

JMA-9133-SA  
JMA-9132-SA  
JMA-9123-7XA/9XA  
JMA-9122-6XA/9XA/6XAH  
JMA-9110-6XA/6XAH

JMA-7133-SA  
JMA-7132-SA  
JMA-7123-7XA/9XA  
JMA-7122-6XA/9XA/6XAH  
JMA-7110-6XA/6XAH

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**MARINE RADAR  
EQUIPMENT**

**INSTALLATION  
MANUAL**

**JRC** *Japan Radio Co., Ltd.*



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## Index

### Cross Reference

JMA-9133-SA .....	i
JMA-9132-SA .....	ii
JMA-9123-7XA/9XA .....	iii
JMA-9122-6XA/9XA .....	iv
JMA-9122-6XAH .....	v
JMA-9110-6XA/6XAH .....	vi
JMA-7133-SA .....	vii
JMA-7132-SA .....	viii
JMA-7123-7XA9XA .....	ix
JMA-7122-6XA/9XA .....	x
JMA-7122-6XAH .....	xi
JMA-7110-6XA/6XAH .....	xii

### SECTION 1

#### EQUIPMENT COMPOSITION

1.1	GENERAL COMPOSITION .....	1-1
1.1.1	JMA-9100 SERIES RADAR .....	1-1
1.1.2	JMA-7100 SERIES RADAR .....	1-2
1.2	LIST OF CIRCUITS .....	1-4
1.2.1	JMA-9100 SERIES RADAR .....	1-4
1.2.2	JMA-7100 SERIES RADAR .....	1-11

### SECTION 2

#### INSTALLATION OF SCANNER UNIT

2.1	EQUIPMENT CABLE .....	2-1
2.1.1	CFQ-6912-** .....	2-1
2.1.2	2695110056 .....	2-2
2.1.3	2695111153 .....	2-3
2.1.4	Cable end processing method .....	2-4
2.1.5	Connection to the display-unit side terminal block .....	2-7
2.2	INSTALLATION OF SCANNER UNIT .....	2-8
2.2.1	NKE-2103 type scanner .....	2-8
2.2.2	NKE-2254 type scanner .....	2-11
2.2.3	NKE-1125 type scanner .....	2-13
2.2.4	NKE-1129 type scanner .....	2-15
2.2.5	NKE-1130 type scanner .....	2-17
2.2.6	NKE-1139 type scanner .....	2-19
2.3	INSTALLATION OF TRANSMITTER RECEIVER UNIT .....	2-21
2.3.1	NTG-3225 type transmitter receiver .....	2-21
2.3.2	NTG-3230 type transmitter receiver .....	2-24
2.4	PRECAUTIONS .....	2-26
2.4.1	Installation of scanner unit .....	2-26
2.4.2	Routing coaxial cable and flexible waveguide .....	2-29
2.4.3	Scanner installation position .....	2-31

2.4.4	Confirmation during test run .....	2-35
2.4.5	Others .....	2-35

## SECTION 3

### INSTALLATION OF DISPLAY UNIT

3.1	INSTALLATION OF DISPLAY UNIT .....	3-1
3.1.1	Exterior Drawing of NCD-4990 .....	3-2
3.1.2	Exterior drawing of NCD-4990T .....	3-3
3.1.3	Exterior drawing of NCD-4790 .....	3-6
3.1.4	Exterior drawing of NCD-4790T .....	3-7
3.2	INSTALLATION OF AC-DC CONVERTER NBA-5135 .....	3-10
3.2.1	NBA-5135 Packing List .....	3-10
3.2.2	Exterior drawing of NBA-5135 .....	3-12
3.2.3	NCD-4990 .....	3-13
3.2.4	NCD-4990T .....	3-17
3.2.5	NCD-4790 .....	3-18
3.2.6	NCD-4790T .....	3-20
3.3	CONNECTIONS WITH SCANNER AND TRANSCEIVER .....	3-21
3.3.1	Connections with NKE-1125,NTG-3225,NKE-1130,NTG-3230 .....	3-21
3.3.2	Connections with NKE-2103,NKE-2254 .....	3-22
3.4	CONNECTION WITH GPS .....	3-24
3.5	CONNECTIONS WITH VESSEL SPEED UNIT (2-AXIS LOG) .....	3-26
3.6	CONNECTIONS WITH GYRO AND ELECTROMAGNETIC LOG .....	3-27
3.7	CONNECTION WITH GYRO (IEC61162-1/2) .....	3-29
3.8	CONNECTIONS WITH AIS .....	3-31
3.9	CONNECTIONS WITH ECDIS .....	3-33
3.9.1	Transmission Port Setting (TX Port) .....	3-34
3.10	CONNECTION WITH ALARM MONITORING SYSTEM .....	3-36
3.11	EXAMPLE OF WIRING IN THE DEVICE .....	3-38
3.12	DISPLAY UNIT LEDS FOR VARIOUS SIGNALS .....	3-39
3.12.1	Serial Signal .....	3-40
3.12.2	Power supply status .....	3-41
3.12.3	Alarm Signal .....	3-42
3.12.4	Fan Alarm .....	3-43

## SECTION 4

### INITIAL SETTING

4.1	GYRO INTERFACE SETTING .....	4-2
4.1.1	GYRO INPUT SETTING (STEP/SYNC setting) .....	4-2
4.1.2	NMEA Input setting .....	4-5
4.2	TUNE ADJUSTMENT .....	4-7
4.3	BEARING ADJUSTMENT .....	4-8
4.4	RANGE ADJUSTMENT .....	4-9
4.5	NAVIGATOR SETTING .....	4-10
4.6	TRUE BEARING SETTING .....	4-11
4.7	ANTENNA HEIGHT SETTING .....	4-12



4.8	CCRP SETTING .....	4-13
4.9	MAIN BANG SUPPRESSION SETTING .....	4-14
4.10	PERFORMANCE MONITOR SETTING .....	4-16
4.11	DATE/TIME DISPLAY SETTING .....	4-18
4.12	INITIALIZATION OF SCANNER OPERATION TIME .....	4-20

## SECTION 5 OPTION UNIT

5.1	INSTALLATION OF INTERSWITCH UNIT .....	5-1
5.1.1	Equipment cable end processing .....	5-1
5.1.2	Plug terminal block connection procedures .....	5-2
5.1.3	Installation of interswitch unit .....	5-3
5.1.4	Setting .....	5-7
5.1.5	Confirmation after installation .....	5-11
5.1.6	Inter-board connection diagram .....	5-12
5.2	INSTALLATION OF POWER CONTROL UNIT .....	5-14
5.2.1	Connection with NKE-2103 type and NKE-2254-6HS type scanners ..	5-14
5.2.2	Connections to NKE-1125, NTG-3225, NKE-1130, and NTG-3230 .....	5-16
5.2.3	Equipment cable end processing .....	5-16
5.2.4	End processing of each cable core .....	5-16
5.2.5	Connection to display unit .....	5-16
5.2.6	General system diagram of power control unit (JMA-7100) .....	5-18
5.2.7	General system diagram of power control unit (JMA-9100) .....	5-36
5.2.8	Inter-board connection diagram of power control unit .....	5-54
5.2.9	Exterior drawing of Power Control Unit .....	5-60
5.3	INSTALLATION OF VDR .....	5-62
5.3.1	Connections .....	5-62
5.3.2	VDR I/F kit .....	5-63
5.4	INSTALLATION OF SUB-OPERATION UNIT AND EXPANSION OF TRACKBALL 5-64	
5.4.1	Sub Operation Unit .....	5-64
5.4.2	Expansion of trackball .....	5-65

## SECTION 6 Appendix

6.1	EXTERIOR DRAWING .....	6-1
6.1.1	NKE-1139 .....	6-1
6.1.2	NTG-3230 .....	6-3
6.1.3	NKE-1130 .....	6-4
6.1.4	NKE-1129-7 .....	6-5
6.1.5	NKE-1129-9 .....	6-6
6.1.6	NTG-3225 .....	6-7
6.1.7	NKE-1125-6 .....	6-8
6.1.8	NKE-1125-9 .....	6-9
6.1.9	NKE-2254-6HS .....	6-10
6.1.10	NKE-2103-6/NKE-2103-6HS .....	6-11
6.1.11	NCD-4990 .....	6-12
6.1.12	NDC-1399-9 .....	6-13
6.1.13	NCE-5163 .....	6-14
6.1.14	NWZ-170 .....	6-15
6.1.15	NCD-4790 .....	6-16
6.1.16	NDC-1399-7 .....	6-17
6.1.17	NCE-5163 .....	6-18

6.1.18	NWZ-173 .....	6-19
<b>6.2</b>	<b>GENERAL SYSTEM DIAGRAM .....</b>	<b>6-20</b>
6.2.1	<b>General system diagram of JMA-7100 (Self-standing type) .....</b>	<b>6-20</b>
6.2.1.1	General system diagram of JMA-7132-SA (Self-standing).....	6-21
6.2.1.2	General system diagram of JMA-7133-SA (Self-standing).....	6-22
6.2.1.3	General system diagram of JMA-7122-6XA (Self-standing).....	6-23
6.2.1.4	General system diagram of JMA-7122-9XA (Self-standing).....	6-24
6.2.1.5	General system diagram of JMA-7122-6XAH (Self-standing).....	6-25
6.2.1.6	General system diagram of JMA-7123-7XA (Self-standing).....	6-26
6.2.1.7	General system diagram of JMA-7123-9XA (Self-standing).....	6-27
6.2.1.8	General system diagram of JMA-7110-6XA (Self-standing).....	6-28
6.2.1.9	General system diagram of JMA-7110-6XAH (Self-standing).....	6-29
6.2.2	<b>General system diagram of JMA-7100 (Desktop type) .....</b>	<b>6-30</b>
6.2.2.1	General system diagram of JMA-7132-SA (Desktop) .....	6-31
6.2.2.2	General system diagram of JMA-7133-SA (Desktop) .....	6-32
6.2.2.3	General system diagram of JMA-7122-6XA (Desktop) .....	6-33
6.2.2.4	General system diagram of JMA-7122-9XA (Desktop) .....	6-34
6.2.2.5	General system diagram of JMA-7122-6XAH (Desktop).....	6-35
6.2.2.6	General system diagram of JMA-7123-7XA (Desktop) .....	6-36
6.2.2.7	General system diagram of JMA-7123-9XA (Desktop) .....	6-37
6.2.2.8	General system diagram of JMA-7110-6XA (Desktop) .....	6-38
6.2.2.9	General system diagram of JMA-7110-6XAH (Desktop).....	6-39
6.2.3	<b>General system diagram of JMA-9100 (Self-standing type) .....</b>	<b>6-40</b>
6.2.3.1	General system diagram of JMA-9132-SA (Self-standing) .....	6-41
6.2.3.2	General system diagram of JMA-9133-SA (Self-standing).....	6-42
6.2.3.3	General system diagram of JMA-9122-6XA (Self-standing).....	6-43
6.2.3.4	General system diagram of JMA-9122-9XA (Self-standing).....	6-44
6.2.3.5	General system diagram of JMA-9122-6XAH (Self-standing).....	6-45
6.2.3.6	General system diagram of JMA-9123-7XA (Self-standing).....	6-46
6.2.3.7	General system diagram of JMA-9123-9XA (Self-standing).....	6-47
6.2.3.8	General system diagram of JMA-9110-6XA (Self-standing).....	6-48
6.2.3.9	General system diagram of JMA-9110-6XAH (Self-standing).....	6-49
6.2.4	<b>General system diagram of JMA-9100 (Desktop type) .....</b>	<b>6-50</b>
6.2.4.1	General system diagram of JMA-9132-SA (Desktop) .....	6-51
6.2.4.2	General system diagram of JMA-9133-SA (Desktop) .....	6-52
6.2.4.3	General system diagram of JMA-9122-6XA (Desktop) .....	6-53
6.2.4.4	General system diagram of JMA-9122-9XA (Desktop) .....	6-54
6.2.4.5	General system diagram of JMA-9122-6XAH (Desktop).....	6-55
6.2.4.6	General system diagram of JMA-9123-7XA (Desktop) .....	6-56
6.2.4.7	General system diagram of JMA-9123-9XA (Desktop) .....	6-57
6.2.4.8	General system diagram of JMA-9110-6XA (Desktop) .....	6-58
6.2.4.9	General system diagram of JMA-9110-6XAH (Desktop).....	6-59
<b>6.3</b>	<b>INTER-BOARD CONNECTION DIAGRAM .....</b>	<b>6-60</b>
6.3.1	<b>Inter-board connection diagram of JMA-7100 .....</b>	<b>6-60</b>
6.3.1.1	Inter-board connection diagram of JMA-7132-SA .....	6-61
6.3.1.2	Inter-board connection diagram of JMA-7133-SA .....	6-62
6.3.1.3	Inter-board connection diagram of JMA-7122-6XA/9XA .....	6-63
6.3.1.4	Inter-board connection diagram of JMA-7122-6XAH.....	6-64
6.3.1.5	Inter-board connection diagram of JMA-7122-6XAH(Desktop).....	6-65
6.3.1.6	Inter-board connection diagram of JMA-7123-7XA/9XA .....	6-66
6.3.1.7	Inter-board connection diagram of JMA-7110-6XA/6XAH.....	6-67
6.3.1.8	Inter-board connection diagram of JMA-7110-6XA/6XAH(Desktop) ....	6-68
6.3.1.9	Inter-unit connection diagram of NCD-4790T.....	6-69



<b>6.3.2</b>	<b>Inter-board connection diagram of JMA-9100 .....</b>	<b>6-70</b>
6.3.2.1	Inter-board connection diagram of JMA-9132-SA .....	6-71
6.3.2.2	Inter-board connection diagram of JMA-9133-SA .....	6-72
6.3.2.3	Inter-board connection diagram of JMA-9122-6XA/9XA .....	6-73
6.3.2.4	Inter-board connection diagram of JMA-9122-6XAH.....	6-74
6.3.2.5	Inter-board connection diagram of JMA-9122-6XAH (Desktop) .....	6-75
6.3.2.6	Inter-board connection diagram of JMA-9123-7XA/9XA .....	6-76
6.3.2.7	Inter-board connection diagram of JMA-9110-6XA/6XAH .....	6-77
6.3.2.8	Inter-board connection diagram of JMA-9110-6XA/6XAH (Desktop) ...	6-78
6.3.2.9	Inter-unit connection diagram of NCD-4990T .....	6-79
<b>6.4</b>	<b>SCANNER UNIT INTERCONNECTION .....</b>	<b>6-80</b>
6.4.1	<b>NKE-2103 .....</b>	<b>6-81</b>
6.4.2	<b>NKE-2254 .....</b>	<b>6-82</b>
6.4.3	<b>NKE-1125 (AC110V) .....</b>	<b>6-83</b>
6.4.4	<b>NKE-1125 (AC220V) .....</b>	<b>6-84</b>
6.4.5	<b>NKE-1129 (AC110V) .....</b>	<b>6-85</b>
6.4.6	<b>NKE-1129 (AC220V) .....</b>	<b>6-86</b>
6.4.7	<b>NTG-3225 .....</b>	<b>6-87</b>
6.4.8	<b>NKE-1130 (AC110V) .....</b>	<b>6-88</b>
6.4.9	<b>NKE-1130 (AC220V) .....</b>	<b>6-89</b>
6.4.10	<b>NKE-1139 (AC110V) .....</b>	<b>6-90</b>
6.4.11	<b>NKE-1139 (AC220V) .....</b>	<b>6-91</b>
6.4.12	<b>NTG-3230 .....</b>	<b>6-92</b>



## Cross Reference

### JMA-9133-SA

Table1-1 : JMA-9100 SERIES RADAR LIST OF COMPOSITION (Self-Standing TYPE)

Table1-2 : JMA-9100 SERIES RADAR LIST OF COMPOSITION (Desktop TYPE)

### Scanner Unit: NKE-1139

Table1-5 : JMA-9133-SA SCANNER and TRANSMITTER RECEIVER UNIT

2.1.2 2695110056

2.2.6 NKE-1139 type scanner

2.4 PRECAUTIONS

### Transmitter Receiver Unit: NTG-3230

2.3.2 NTG-3230 type transmitter receiver

### Display Unit (self standing): NCD-4990

Table1-11 : NCD-4990/NCD-4990T DISPLAY UNIT

3.1 INSTALLATION OF DISPLAY UNIT

3.3.1 Connections with NKE-1125,NTG-3225,NKE-1130,NTG-3230

## OPTION

### Interswitch Unit: NQE-3141-2/4A/8A

5.1 INSTALLATION OF INTERSWITCH UNIT

### Power Control Unit: NQE-3167

3230

5.2.2 Connections to NKE-1125, NTG-3225, NKE-1130, and NTG-

5.2.5 Connection to display unit

### VDR I/F Kit: CQD-1891

5.3 INSTALLATION OF VDR

## JMA-9132-SA

Table1-1 : JMA-9100 SERIES RADAR LIST OF COMPOSITION (Self-Standing TYPE)

Table1-2 : JMA-9100 SERIES RADAR LIST OF COMPOSITION (Desktop TYPE)

### Scanner Unit: NKE-1130

Table1-6 : JMA-9132-SA SCANNER UNIT

2.1.2 2695110056

2.2.5 NKE-1130 type scanner

2.4 PRECAUTIONS

### Display Unit (self standing): NCD-4990

Table1-11 : NCD-4990/NCD-4990T DISPLAY UNIT

3.1 INSTALLATION OF DISPLAY UNIT

3.3.1 Connections with NKE-1125,NTG-3225,NKE-1130,NTG-3230

## OPTION

### Interswitch Unit: NQE-3141-2/4A/8A

5.1 INSTALLATION OF INTERSWITCH UNIT

### Power Control Unit: NQE-3167

3230

5.2.2 Connections to NKE-1125, NTG-3225, NKE-1130, and NTG-

5.2.5 Connection to display unit

### VDR I/F Kit: CQD-1891

5.3 INSTALLATION OF VDR

JMA-9123-7XA/9XA

Table1-1 : JMA-9100 SERIES RADAR LIST OF COMPOSITION (Self-Standing TYPE)

Table1-2 : JMA-9100 SERIES RADAR LIST OF COMPOSITION (Desktop TYPE)

Scanner Unit: NKE-1129

Table1-7 : JMA-9123-7XA/JMA-9123-9XA SCANNER and TRANSMITTER-RECEIVER UNIT

2.1.2 2695110056

2.2.4 NKE-1129 type scanner

2.4 PRECAUTIONS

Transmitter Receiver Unit: NTG-3225

2.3.1 NTG-3225 type transmitter receiver

Display Unit (self standing): NCD-4990

Table1-11 : NCD-4990/NCD-4990T DISPLAY UNIT

3.1 INSTALLATION OF DISPLAY UNIT

3.3.1 Connections with NKE-1125,NTG-3225,NKE-1130,NTG-3230

OPTION

Interswitch Unit: NQE-3141-2/4A/8A

5.1 INSTALLATION OF INTERSWITCH UNIT

Power Control Unit: NQE-3167

3230 5.2.2 Connections to NKE-1125, NTG-3225, NKE-1130, and NTG-

5.2.5 Connection to display unit

VDR I/F Kit: CQD-1891

5.3 INSTALLATION OF VDR

## JMA-9122-6XA/9XA

Table1-1 : JMA-9100 SERIES RADAR LIST OF COMPOSITION (Self-Standing TYPE)

Table1-2 : JMA-9100 SERIES RADAR LIST OF COMPOSITION (Desktop TYPE)

### Scanner Unit: NKE-1125

Table1-8 : JMA-9122-6XA/JMA-9122-9XA SCANNER UNIT

2.1.2 2695110056

2.2.3 NKE-1125 type scanner

2.4 PRECAUTIONS

### Display Unit (self standing): NCD-4990

Table1-11 : NCD-4990/NCD-4990T DISPLAY UNIT

3.1 INSTALLATION OF DISPLAY UNIT

3.3.1 Connections with NKE-1125,NTG-3225,NKE-1130,NTG-3230

## OPTION

### Interswitch Unit: NQE-3141-2/4A/8A

5.1 INSTALLATION OF INTERSWITCH UNIT

### Power Control Unit: NQE-3167

3230 5.2.2 Connections to NKE-1125, NTG-3225, NKE-1130, and NTG-

5.2.5 Connection to display unit

### VDR I/F Kit: CQD-1891

5.3 INSTALLATION OF VDR



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JMA-9122-6XAH

Table1-1 : JMA-9100 SERIES RADAR LIST OF COMPOSITION (Self-Standing TYPE)

Table1-2 : JMA-9100 SERIES RADAR LIST OF COMPOSITION (Desktop TYPE)

Scanner Unit: NKE-2254-6HS

Table1-9 : JMA-9122-6XAH SCANNER UNIT

2.1.1 CFQ-6912-\*\*

2.2.2 NKE-2254 type scanner

2.4 PRECAUTIONS

Display Unit (self standing): NCD-4990

Table1-11 : NCD-4990/NCD-4990T DISPLAY UNIT

3.1 INSTALLATION OF DISPLAY UNIT

3.2 INSTALLATION OF AC-DC CONVERTER NBA-5135

3.3.2 Connections with NKE-2103,NKE-2254

OPTION

Interswitch Unit: NQE-3141-2/4A/8A

5.1 INSTALLATION OF INTERSWITCH UNIT

Power Control Unit: NQE-3167

scanners

5.2.1 Connection with NKE-2103 type and NKE-2254-6HS type

5.2.5 Connection to display unit

VDR I/F Kit: CQD-1891

5.3 INSTALLATION OF VDR

## JMA-9110-6XA/6XAH

Table1-1 : JMA-9100 SERIES RADAR LIST OF COMPOSITION (Self-Standing TYPE)

Table1-2 : JMA-9100 SERIES RADAR LIST OF COMPOSITION (Desktop TYPE)

### Scanner Unit: NKE-2103

Table1-10 : JMA-9110-6XA/JMA-9110-6XAH SCANNER UNIT

2.1.1 CFQ-6912-\*\*

2.2.1 NKE-2103 type scanner

2.4 PRECAUTIONS

### Display Unit (self standing): NCD-4990

Table1-11 : NCD-4990/NCD-4990T DISPLAY UNIT

3.1 INSTALLATION OF DISPLAY UNIT

3.2 INSTALLATION OF AC-DC CONVERTER NBA-5135

5.2.1 Connection with NKE-2103 type and NKE-2254-6HS type scanners

## OPTION

### Interswitch Unit: NQE-3141-2/4A/8A

5.1 INSTALLATION OF INTERSWITCH UNIT

### Power Control Unit: NQE-3167

scanners 5.2.1 Connection with NKE-2103 type and NKE-2254-6HS type

5.2.5 Connection to display unit

### VDR I/F Kit: CQD-1891

5.3 INSTALLATION OF VDR

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## JMA-7133-SA

Table1-3 : JMA-7100 SERIES RADAR LIST OF COMPOSITION (Self-Standing TYPE)

Table1-4 : JMA-7100 SERIES RADAR LIST OF COMPOSITION (Desktop TYPE)

### Scanner Unit: NKE-1139

Table1-12 : JMA-7133-SASCANNER and TRANSMITTER RECEIVER UNIT

2.1.2 2695110056

2.2.6 NKE-1139 type scanner

2.4 PRECAUTIONS

### Transmitter Receiver Unit: NTG-3230

2.3.2 NTG-3230 type transmitter receiver

### Display Unit (self standing): NCD-4790

Table1-18 : NCD-4790/NCD-4790T DISPLAY UNIT

3.1 INSTALLATION OF DISPLAY UNIT

3.3.1 Connections with NKE-1125,NTG-3225,NKE-1130,NTG-3230

## OPTION

### Interswitch Unit: NQE-3141-2/4A/8A

5.1 INSTALLATION OF INTERSWITCH UNIT

### Power Control Unit: NQE-3167

3230

5.2.2 Connections to NKE-1125, NTG-3225, NKE-1130, and NTG-

5.2.5 Connection to display unit

### VDR I/F Kit: CQD-1891

5.3 INSTALLATION OF VDR

## JMA-7132-SA

Table1-3 : JMA-7100 SERIES RADAR LIST OF COMPOSITION (Self-Standing TYPE)

Table1-4 : JMA-7100 SERIES RADAR LIST OF COMPOSITION (Desktop TYPE)

### Scanner Unit: NKE-1139

Table1-13 : JMA-7132-SA SCANNER UNIT

2.1.2 2695110056

2.2.5 NKE-1130 type scanner

2.4 PRECAUTIONS

### Display Unit (self standing): NCD-4790

Table1-18 : NCD-4790/NCD-4790T DISPLAY UNIT

3.1 INSTALLATION OF DISPLAY UNIT

3.3.1 Connections with NKE-1125,NTG-3225,NKE-1130,NTG-3230

## OPTION

### Interswitch Unit: NQE-3141-2/4A/8A

5.1 INSTALLATION OF INTERSWITCH UNIT

### Power Control Unit: NQE-3167

3230

5.2.2 Connections to NKE-1125, NTG-3225, NKE-1130, and NTG-

5.2.5 Connection to display unit

### VDR I/F Kit: CQD-1891

5.3 INSTALLATION OF VDR

JMA-7123-7XA9XA

Table1-3 : JMA-7100 SERIES RADAR LIST OF COMPOSITION (Self-Standing TYPE)

Table1-4 : JMA-7100 SERIES RADAR LIST OF COMPOSITION (Desktop TYPE)

Scanner Unit: NKE-1139

Table1-14 : JMA-7123-7XA/JMA-7123-9XASCANNER and TRANSMITTER RECEIVER UNIT

2.1.2 2695110056

2.2.4 NKE-1129 type scanner

2.4 PRECAUTIONS

Transmitter Receiver Unit: NTG-3225

2.3.1 NTG-3225 type transmitter receiver

Display Unit (self standing): NCD-4790

Table1-18 : NCD-4790/NCD-4790T DISPLAY UNIT

3.1 INSTALLATION OF DISPLAY UNIT

3.3.1 Connections with NKE-1125,NTG-3225,NKE-1130,NTG-3230

OPTIONInterswitch Unit: NQE-3141-2/4A/8A

5.1 INSTALLATION OF INTERSWITCH UNIT

Power Control Unit: NQE-3167

3230

5.2.2 Connections to NKE-1125, NTG-3225, NKE-1130, and NTG-

5.2.5 Connection to display unit

VDR I/F Kit: CQD-1891

5.3 INSTALLATION OF VDR

## JMA-7122-6XA/9XA

Table1-3 : JMA-7100 SERIES RADAR LIST OF COMPOSITION (Self-Standing TYPE)

Table1-4 : JMA-7100 SERIES RADAR LIST OF COMPOSITION (Desktop TYPE)

### Scanner Unit: NKE-1125

Table1-15 : JMA-7122-6XA/JMA-7122-9XA SCANNER UNIT

2.1.2 2695110056

2.2.3 NKE-1125 type scanner

2.4 PRECAUTIONS

### Display Unit (self standing): NCD-4790

Table1-18 : NCD-4790/NCD-4790T DISPLAY UNIT

3.1 INSTALLATION OF DISPLAY UNIT

3.3.1 Connections with NKE-1125,NTG-3225,NKE-1130,NTG-3230

## OPTION      Interswitch Unit: NQE-3141-2/4A/8A

5.1 INSTALLATION OF INTERSWITCH UNIT

### Power Control Unit: NQE-3167

3230                      5.2.2 Connections to NKE-1125, NTG-3225, NKE-1130, and NTG-

5.2.5 Connection to display unit

### VDR I/F Kit: CQD-1891

5.3 INSTALLATION OF VDR

JMA-7122-6XAH

Table1-3 : JMA-7100 SERIES RADAR LIST OF COMPOSITION (Self-Standing TYPE)

Table1-4 : JMA-7100 SERIES RADAR LIST OF COMPOSITION (Desktop TYPE)

Scanner Unit: NKE-2254-6HS

Table1-16 : JMA-7122-6XAH SCANNER UNIT

2.1.1 CFQ-6912-\*\*

2.2.2 NKE-2254 type scanner

2.4 PRECAUTIONS

Display Unit (self standing): NCD-4790

Table1-18 : NCD-4790/NCD-4790T DISPLAY UNIT

3.1 INSTALLATION OF DISPLAY UNIT

3.2 INSTALLATION OF AC-DC CONVERTER NBA-5135

3.3.2 Connections with NKE-2103,NKE-2254

OPTIONInterswitch Unit: NQE-3141-2/4A/8A

5.1 INSTALLATION OF INTERSWITCH UNIT

Power Control Unit: NQE-3167

scanners 5.2.1 Connection with NKE-2103 type and NKE-2254-6HS type

5.2.5 Connection to display unit

VDR I/F Kit: CQD-1891

5.3 INSTALLATION OF VDR

## JMA-7110-6XA/6XAH

Table1-3 : JMA-7100 SERIES RADAR LIST OF COMPOSITION (Self-Standing TYPE)

Table1-4 : JMA-7100 SERIES RADAR LIST OF COMPOSITION (Desktop TYPE)

### Scanner Unit: NKE-2103

Table1-17 : JMA-7110-6XA/JMA-7110-6XAH SCANNER UNIT

2.1.1 CFQ-6912-\*\*

2.2.1 NKE-2103 type scanner

2.4 PRECAUTIONS

### Display Unit (self standing): NCD-4790

Table1-18 : NCD-4790/NCD-4790T DISPLAY UNIT

3.1 INSTALLATION OF DISPLAY UNIT

3.2 INSTALLATION OF AC-DC CONVERTER NBA-5135

3.3.2 Connections with NKE-2103,NKE-2254

### OPTION Interswitch Unit: NQE-3141-2/4A/8A

5.1 INSTALLATION OF INTERSWITCH UNIT

### Power Control Unit: NQE-3167

scanners 5.2.1 Connection with NKE-2103 type and NKE-2254-6HS type

5.2.5 Connection to display unit

### VDR I/F Kit: CQD-1891

5.3 INSTALLATION OF VDR



**1 EQUIPMENT COMPOSITION**

**2 INSTALLATION OF SCANNER UNIT**

**3 INSTALLATION OF DISPLAY UNIT**

**4 INITIAL SETTING**

**5 OPTION UNIT**

**6 APPENDIX**

**1**

**2**

**3**

**4**

**5**

**6**



# SECTION 1

## EQUIPMENT COMPOSITION

### EQUIPMENT COMPOSITION

1.1	GENERAL COMPOSITION .....	1-1
1.1.1	JMA-9100 SERIES RADAR .....	1-1
1.1.2	JMA-7100 SERIES RADAR .....	1-2
1.2	LIST OF CIRCUITS .....	1-4
1.2.1	JMA-9100 SERIES RADAR .....	1-4
1.2.2	JMA-7100 SERIES RADAR .....	1-11



# 1.1

## GENERAL COMPOSITION

1

### 1.1.1 JMA-9100 SERIES RADAR

**Table1-1 : JMA-9100 SERIES RADAR LIST OF COMPOSITION (Self-Standing TYPE)**

MODEL	SCANNER UNIT	RADIATOR	PERFORMANCE MONITOR	TRANSMITTER RECEIVER UNIT	DISPLAY UNIT	AC-DC CONVERTER
JMA-9133-SA	NKE-1139		NJU-84	NTG-3230	NCD-4990	—
JMA-9132-SA	NKE-1130			—		
JMA-9123-7XA	NKE-1129-7	NAX-16B-7	NJU-85	NTG-3225		NBA-5135 (Built in a display unit)
JMA-9123-9XA	NKE-1129-9	NAX-16B-9				
JMA-9122-6XA	NKE-1125-6	NAX-16B-6		—		
JMA-9122-9XA	NKE-1125-9	NAX-16B-9		—		
JMA-9122-6XAH	NKE-2254-6HS	NAX-16B-6		—		
JMA-9110-6XA	NKE-2103-6	NAX-16B-6		—		
JMA-9110-6XAH	NKE-2103-6HS	NAX-16B-6		—		

**Table1-2 : JMA-9100 SERIES RADAR LIST OF COMPOSITION (Desktop TYPE)**

MODEL	SCANNER UNIT	RADIATOR	PERFORMANCE MONITOR	TRANSMITTER RECEIVER UNIT	DISPLAY UNIT	AC-DC CONVERTER
JMA-9133-SA	NKE-1139		NJU-84	NTG-3230	Display unit:	—
JMA-9132-SA	NKE-1130			—	NWZ-170	—
JMA-9123-7XA	NKE-1129-7	NAX-16B-7	NJU-85	NTG-3225	Radar Process Unit: NDC-1399-9 Operation Unit: NCE-5163	—
JMA-9123-9XA	NKE-1129-9	NAX-16B-9				—
JMA-9122-6XA	NKE-1125-6	NAX-16B-6		—		
JMA-9122-9XA	NKE-1125-9	NAX-16B-9		—		
JMA-9122-6XAH	NKE-2254-6HS	NAX-16B-6		—		
JMA-9110-6XA	NKE-2103-6	NAX-16B-6		—		
JMA-9110-6XAH	NKE-2103-6HS	NAX-16B-6		—		

\*1 Input voltage is selectable. '1' or '2' suffix is attached to model name of scanner unit. '1' means AC100-115V(50/60Hz) and '2' means AC220-240V(50/60Hz) for type of scanner unit NKE-1139, NKE-1130, NKE-1129-7, NKE-1129-9, NKE-1125-6 and NKE-1125-9. Others are DC input.

\*2 HEATER OPTION is available at suffix 'D' exclude type NKE-2103.

Ex)NKE-1139-1 D, NKE-1129-92 D, NKE-2254-6HSD,

1 : AC 100-115V 50/60Hz 1φ

2 : AC 220-240V 50/60Hz 1φ

D : HEATER OPTION

## 1.1.2 JMA-7100 SERIES RADAR

**Table1-3 : JMA-7100 SERIES RADAR LIST OF COMPOSITION (Self-Standing TYPE)**

MODEL	SCANNER UNIT	RADIATOR	PERFORMAN CEMONITOR	TRANSMITTER RECEIVER UNIT	DISPLAY UNIT	AC-DC CONVERTER	
JMA-7133-SA	NKE-1139		NJU-84	NTG-3230	NCD-4790	—	
JMA-7132-SA	NKE-1130			—			
JMA-7123-7XA	NKE-1129-7	NAX-16B-7	NJU-85	NTG-3225			NBA-5135 (DISPLAY UNIT に内蔵)
JMA-7123-9XA	NKE-1129-9	NAX-16B-9					
JMA-7122-6XA	NKE-1125-6	NAX-16B-6		—			
JMA-7122-9XA	NKE-1125-9	NAX-16B-9		—			
JMA-7122-6XAH	NKE-2254-6HS	NAX-16B-6		—			
JMA-7110-6XA	NKE-2103-6	NAX-16B-6		—			
JMA-7110-6XAH	NKE-2103-6HS	NAX-16B-6		—			

**Table1-4 : JMA-7100 SERIES RADAR LIST OF COMPOSITION (Desktop TYPE)**

MODEL	SCANNER UNIT	RADIATOR	PERFORMAN CEMONITOR	TRANSMITTER RECEIVER UNIT	DISPLAY UNIT	A C - D C CONVERTER
JMA-7133-SA	NKE-1139		NJU-84	NTG-3230	Display unit:	—
JMA-7132-SA	NKE-1130			—	NWZ-170	—
JMA-7123-7XA	NKE-1129-7	NAX-16B-7	NJU-85	NTG-3225	Radar Process Unit: NDC-1399-9  Operation Unit: NCE-5163	—
JMA-7123-9XA	NKE-1129-9	NAX-16B-9				—
JMA-7122-6XA	NKE-1125-6	NAX-16B-6		—		
JMA-7122-9XA	NKE-1125-9	NAX-16B-9		—		
JMA-7122-6XAH	NKE-2254-6HS	NAX-16B-6		—		
JMA-7110-6XA	NKE-2103-6	NAX-16B-6		—		
JMA-7110-6XAH	NKE-2103-6HS	NAX-16B-6		—		

\*1 Input voltage is selectable. '1' or '2' suffix is attached to model name of scanner unit. '1' means AC100-115V(50/60Hz) and '2' means AC220-240V(50/60Hz) for type of scanner unit NKE-1139,NKE-1130,NKE-1129-7,NKE-1129-9,NKE-1125-6 and NKE-1125-9. Others are DC input.

\*2 HEATER OPTION is available at suffix 'D' exclude type NKE-2103.

Ex) NKE-1139-1 D, NKE-1129-92 D, NKE-2254-6HSD,、

1 : AC 100-115V 50/60Hz 1φ

2 : AC 220-240V 50/60Hz 1φ

D : HEATER OPTION

# 1.2 LIST OF CIRCUITS

## 1.2.1 JMA-9100 SERIES RADAR

**Table1-5 : JMA-9133-SA SCANNER and TRANSMITTER RECEIVER UNIT**

	NKE-1139-1		NKE-1139-2	
SCANNER UNIT	SCANNER INTERCONNECTION UNIT	CAX-14		
	RADIATOR	CTG-270		
	SAFETY SWITCH	CSD-657		
	ENCODER	CHT-71A1		
	MOTOR	MDBW10823		
	AC100V MOTOR DRIVER	7EPRD0035	AC220V MOTOR DRIVER	7EPRD0034
	BREAK CIRCUIT	CFA-255		
	BREAK CONTROL CIRCUIT	CCB-655		
	BREAK UNIT	NZR-17		
	HEATER CONTROL PART	CHG-215		
	PERFORMANCE MONITOR	NJU-84		
TRANSMITTER RECEIVER UNIT	NTG-3230			
	TRANSCIVER INTERCONNECTION UNIT	CMK-594		
	MODULATOR UNIT	NMA-553-1		
	MODULATOR INTERCONNECTION UNIT	CMB-407		
	MODULATOR CIRCUIT	CPA-264		
	RECEIVER CIRCUIT	NRG-229		
	RECEIVER INTERCONNECTION UNIT	CMA-902		
	IF CIRCUIT	CAE-499		
	RF CIRCUIT	CAF-595		
	T/R CONTROL CIRCUIT	CMC-1205R		
	RELAY FILTER CIRCUIT	CSC-656		
POEWR SUPPLY CIRCUIT	CBD-1682A			
DISPLAY UNIT	NCD-4990/T			





**Table1-6 : JMA-9132-SA SCANNER UNIT**

	NKE-1130-1		NKE-1130-2	
SCANNER UNIT	SCANNER UNIT INTERCONNECTION		CAX-13	
	RADIATOR		CTG-270	
	SAFETY SWITCH		CSD-656	
	ENCODER		CHT-71A	
	MOTOR		MDBW10823	
	AC100V MOTOR DRIVER	7EPRD0035	AC220V MOTOR DRIVER	7EPRD0034
	BREAK CIRCUIT		CFA-255	
	BREAK CONTROL CIRCUIT		CCB-655	
	BREAK UNIT		NZR-17	
	MODULATOR UNIT		NMA-551-1	
	MODULATOR UNIT INTERCONNECTION		CMB-406	
	MODULATOR CIRCUIT		CPA-264	
	RECEIVER CONTROL UNIT		NZT-1130	
	RECEIVER UNIT		NRG-229	
	RECEIVER UNIT INTERCONNECTION		CMA-902	
	IF CIRCUIT		CAE-499	
	RF CIRCUIT		CAF-595	
	T/R CONTROL CIRCUIT		CMC-1205R	
	RELAY FILTER CIRCUIT		CSC-656	
	POWER SUPPLY CIRCUIT		CBD-1682A	
HEATER CONTROL PART		CHG-215		
PERFORMANCE MONITOR		NJU-84		
DISPLAY UNIT	NCD-4990/T			

**Table1-7 : JMA-9123-7XA/JMA-9123-9XA SCANNER and TRANSMITTER-RECEIVER UNIT**

	NKE-1129-1		NKE-1129-2	
S C A N N E R U N I T	SCANNER UNIT INTERCONNECTION		CAX-12	
	SAFETY SWITCH		CSD-655	
	ENCODER		CHT-71A1	
	MOTOR		MDBW10822	
	AC100V MOTOR DRIVER	7EPRD0035	AC220V MOTOR DRIVER	7EPRD0034
	BREAK CIRCUIT		CFA-253	
	BREAK CONTROL CIRCUIT		CCB-655	
	BREAK UNIT		NZR-15	
	HEATER CONTROL PART		CHG-216	
	PERFORMANCE MONITOR		NJU-85	
T R A N S M I T T E R R E C E I V E R U N I T	NTG-3225			
	TRANSCIVER UNIT INTERCONNECTION		CMK-593	
	MODULATOR UNIT		NMA-552-1	
	MODULATOR UNIT INTERCONNECTION		CMB-405	
	MODULATOR CIRCUIT		CPA-264	
	RECEIVER CIRCUIT		CFR-229	
	RECEIVER UNIT INTERCONNECTION		NRG-162A	
	IF CIRCUIT		CMA-866A	
	RF CIRCUIT		CMC-1205R	
	T/R CONTROL CIRCUIT		CSC-656	
RELAY FILTER CIRCUIT		CBD-1682A		
DISPLAY UNIT	NCD-4990/T			

**Table1-8 : JMA-9122-6XA/JMA-9122-9XA SCANNER UNIT**

	NKE-1125-61,NKE-1125-91		NKE-1125-62,NKE-1125-92	
SCANNER UNIT	SCANNER UNIT INTERCONNECTION	CAX-11		
	SAFETY SWITCH	CSD-654		
	ENCODER	CHT-71A		
	MOTOR	MDBW10822		
	AC100V MOTOR DRIVER	7EPRD0035	AC220V MOTOR DRIVER	7EPRD0034
	BREAK CIRCUIT	CFA-253		
	BREAK CONTROL CIRCUIT	CCB-655		
	BREAK UNIT	NZR-16		
	MODULATOR UNIT	NMA-550-1		
	MODULATOR UNIT INTERCONNECTION	CMB-404		
	MODULATOR	CPA-264		
	MAG FILTER CIRCUIT	CFR-229		
	RECEIVER UNIT	NRG-162A		
	RECEIVER CIRCUIT	CMA-866A		
	T/R CONTROL CIRCUIT	CMC-1205R		
	RELAY FILTER CIRCUIT	CSC-656		
	POWER SUPPLY CIRCUIT	CBD-1682A		
HEATER CONTROL PART	CHG-216			
PERFORMANCE MONITOR	NJU-85			
DISPLAY UNIT	NCD4990/T			

**Table1-9 : JMA-9122-6XAH SCANNER UNIT**

NKE-2254-6HS		
SCANNER UNIT	SCANNER UNIT INTERCONNECTION	CAX-15
	SAFETY SWITCH	CSD-653
	ENCODER	CHT-71A
	MOTOR	7BDRD0045A
	MOTOR CONTROL POWER SUPPLY	CBD-1779
	BREAK CIRCUIT	CFA-257
	MODULATOR UNIT	NMA-550-1
	MODULATOR UNIT INTERCONNECTION	CMB-404
	M O D U L A T O R CIRCUIT	CPA-264
	MAG FILTER CIRCUIT	CFR-229
	RECEIVER UNIT	NRG-162A
	RECEIVER CIRCUIT	CMA-866A
	T/RCONTROL CIRCUIT	CMC-1205R
	POWER SUPPLY CIRCUIT	CBD-1682A
	HEATER CONTROL PART	CHG-216
P E R F O R M A N C E MONITOR	NJU-85	
DISPLAY UNIT	NCD-4990/T	
AC-DC CONVERTER	NBA-5135	

**Table1-10 : JMA-9110-6XA/JMA-9110-6XAH SCANNER UNIT**

NKE-2103-6,NKE-2103-6HS		
SCANNER UNIT	SCANNER UNIT INTERCONNECTION	CAX-10
	ENCODER	CHT-71A
	MOTOR	7BDRD0048
	BREAK CIRCUIT	CFA-252
	T R A N S M I T T E R RECEIVER UNIT	NZT-2103
	T R A N S M I T T E R RECEIVER UNIT INTERCONNECTION	CMK-599
	MODULATORCIRCUIT	CME-363
	POWER SUPPLY CIRCUIT	CBD-1783
	MOTOR CONTROL POWER SUPPLY	CBD-1779
	RECEIVER UNIT	NRG-610
	RECEIVER UNIT INTERCONNECTION	CMA-823
	IF AMP CIRCUIT	CAE-529-1
	PERFORMANCE MONITOR	NJU-85
DISPLAY UNIT	NCD-4990/T	
AC-DC CONVERTER	NBA-5135	

**Table1-11 : NCD-4990/NCD-4990T DISPLAY UNIT**

	NCD-4990		NCD-4990T	
RADAR	NDC-1399-9		NDC-1399-9	
PROCESS UNIT	RADAR PROCESS CIRCUIT	CDC-1324		
	AIS PROCESS CIRCUIT	CDC-1325		
	ARPA PROCESS CIRCUIT	CDC-1186D		
	GYRO I/FCIRCUIT	CMJ-462E		
	MOTHER BOARD	CQC-1192		
	TERMINAL BOARD CIRCUIT	CQD-2097		
	POWER SUPPLY	CBD-1661		
	RADAR PROCESS U N I T INTERCONNECTION	CML-763	RADAR PROCESS U N I T INTERCONNECTION	CML-763T
	OPERATION	NCE-5163		NCE-5163
UNIT	O P E R A T I O N C I R C U I T A	CCK-973		
	O P E R A T I O N C I R C U I T B	CCK-974		
	O P E R A T I O N C I R C U I T D	CCK-976		
	OPERATION UNIT INTERCONNECTION	CMD-996-R	OPERATION UNIT INTERCONNECTION	CMD-996-RT
	MONITOR UNIT	RADAR PROCESS CIRCUIT	NWZ-170	
	AIS PROCESS CIRCUIT	CML-799		
	ARPA PROCESS CIRCUIT	CCK-972		
	GYRO I/FCIRCUIT	CML-764-R	MONITOR UNIT INTERCONNECTION	CML-764-RT
AC-DC CONVERTER	NBA-5135 *(Only for NKE-2103-6/6HS,NKE-2254-6/6HS)			

## 1.2.2 JMA-7100 SERIES RADAR



**Table1-12 : JMA-7133-SASCANNER and TRANSMITTER RECEIVER UNIT**

	NKE-1139-1		NKE-1139-2	
S C A N N E R UNIT	SCANNER UNIT INTERCONNECTION		CAX-14	
	RADIATOR		CTG-270	
	SAFETY SWITCH		CSD-657	
	ENCODER		CHT-71A1	
	MOTOR		MDBW10823	
	AC100V MOTOR DRIVER	7EPRD0035	AC220V MOTOR DRIVER	7EPRD0034
	BREAK CIRCUIT		CFA-255	
	BREAK CONTROL CIRCUIT		CCB-655	
	BREAK UNIT		NZR-17	
	HEATER CONTROL PART		CHG-215	
	PERFORMANCE MONITOR		NJU-84	
TRANSMITTER R E C E I V E R UNIT	NTG-3230			
	TRANSCEIVER UNIT INTERCONNECTION		CMK-594	
	MODULATOR UNIT		NMA-553-1	
	MODULATOR UNIT INTERCONNECTION		CMB-407	
	MODULATOR CIRCUIT		CPA-264	
	RECEIVER CIRCUIT		NRG-229	
	RECEIVER UNIT INTERCONNECTION		CMA-902	
	IF CIRCUIT		CAE-499	
	RF CIRCUIT		CAF-595	
	T/R CONTROL CIRCUIT		CMC-1205R	
	RELAY FILTER CIRCUIT		CSC-656	
	POEWR SUPPLY CIRCUIT		CBD-1682A	
DISPLAY UNIT	NCD-4790/T			

**Table1-13 : JMA-7132-SA SCANNER UNIT**

	NKE-1130-1		NKE-1130-2	
SCANNER UNIT	SCANNER INTERCONNECTION UNIT		CAX-13	
	RADIATOR		CTG-270	
	SAFETY SWITCH		CSD-656	
	ENCODER		CHT-71A	
	MOTOR		MDBW10823	
	AC100V MOTOR DRIVER	7EPRD0035	AC220V MOTOR DRIVER	7EPRD0034
	BREAK CIRCUIT		CFA-255	
	BREAK CONTROL CIRCUIT		CCB-655	
	BREAK UNIT		NZR-17	
	MODULATOR UNIT		NMA-551-1	
	MODULATOR UNIT INTERCONNECTION		CMB-406	
	MODULATOR CIRCUIT		CPA-264	
	RECEIVER CONTROL UNIT		NZZ-1130	
	RECEIVER UNIT		NRG-229	
	RECEIVER UNIT INTERCONNECTION		CMA-902	
	IF CIRCUIT		CAE-499	
	RF CIRCUIT		CAF-595	
	T/R CONTROL CIRCUIT		CMC-1205R	
	RELAY FILTER CIRCUIT		CSC-656	
	POWER SUPPLY CIRCUIT		CBD-1682A	
HEATER CONTROL PART		CHG-215		
PERFORMANCE MONITOR		NJU-84		
DISPLAY UNIT	NCD-4790/T			





**Table1-14 : JMA-7123-7XA/JMA-7123-9XASCANNER and TRANSMITTER RECEIVER UNIT**

	NKE-1129-71,NKE-1129-91	NKE-1129-72,NKE-1129-92		
S C A N N E R UNIT	SCANNER UNIT INTERCONNECTION	CAX-12		
	SAFETY SWITCH	CSD-655		
	ENCODER	CHT-71A1		
	MOTOR	MDBW10822		
	AC100V MOTOR DRIVER	7EPRD0035	AC220V MOTOR DRIVER	7EPRD0034
	BREAK CIRCUIT	CFA-253		
	BREAK CONTROL CIRCUIT	CCB-655		
	BREAK UNIT	NZR-15		
	HEATER CONTROL PART	CHG-216		
	PERFORMANCE MONITOR	NJU-85		
TRANSMITTER R E C E I V E R UNIT	NTG-3225			
	TRANSCIVER UNIT INTERCONNECTION	CMK-593		
	MODULATOR UNIT	NMA-552-1		
	MODULATOR UNIT INTERCONNECTION	CMB-405		
	MODULATOR CIRCUIT	CPA-264		
	RECEIVER CIRCUIT	CFR-229		
	RECEIVER UNIT INTERCONNECTION	NRG-162A		
	IF CIRCUIT	CMA-866A		
	RF CIRCUIT	CMC-1205R		
	T/R CONTROL CIRCUIT	CSC-656		
RELAY FILTER CIRCUIT	CBD-1682A			
DISPLAY UNIT	NCD-4790/T			

**Table1-15 : JMA-7122-6XA/JMA-7122-9XA SCANNER UNIT**

	NKE-1125-61,NKE-1125-91		NKE-1125-62,NKE-1125-92	
SCANNER UNIT	SCANNER UNIT INTERCONNECTION	CAX-11		
	SAFETY SWITCH	CSD-654		
	ENCODER	CHT-71A		
	MOTOR	MDBW10822		
	AC100V MOTOR DRIVER	7EPRD0035	AC220VMOTOR DRIVER	7EPRD0034
	BREAKCIRCUIT	CFA-253		
	BREAK CONTROL CIRCUIT	CCB-655		
	BREAK UNIT	NZR-16		
	MODULATOR UNIT	NMA-550-1		
	MODULATOR UNIT INTERCONNECTION	CMB-404		
	MODULATORCIRCUIT	CPA-264		
	MAG FILTER CIRCUIT	CFR-229		
	RECEIVER UNIT	NRG-162A		
	RECEIVERCIRCUIT	CMA-866A		
	T/R CONTROL CIRCUIT	CMC-1205R		
	RELAY FILTER CIRCUIT	CSC-656		
	POWER SUPPLY CIRCUIT	CBD-1682A		
HEATER CONTROL PART	CHG-216			
PERFORMANCE MONITOR	NJU-85			
DISPLAY UNIT	NCD-4790/T			

**Table1-16 : JMA-7122-6XAH SCANNER UNIT**

NKE-2254-6HS		
SCANNER UNIT	SCANNER UNIT INTERCONNECTION	CAX-15
	SAFETY SWITCH	CSD-653
	ENCODER	CHT-71A
	MOTOR	7BDRD0045A
	MOTOR CONTROL POWERSUPPLY	CBD-1779
	BREAK CIRCUIT	CFA-257
	MODULATOR UNIT	NMA-550-1
	MODULATOR UNIT INTERCONNECTION	CMB-404
	MODULATORCIRCUIT	CPA-264
	MAG FILTER CIRCUIT	CFR-229
	RECEIVER UNIT	NRG-162A
	RECEIVERCIRCUIT	CMA-866A
	T/R CONTROL CIRCUIT	CMC-1205R
	POWER SUPPLY CIRCUIT	CBD-1682A
HEATER CONTROL PART	CHG-216	
PERFORMANCE MONITOR	NJU-85	
DISPLAY UNIT	NCD-4790/T	

**Table1-17 : JMA-7110-6XA/JMA-7110-6XAH SCANNER UNIT**

NKE-2103-6,NKE-2103-6HS		
SCANNER UNIT	SCANNER UNIT INTERCONNECTION	CAX-10
	ENCODER	CHT-71A
	MOTOR	7BDRD0048
	BREAK CIRCUIT	CFA-252
	T R A N S M I T T E R RECEIVER UNIT	NZT-2103
	T R A N S M I T T E R RECEIVER UNIT INTERCONNECTION	CMK-599
	MODULATORCIRCUIT	CME-363
	POWER SUPPLY CIRCUIT	CBD-1783
	MOTOR CONTROL POWER SUPPLY	CBD-1779
	RECEIVER UNIT	NRG-610
	RECEIVER UNIT INTERCONNECTION	CMA-823
	IF AMP CIRCUIT	CAE-529-1
	P E R F O R M A N C E MONITOR	NJU-85
DISPLAY UNIT	NCD-4790/T	
AC-DC CONVERTER	NBA-5135	

**Table1-18 : NCD-4790/NCD-4790T DISPLAY UNIT**

	NCD-4790		NCD-4790T	
RADAR PROCESS UNIT	NDC-1399-7		NDC-1399-7	
	RADAR PROCESS CIRCUIT	CDC-1324		
	AIS PROCESS CIRCUIT	CDC-1325		
	ARPA PROCESS CIRCUIT	CDC-1186D		
	GYRO I/FCIRCUIT	CMJ-462E		
	MOTHER BOARD	CQC-1192		
	T E R M I N A L BOARD CIRCUIT	CQD-2097		
	POWER SUPPLY	CBD-1661		
	RADAR PROCESS UNIT INTERCONNECTION	CML-763	RADAR PROCESS UNIT INTERCONNECTION	CML-763T
OPERATION UNIT	NCE-5163		NCE-5163	
	O P E R A T I O N CIRCUIT A	CCK-973		
	O P E R A T I O N CIRCUIT B	CCK-974		
	O P E R A T I O N CIRCUIT D	CCK-976		
	OPERATION UNIT INTERCONNECTION	CMD-996-R	OPERATION UNIT INTERCONNECTION	CMD-996-RT
MONITOR UNIT	NWZ-173		NWZ-173	
AC-DC CONVERTER	NBA-5135 *(Only for NKE-2103-6/6HS,NKE-2254-6/6HS)			





# SECTION 2

## INSTALLATION OF SCANNER UNIT

### INSTALLATION OF SCANNER UNIT

<b>2.1</b>	<b>EQUIPMENT CABLE</b> .....	<b>2-1</b>
2.1.1	CFQ-6912-** .....	2-1
2.1.2	2695110056 .....	2-2
2.1.3	2695111153 .....	2-3
2.1.4	Cable end processing method .....	2-4
2.1.5	Connection to the display-unit side terminal block .....	2-7
<b>2.2</b>	<b>INSTALLATION OF SCANNER UNIT</b> .....	<b>2-8</b>
2.2.1	NKE-2103 type scanner .....	2-8
2.2.2	NKE-2254 type scanner .....	2-11
2.2.3	NKE-1125 type scanner .....	2-13
2.2.4	NKE-1129 type scanner .....	2-15
2.2.5	NKE-1130 type scanner .....	2-17
2.2.6	NKE-1139 type scanner .....	2-19
<b>2.3</b>	<b>INSTALLATION OF TRANSMITTER RECEIVER UNIT</b> .....	<b>2-21</b>
2.3.1	NTG-3225 type transmitter receiver .....	2-21
2.3.2	NTG-3230 type transmitter receiver .....	2-24
<b>2.4</b>	<b>PRECAUTIONS</b> .....	<b>2-26</b>

<b>2.4.1</b>	<b>Installation of scanner unit .....</b>	<b>2-26</b>
<b>2.4.2</b>	<b>Routing coaxial cable and flexible waveguide .....</b>	<b>2-29</b>
<b>2.4.3</b>	<b>Scanner installation position .....</b>	<b>2-31</b>
<b>2.4.4</b>	<b>Confirmation during test run .....</b>	<b>2-35</b>
<b>2.4.5</b>	<b>Others .....</b>	<b>2-35</b>



# 2.1 EQUIPMENT CABLE

## 2.1.1 CFQ-6912-\*\*

This is a 19-core shielded composite cable.

The cable length is indicated in the asterisks \*\* area in the model name, and the available cable lengths are 5, 10, 20, 30, 40, 50, and 65 meters.

This cable is used to connect an NKE-2103 type scanner or an NKE-2254 type scanner to the display unit.

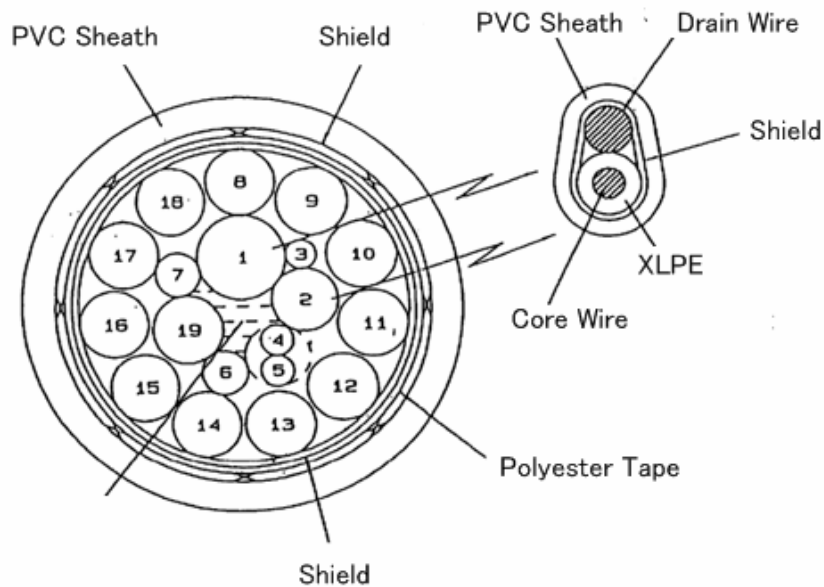


Fig 2-1: Cross-sectional drawing of CFQ-6912

Table2-1 : CFQ-6912 wire

Core(NO)	AWG	No. of Wire /φ	Color	Remarks
1	AWG24	7/0.2T	Black1	Coaxial
2	AWG24	7/0.2T	Black2	Shield
3	AWG24	7/0.2T	Green	
4	AWG24	7/0.2T	Yellow	
5	AWG24	7/0.2T	White	
6	AWG22	17/0.16T	Black	
7	AWG22	17/0.16T	Orange	
8	AWG16	50/0.18T	Blue	
9	AWG16	50/0.18T	Gray	
10	AWG16	50/0.18T	Purple	
11	AWG16	50/0.18T	Brown	
12	AWG16	50/0.18T	White	
13	AWG16	50/0.18T	Orange	
14	AWG16	50/0.18T	Red	
15	AWG16	50/0.18T	Green	
16	AWG16	50/0.18T	Yellow	
17	AWG16	50/0.18T	Black	
18	AWG16	50/0.18T	Sky	
19	AWG16	50/0.18T	Pink	

maximum diameter 14.5mm

## 2.1.2 2695110056

This is a 14-core shielded composite cable.

This cable is used to connect an NKE-1125 type scanner or an NKE-1130 type scanner, and an NTG-3225 type transmitter-receiver or a NTG-3230 type transmitter-receiver to the display unit.

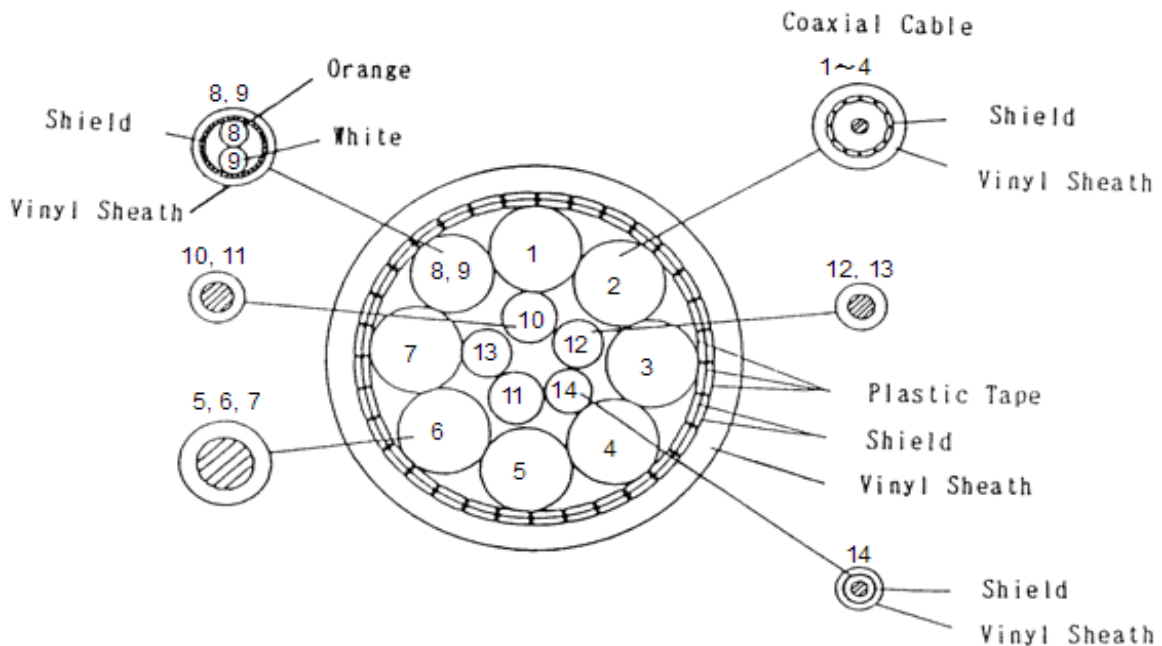


Fig 2-2: Cross-sectional drawing of 2695110056

Table2-2 : 2695110056 wire

Core (No.)	Cross Section (m <sup>2</sup> )	No. of wire / φ	Color	Remarks
1	0.5	19 / 0.18	Black 1	Coaxial Cable
2	0.5	19 / 0.18	Black 2	Coaxial Cable
3	0.5	19 / 0.18	Black 3	Coaxial Cable
4	0.5	19 / 0.18	Black 4	Coaxial Cable
5	5.5	35 / 0.45	Yellow	
6	5.5	35 / 0.45	Green	
7	5.5	35 / 0.45	Brown	
8	0.3	12 / 0.18	White	Twisted pair cable with Shield sheath white
9	0.3	12 / 0.18	Orange	
10	2	37 / 0.26	Red	
11	2	37 / 0.26	Blue	
12	1.25	50 / 0.18	Black	
13	1.25	50 / 0.18	Purple	
14	0.5	1 / 0.18	Gray	Shield wire

maximum diameter 23.0mm

### 2.1.3 2695111153

This is an 18-core shielded composite cable.

This cable is used to connect an interswitch to the display unit.

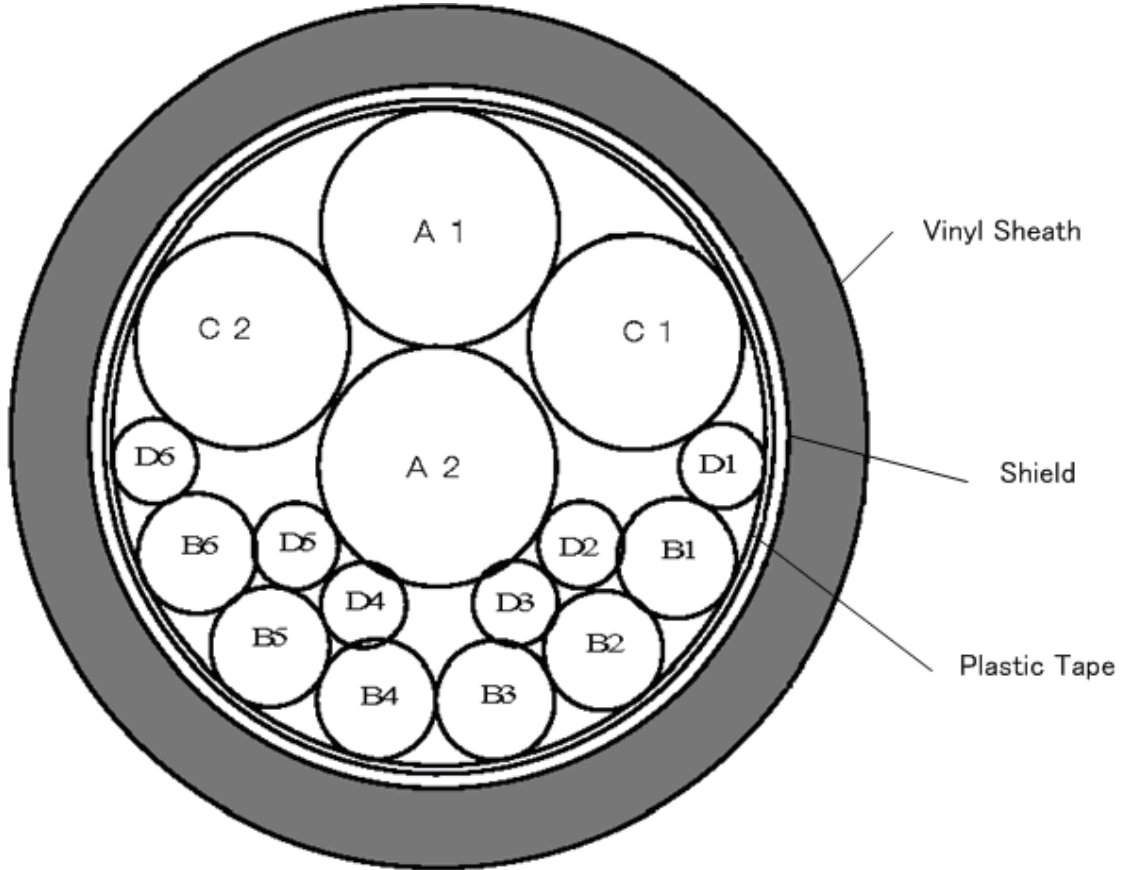


Fig 2-3: Cross-sectional drawing of 2695111153

Table2-3 : 2695111153 wire

Wire NO.	Cross Section (m2)	No. of wire / φ	Color	Remarks
A1	0.5	19 / 0.18	Black 1	Coaxial
A2	0.5	19 / 0.18	Black 2	Coaxial
B1	0.5	19 / 0.18	Blue	Shield
B2	0.5	19 / 0.18	Yellow	Shield
B3	0.5	19 / 0.18	Green	Shield
B4	0.5	19 / 0.18	Red	Shield
B5	0.5	19 / 0.18	Purple	Shield
B6	0.5	19 / 0.18	Clear	Shield
C1	0.3	12 / 0.18	Blue	2 Cores Shield
	0.3		White	
C2	0.3	12 / 0.18	Yellow	2 Cores Shield
	0.3		White	
D1	0.5	19 / 0.18	Brown	
D2	0.5	19 / 0.18	Black	
D3	0.5	19 / 0.18	Orange	
D4	0.5	19 / 0.18	Gray	
D5	0.5	19 / 0.18	Pink	
D6	0.5	19 / 0.18	SkyBlue	

maximum diameter 18.0mm

## 2.1.4 Cable end processing method

Allow for sufficient cable length so that maintenance, inspection, and repair work can be easily executed. Ensure a place to store the cable.

### 1) CFQ-6912

Cut off the metal shell connector.

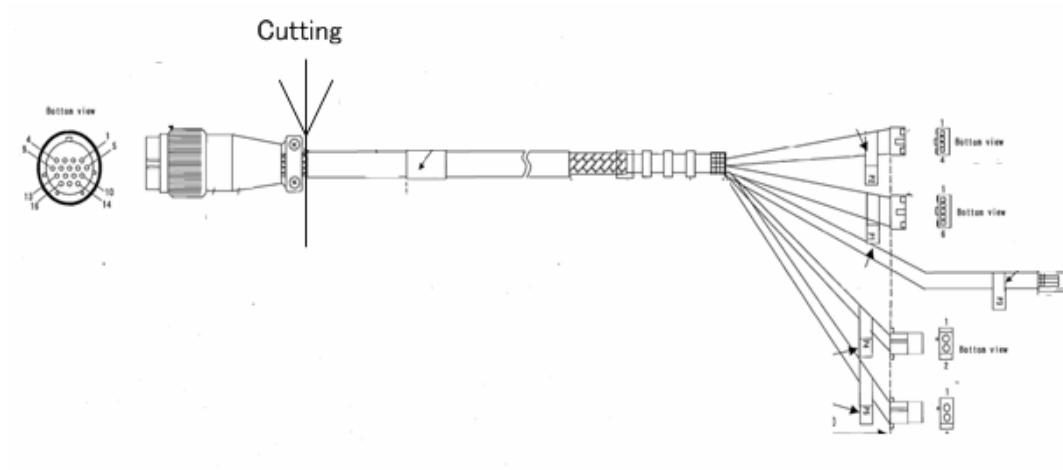


Fig 2-4: CFQ-6912 Cutting position

Remove about one meter of the outer skin, and then process the double braided shield according to the procedures shown below.

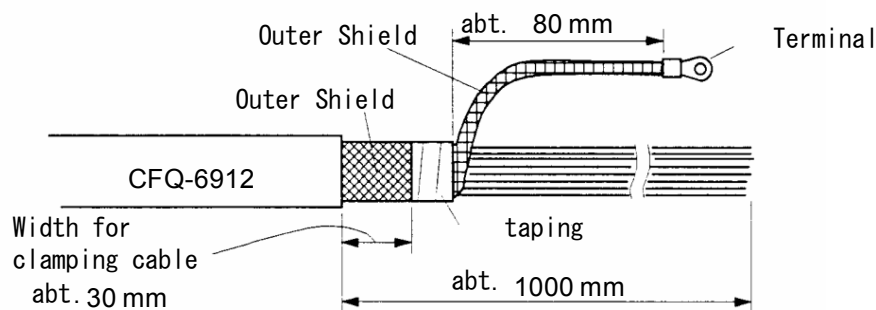


Fig 2-5: CFQ-6912 Processing of braided shield

Process each cable end according to the procedures shown below.

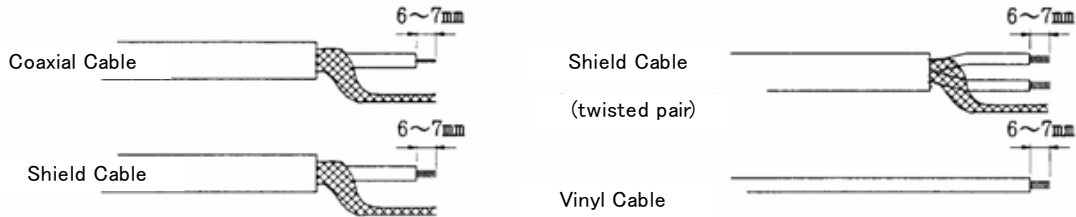


Fig 2-6: CFQ-6912 End processing of each wire

Twist each pair of the following colored wires and clamp them to the crimp-type terminal. (V2-M4 recommended)

- RED.T/GRN.T → +terminal
- WHT.T/ORN.T → +terminal
- PUR.T/BRN.T → -terminal
- BLU.T/GRY.T → -terminal

Overlay those wires as shown in the drawing at the right, and fix them onto the CBD-1684A (TB522) or TB401 terminal block.

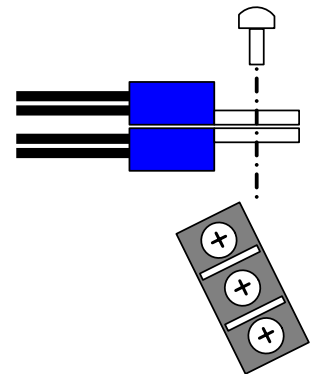


Fig 2-7: Fixing onto the terminal block

Twist each pair of the following colored wires and connect them to the TB4101 of the terminal board circuit CQD-2097.

- YEL.T/PNK.T → TB4101(+48V)
- BLK.T/SKY.T → TB4101(+48VG)

2) 2695110056, 2695111153

Remove about one meter of the outer skin, and then process the double braided shield according to the procedures shown below.

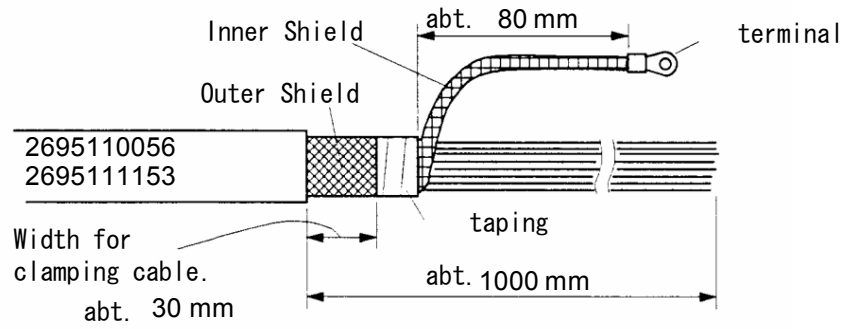


Fig 2-8: 2695110056 Processing of braided shield

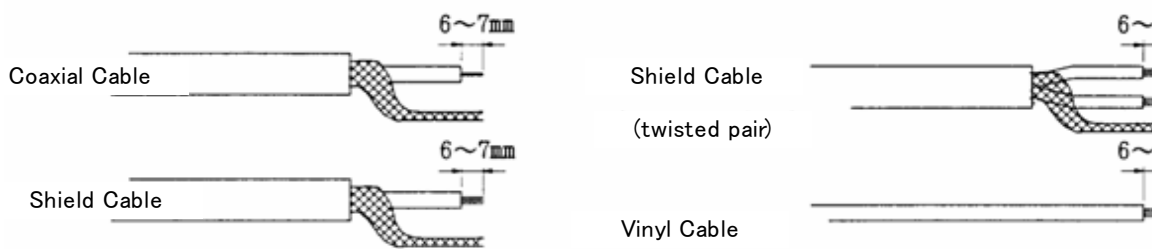


Fig 2-9: 2695110056 End processing of each wire

## 2.1.5 Connection to the display-unit side terminal block

The terminal block of the display unit's terminal board circuit is a plug terminal block which does not require a crimp-type terminal. Connection procedures are described below.

- 1) Use a tool, such as a flathead screwdriver, to press the control so as to open the cable inlet.
- 2) Check the length of the uninsulated portion of the electric wire and its alignment, and then insert the electric wire until the end comes in contact with the rear of the inlet.
- 3) Remove the tool from the control and securely tighten the cable. Properly connect the cable in reference to the inter-board connection diagram.
- 4) After the cable has been connected, gently tug at the cable to ensure that it is securely fastened.

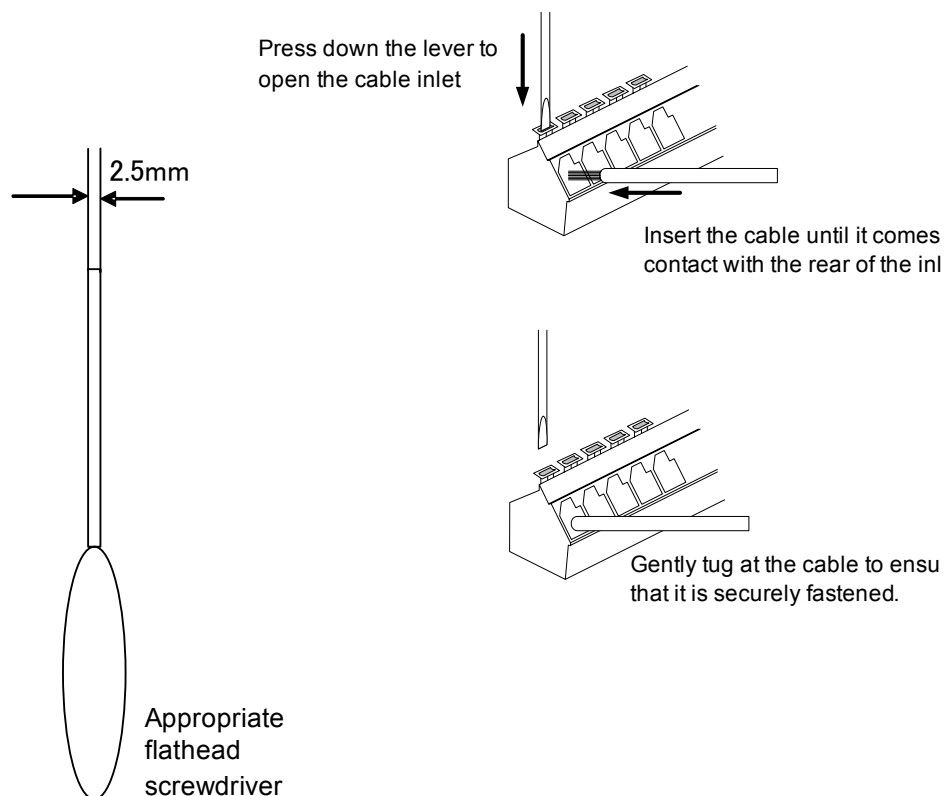


Fig 2-10: Terminal block connection method

## 2.2 INSTALLATION OF SCANNER UNIT

### 2.2.1 NKE-2103 type scanner

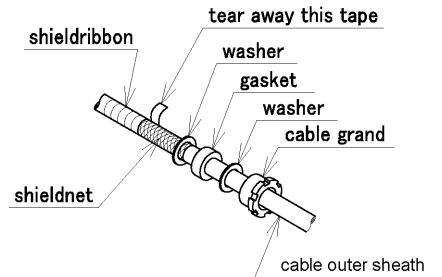


### Instruction for Equipment

#### 装備要領

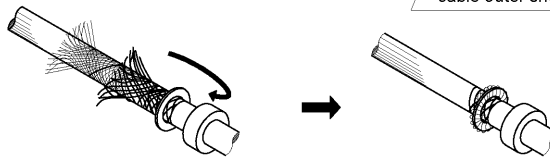
1. Put the cable into cablegrand, washers and gasket.  
Tear the tape.

ケーブルをワッシャ、ガスケット、グラウンドに通し、テープを剥がす。



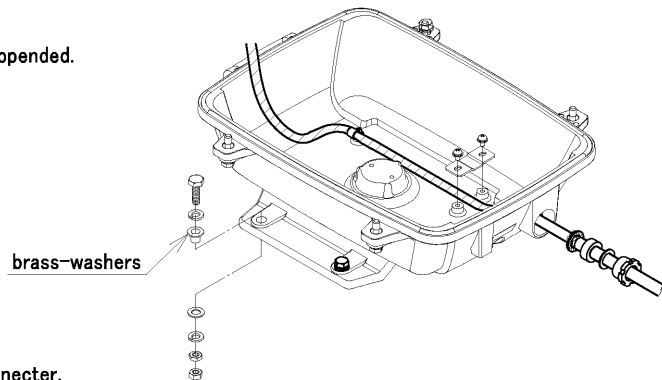
2. Unknit shieldnet and wrap it around a washer.

シールドネットをほどき、ワッシャに巻き付ける。



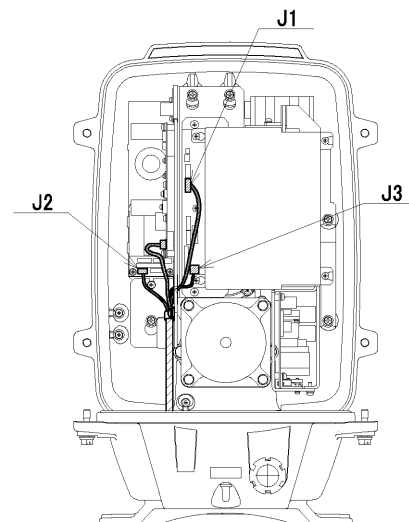
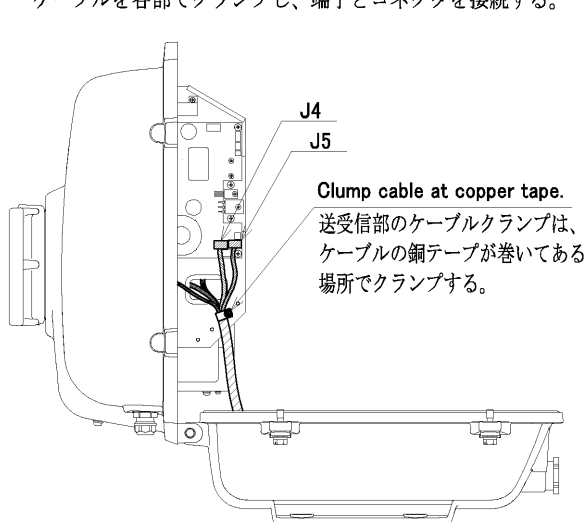
3. Equip the scannerunit with brass-washers : appended.

黄銅製ワッシャを用い、空中線を装備する。



4. Clump the cable, connect 5 terminals and connector.

ケーブルを各部でクランプし、端子とコネクタを接続する。



MTZ303800-1/2



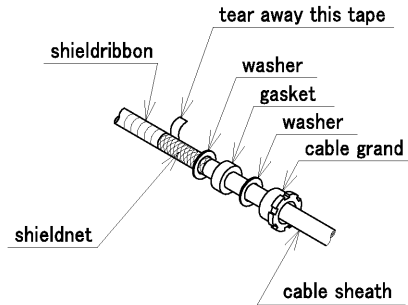
## 2.2.2 NKE-2254 type scanner

### Instruction for Equipment

#### 装備要領

1. Put the cable into cablegrand, washers and gasket.  
Tear the tape.

ケーブルをワッシャ、ガスケット、グラントに通し、テープを剥がす。

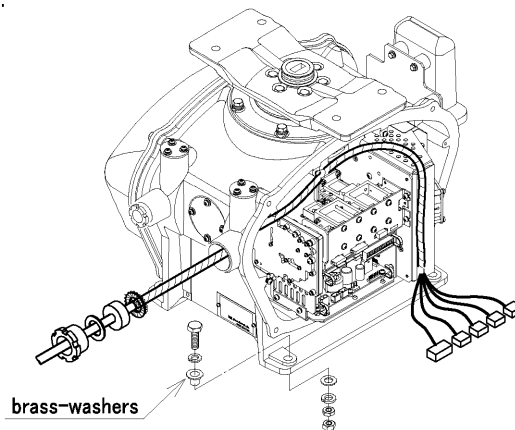


2. Unknit shieldnet and wrap it around a washer.  
シールドネットをほどこき、ワッシャに巻き付ける。



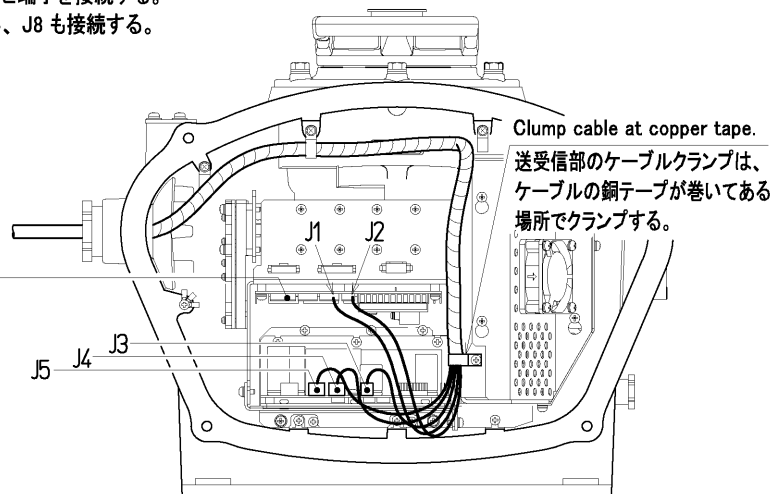
3. Equip the scannerunit with brass-washers: appended.

黄銅製ワッシャを用い、空中線を装備する。



4. Clump the cable, connect 5 connectors.

ケーブルを各部分でクランプし、コネクタと端子を接続する。  
PM付きの場合は専用ケーブルを用い、J8も接続する。

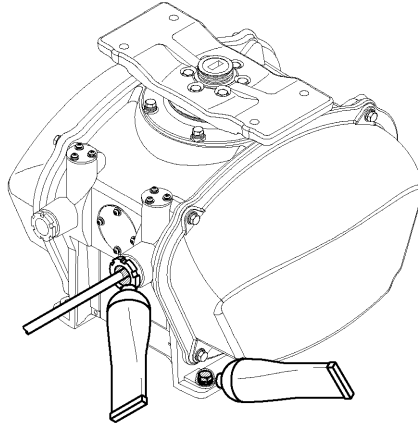


J8  
for performance-monitor : P.M  
Connect this,  
only when the cable has P8.

MTZ303795-1/2

5. Apply silicone sealant around the bolts and into the cableinlet.

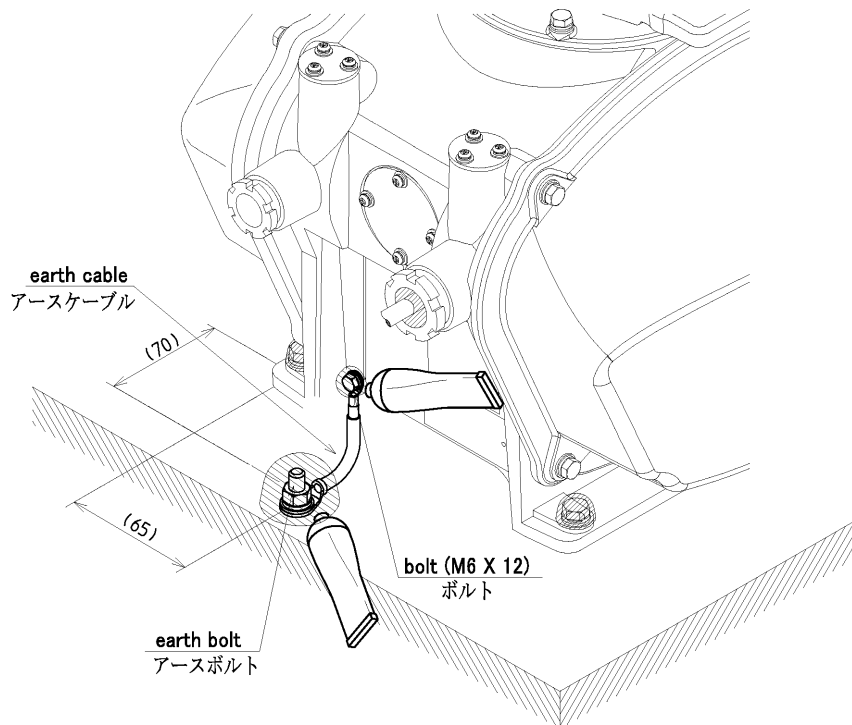
ボルトの周辺部とケーブルグランド部をシールする。



6. Bolt the earth cable to mountbase and scanner.

Apply silicone sealant around the bolts.

アースケーブルをボルトで締結後、締結部分を全てシールすること。



MTZ303795-2/2

## 2.2.3 NKE-1125 type scanner

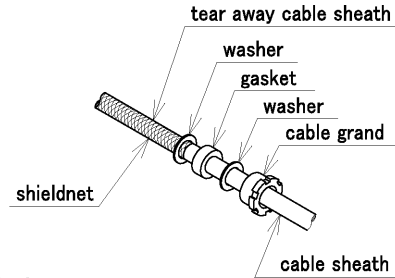
### Instruction for Equipment

#### 装備要領

1. Put the cable into cablegrand, washers and gasket.

Tear away the cable sheath.

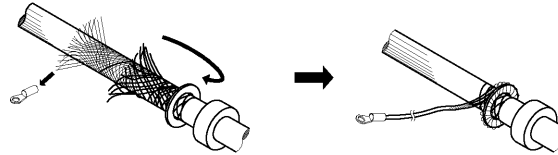
ケーブルをワッシャ、ガスケット、グラウンドに通し、被覆を剥がす。



2. Unknit outer shieldnet and wrap it around a washer.

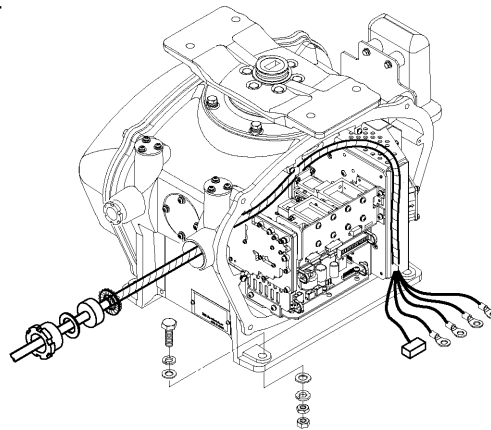
Connect a solderless terminal (for a ground) to an inner shieldnet.

外側のシールドネットをほどき、座金に巻きつけ、内側のシールドネットには丸型圧着端子(アース)を取付ける。



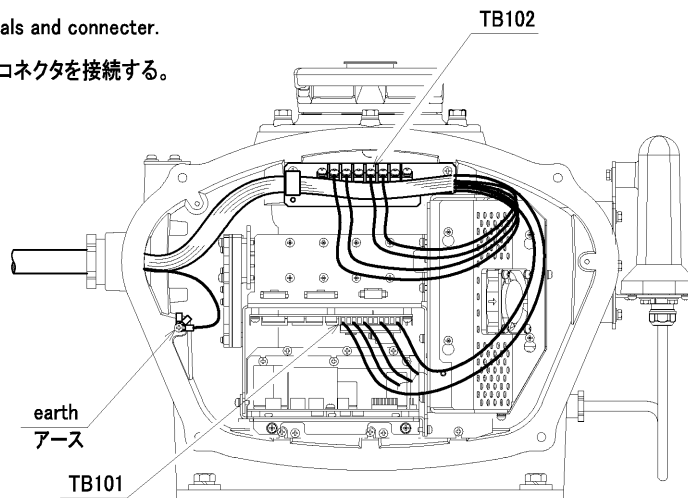
3. Equip the scannerunit with bolts and washers.

ボルト、ワッシャを用いて、空中線を装備する。



4. Clump the cable, connect 6 terminals and connector.

ケーブルを各部分でクランプし、端子とコネクタを接続する。



MTZ303794-1/2



## 2.2.4 NKE-1129 type scanner

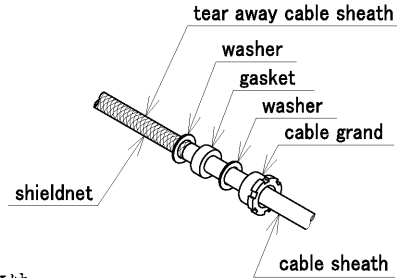
### Instruction for Equipment

#### 装備要領

1. Put the cable into cablegrand, washers and gasket.

Tear away the cable sheath.

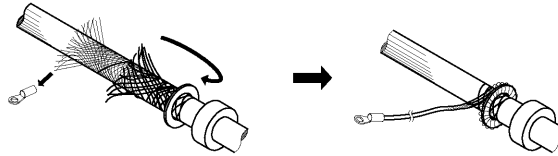
ケーブルをワッシャ、ガスケット、グラントに通し、被覆を剥がす。



2. Unknit outer shieldnet and wrap it around a washer.

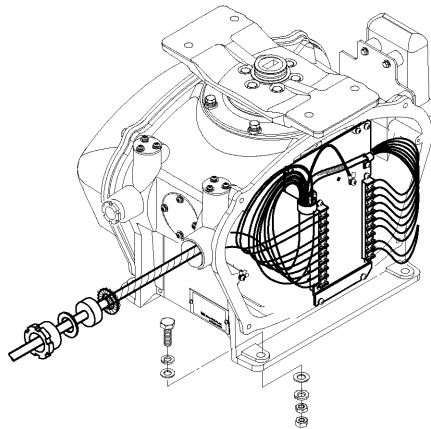
Connect a solderless terminal (for a ground) to an inner shieldnet.

外側のシールドネットをほどき、座金に巻きつけ、内側のシールドネットには丸型圧着端子(アース)を取付ける。



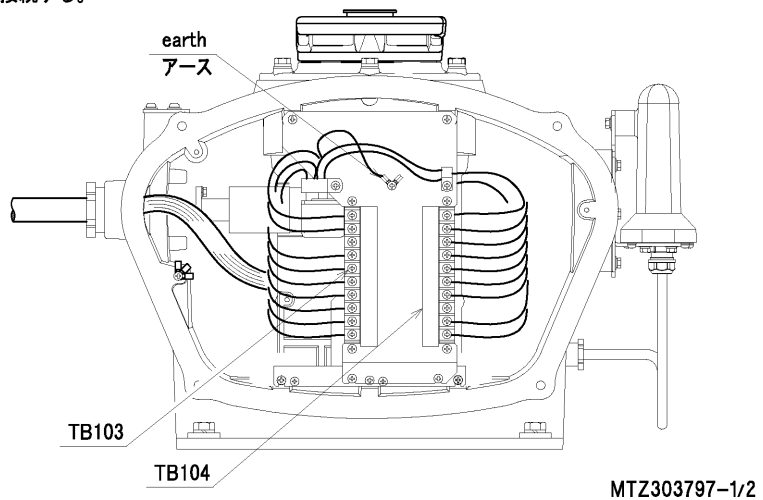
3. Equip the scannerunit with bolts and washers.

ボルト、ワッシャを用いて、空中線を装備する。



4. Clump the cable, connect terminals .

ケーブルを各部でクランプし、端子を接続する。







## 2.2.5 NKE-1130 type scanner

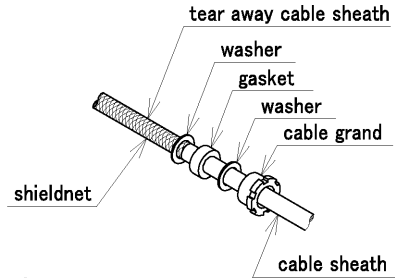
### Instruction for Equipment

#### 装備要領

1. Put the cable into cablegrand, washers and gasket.

Tear away the cable sheath.

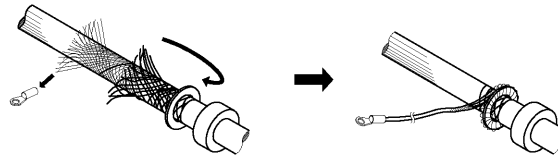
ケーブルをワッシャ、ガスケット、グランドに通し、被覆を剥がす。



2. Unknit outer shieldnet and wrap it around a washer.

Connect a solderless terminal (for a ground) to an inner shieldnet.

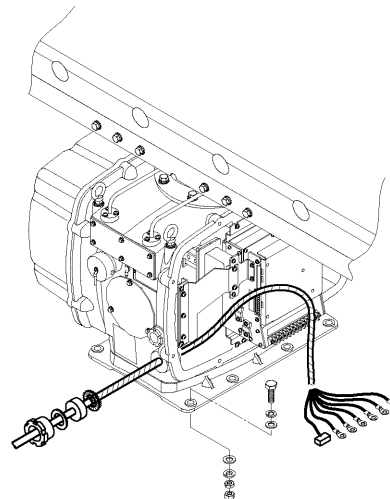
外側のシールドネットをほどき、座金に巻きつけ、内側のシールドネットには丸型圧着端子(アース)を取付ける。



3. Equip the scanner unit with bolts and washers.

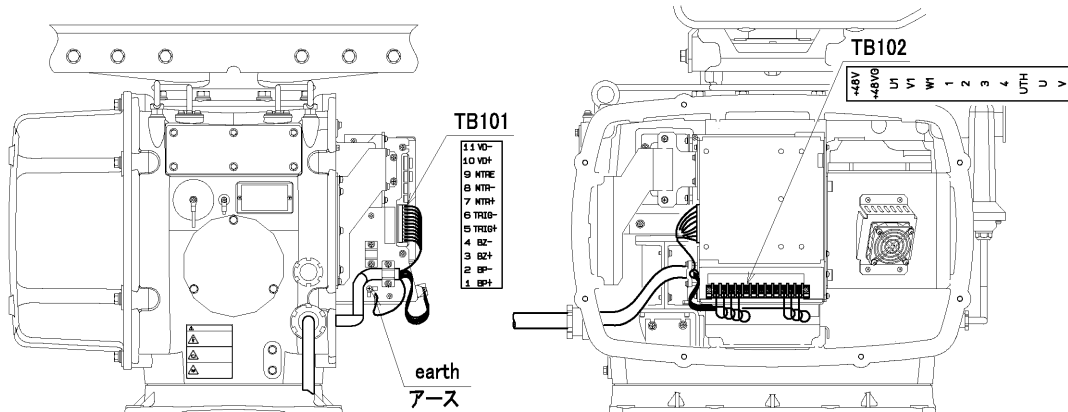
Pass the cable into unit and fix it.

ボルト、ワッシャを用いて、空中線を装備する。ケーブルを機内に引き込み固定して下さい。



4. Clump the cable, connect 6 terminals and connector.

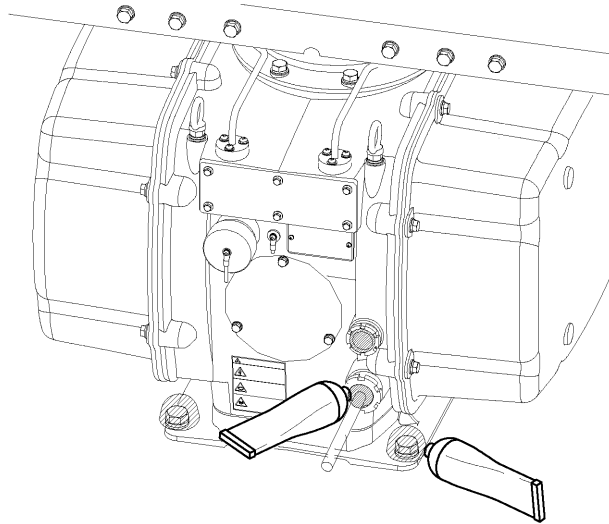
ケーブルを各部分でクランプし、端子とコネクタを接続する。



MTZ303822-1/2

5. Apply silicone sealant around the bolts and into the cableinlet.

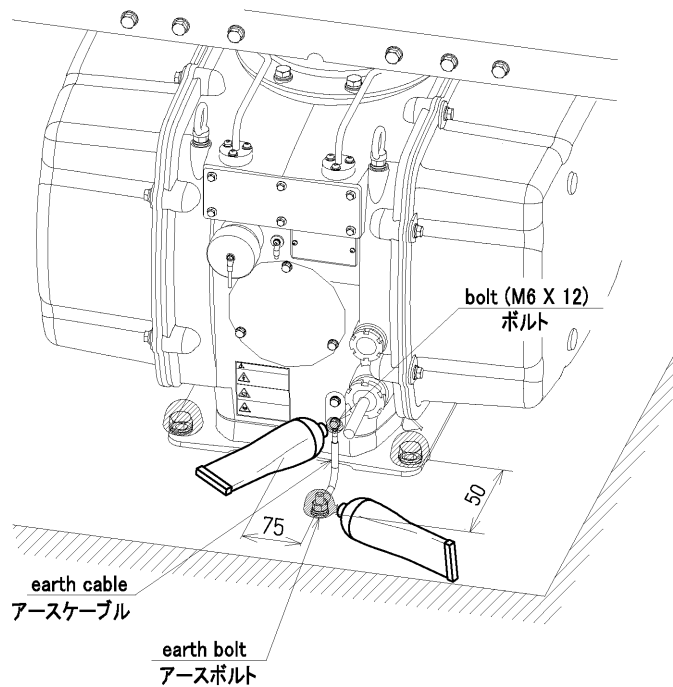
ボルトの周辺部とケーブルグランド部をシールする。



6. Bolt the earth cable to mountbase and scanner.

Apply silicone sealant around the bolts.

アースケーブルをボルトで締結後、締結部分を全てシールすること。



MTZ303822-2/2

## 2.2.6 NKE-1139 type scanner

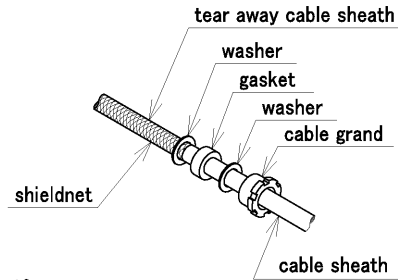
### Instruction for Equipment

#### 装備要領

1. Put the cable into cablegrand, washers and gasket.

Tear away the cable sheath.

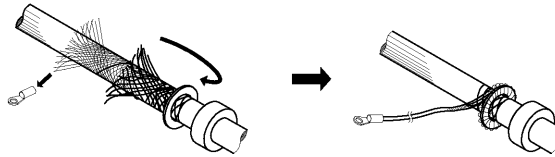
ケーブルをワッシャ、ガスケット、グラウンドに通し、被覆を剥がす。



2. Unknit outer shieldnet and wrap it around a washer.

Connect a solderless terminal (for a ground) to an inner shieldnet.

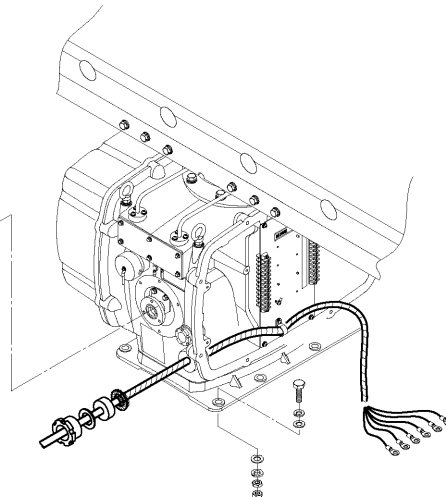
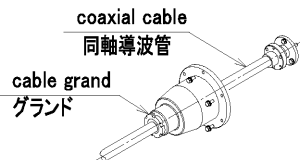
外側のシールドネットをほどき、座金に巻きつけ、内側のシールドネットには丸型圧着端子(アース)を取付ける。



3. Equip the scannerunit with bolts and washers.

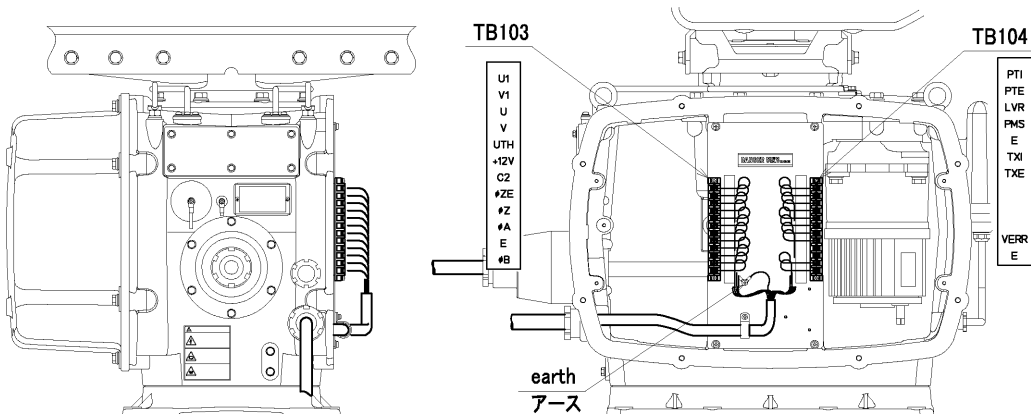
Pass the cable and coaxial cable into unit and fix cable.

ボルト、ワッシャを用いて、空中線を装備する。ケーブルと同軸導波管を機内に引き込み固定して下さい。



4. Clump the cable, connect 6 terminals and connector.

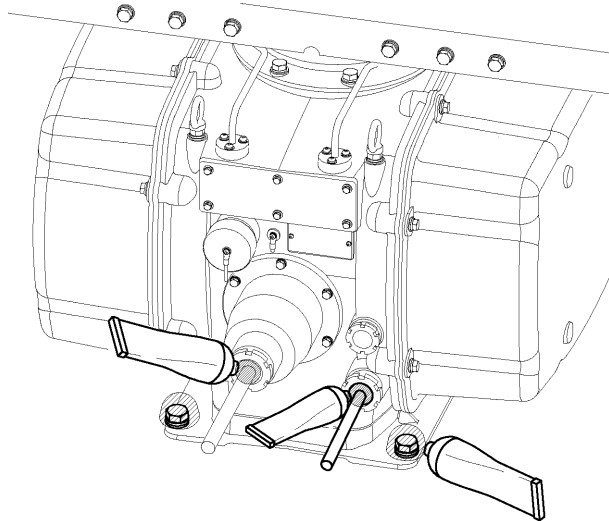
ケーブルを各部分でクランプし、端子とコネクタを接続する。



MTZ303823-1/2

5. Apply silicone sealant around the bolts and into the cableinlet.

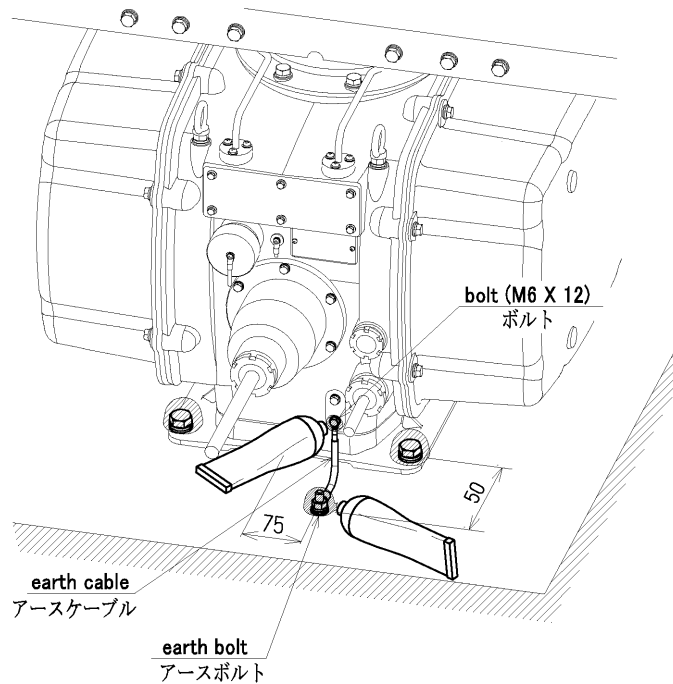
ボルトの周辺部とケーブルグランド部をシールする。



6. Bolt the earth cable to mountbase and scanner.

Apply silicone sealant around the bolts.

アースケーブルをボルトで締結後、締結部分を全てシールすること。



MTZ303823-2/2

## 2.3

# INSTALLATION OF TRANSMITTER RECEIVER UNIT

### 2.3.1 NTG-3225 type transmitter receiver

2

## Instruction for Equipment

### 装備要領

1. Equip the transmitter with nuts and washers.

ナット、ワッシャを用いて、送受信機を装備する。

2. Clump a flexible waveguide terminal with bolts.

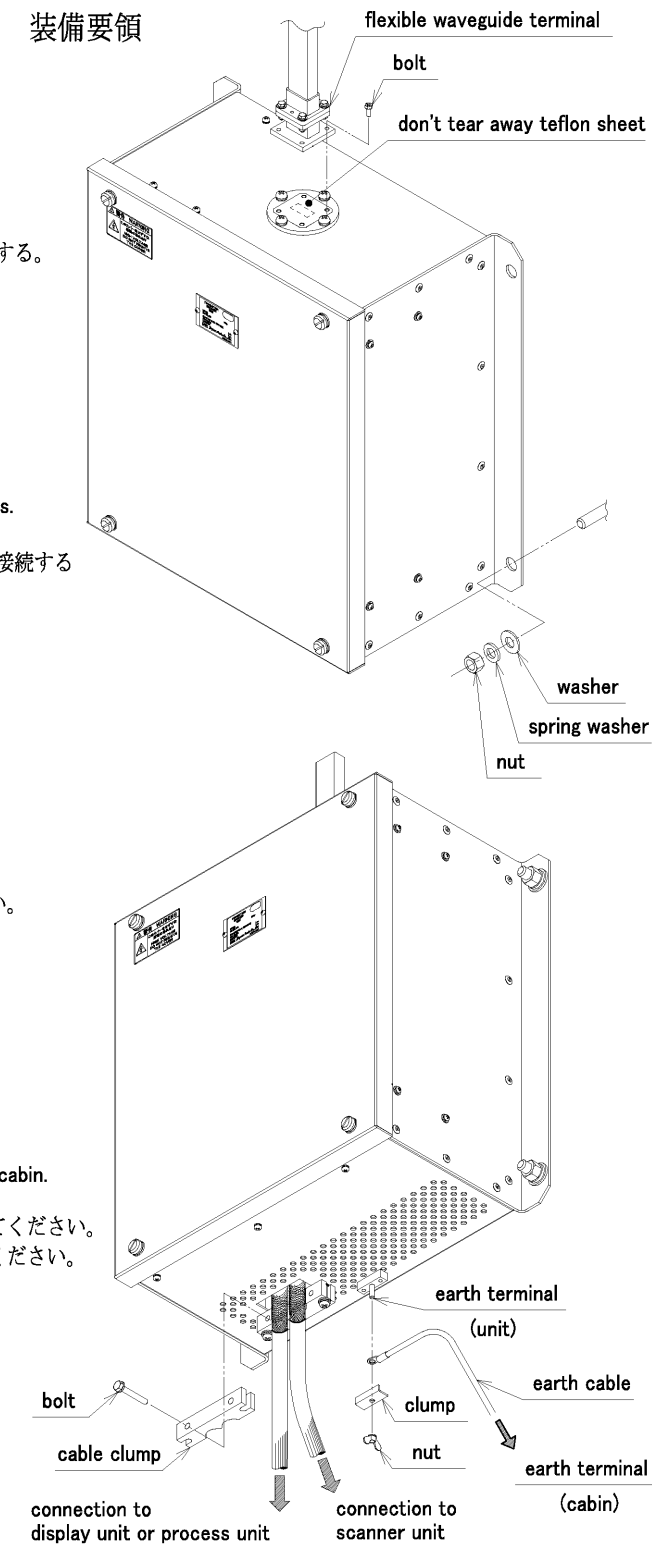
ボルトを用いて、フレキシブル導波管端子を接続する

3. Pass the cables into unit and clump them.

ケーブルを機内に引き込み、固定してください。

4. Connect earth cable to earth terminal of unit.  
Another terminal connect to earth terminal of cabin.

アースケーブルは機器のアース端子に接続してください。  
もう一方の端末は船内アース端子に接続してください。



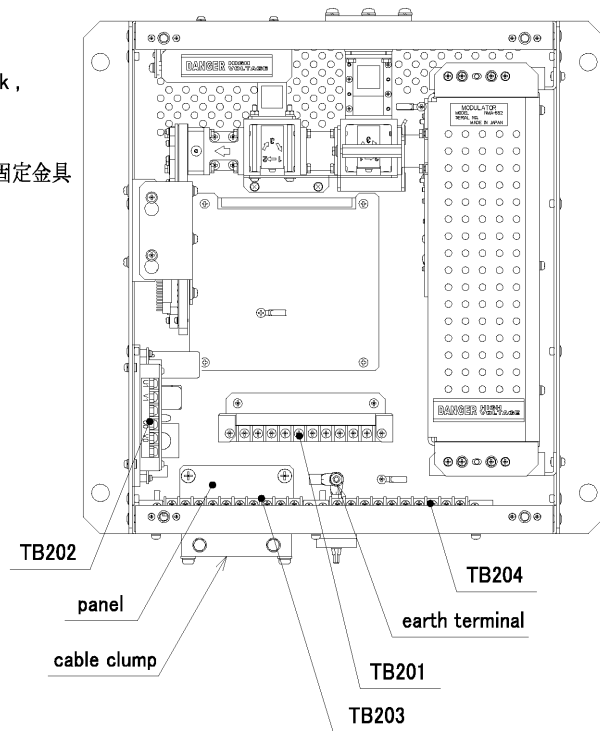
MTZ303824-1/2

※ In case of passing the cables into unit from back ,  
replace cable clamp with panel and clamp them.

背面よりケーブルを引き込む場合は、ケーブル固定金具  
とパネルを置き換えて固定してください。

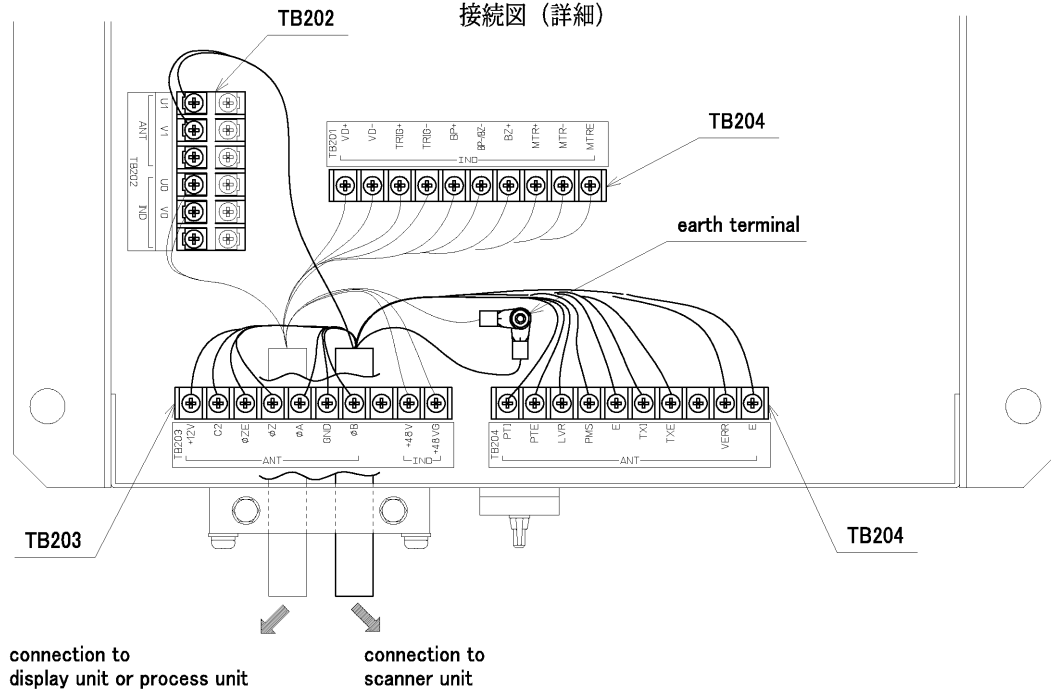
5. Connect the cables to each terminal.

ケーブルの端末を各部に接続してください。



Connected chart

接続図 (詳細)



MTZ303824-2/2

## 2.3.2 NTG-3230 type transmitter receiver

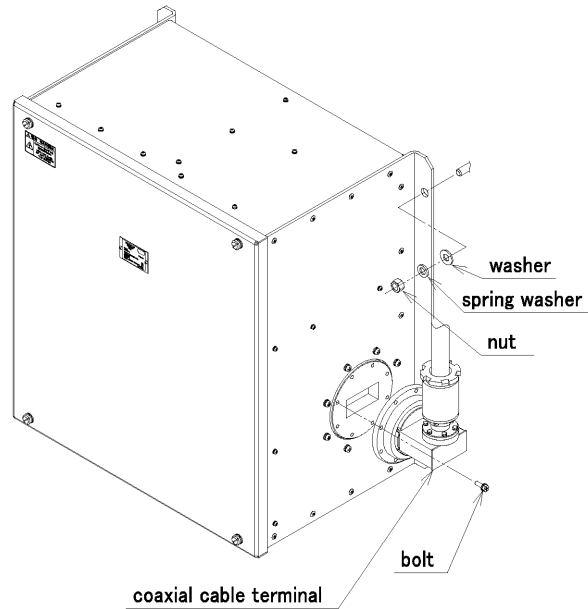
### Instruction for Equipment 装備要領

1. Equip the transmitter with nuts and washers.

ナット、ワッシャを用いて、送受信機を装備する。

2. Clumpt a coaxial cable terminal with bolts.

ボルトを用いて、同軸導波管端子を接続する



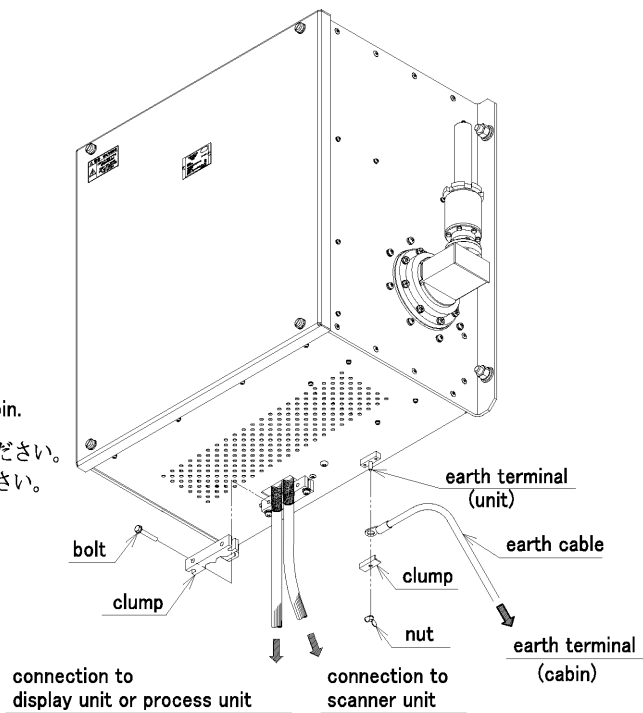
3. Pass the cables into unit and clump them.

ケーブルを機内に引き込み、固定してください。

4. Connect earth cable to earth terminal of unit.

Another terminal connect to earth terminal of cabin.

アースケーブルは機器のアース端子に接続してください。  
もう一方の端末は船内アース端子に接続してください。



MTZ303825-1/2

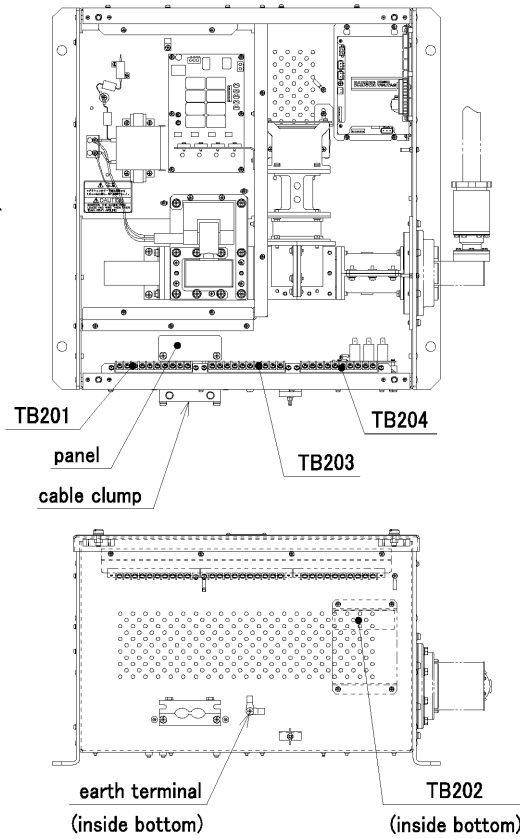


※ In case of passing the cables into unit from back ,  
replace cable clamp with panel and clamp them.

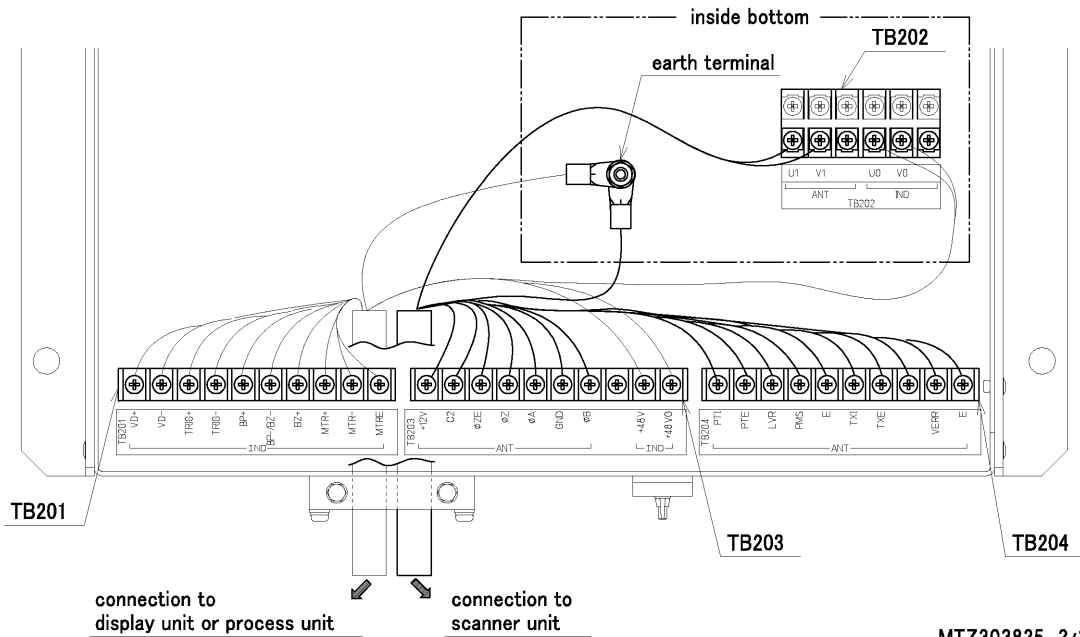
背面よりケーブルを引き込む場合は、ケーブル固定金具  
とパネルを置き換えて固定してください。

5. Connect the cables to each terminal.

ケーブルの端末を各部に接続してください。



Connected chart  
接続図 (詳細)



MTZ303825-2/2

## 2.4 PRECAUTIONS

### 2.4.1 Installation of scanner unit

#### 1) *Precautions for transporting and storing the scanner*

- An scanner is a heavy load. Be very careful about handling it.
- Do not allow the scanner fall on its side while it is stored or being installed.
- Do not apply rope to the scanner in the way that squeezes or deforms the radiating section.
- When hoisting the scanner by a crane, do not hoist it by attaching a belt or a rope only to the scanner's radiating section as shown in Fig 2-11.
- For the S-band, attach a rope to the hoisting eyebolts attached to the scanner's chassis, and then hoist the scanner (Fig 2-12). If a belt or a rope is attached to the scanner's support section located at the bottom of the radiating section, a load is imposed to the joint between the radiating section and the chassis.
- For the X-band, wrap a cloth around the scanner's support section located at the bottom of the radiating section, and then attach a belt or rope to it to hoist the scanner (Fig 2-13).

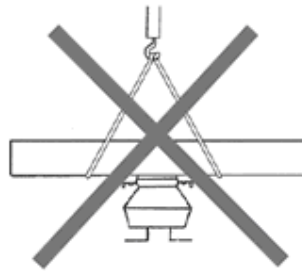


Fig 2-11: *Improper way to hoist*

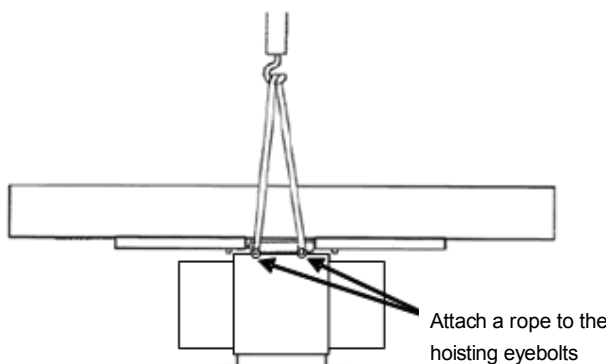


Fig 2-12: *S-band*

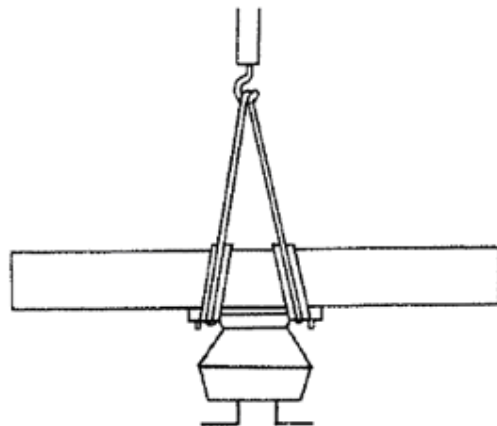


Fig 2-13: *X-band*

2) *Installation procedures*

**a.Maintain a flat level surface on which to install the scanner.**

- Use sufficiently thick steel material and reinforcement material for the scanner's installation surface (mount base) to reduce vibration and impact. Keep the mount base flat and smooth.
- If there is a partial gap between the mount base and the scanner chassis's legs, work on the installation surface so that it becomes flat and smooth, or make adjustments by inserting metal shims. If a gap exists and the scanner is tightly clamped, the chassis will distort and become damaged by vibration.

**b.Avoid using vibration-proof rubber and resin**

- Do not insert an elastic body, such as vibration-proof rubber or resin, between the mount base and the scanner chassis' legs. If rubber or resin is inserted, the amplitude of vibration increases, resulting in the possibility of damage to the scanner. Furthermore, if installation bolts become loose due to deterioration of rubber or resin, the scanner may be damaged or fall from its mount.

3) *Installation and clamping method*

**a.Installation direction**

- Installation should be done so that the cable gland is oriented toward the stern.

**b.Bolts, nuts and tightening torque to be used**

- Use stainless steel bolts for the scanner and uniformly tighten all of the bolts using double nuts for each bolt so that the scanner will not become loose (Table 2-4).
- Although the length of the bolt will differ according to the thickness of the mount base, use a bolt long enough so that more than 4 millimeters of thread protrudes beyond the double nuts after the double nuts have been tightened.

Table2-4 : Length of scanner mounting bolts and tightening torque

	Thickness of Mount Base(mm)	Bolt	Torque(N-m)
S-band	19	M12 × 65(mm) SUS304	65
X-band	12	M10 × 55(mm) SUS304	40

**c.Use of washer and corrosion-resistant measures**

- At the location where a bolt's head or nut comes in contact with the scanner chassis' legs and the mount base, insert a plain washer which fits the bolt; and, at the location where the nut comes in contact with the plain washer, insert a spring washer, and then securely tighten the nuts (Fig 2-14).
- To prevent corrosion due to the contacts between different metals, such as the scanner chassis' legs, installation surface, bolts, nuts, etc., cover the bolt's head and nuts with sealant (Fig 2-14).

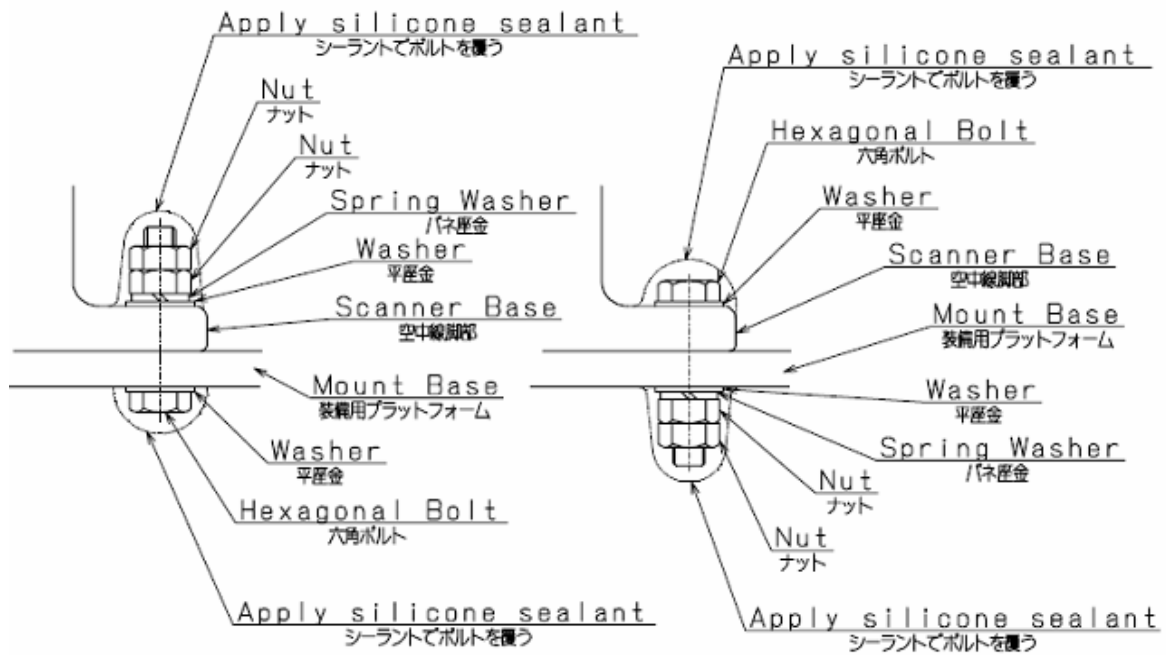


Fig 2-14: Use of washer and corrosion-resistant measures

**d. Grounding and corrosion-resistant measures**

- Ground the scanner chassis and the installation surface (hull) by using an earth line. Apply sealant to the connection portion of the earth line to prevent corrosion and damage by vibration (Fig 2-15).

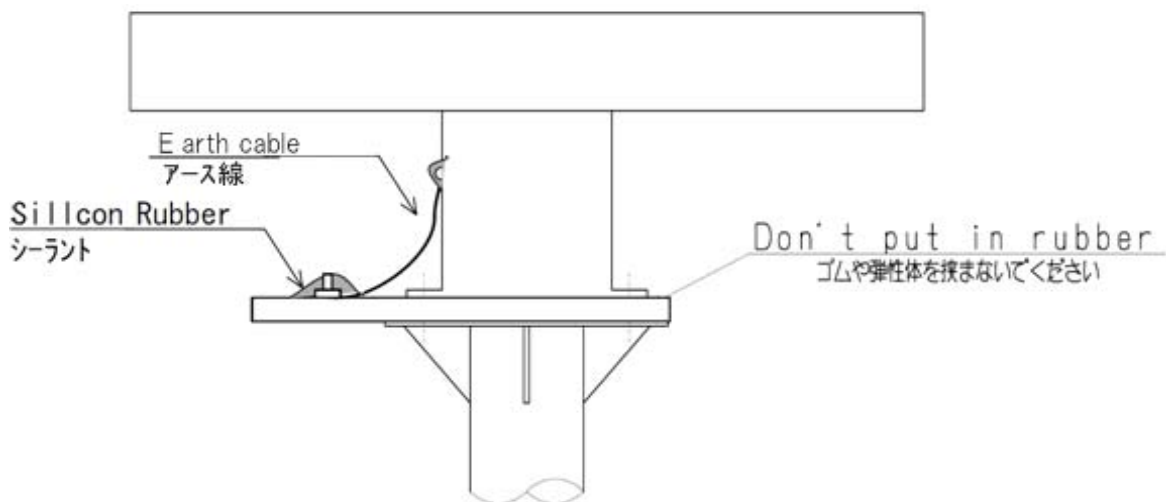


Fig 2-15: Grounding and corrosion-resistant measures

## 2.4.2 Routing coaxial cable and flexible waveguide

In the case of the three-unit system consisting of the display unit, transmitter-receiver, and the scanner, use a Coaxial cable, shown in Fig 2-16, between the transmitter-receiver and the scanner for the S-band, and use a Flexible waveguide, shown in Fig 2-17, for the X-band.

### 1) Protecting coaxial cable and flexible waveguide

- Since cables and waveguides are hollow inside, when mounting them by using electric wire bands, try not to fasten the bands too tightly around the cables and waveguides. If they are fastened too tightly, the inside will become deformed or blocked, which may cause the receiving sensitivity to decrease or the transmitter-receiver to be damaged.

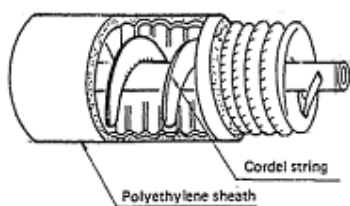


Fig 2-16: Coaxial cable

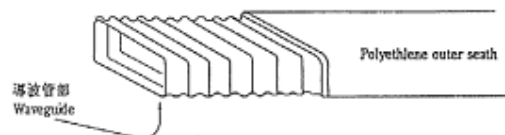


Fig 2-17: Flexible waveguide

- Stabilize the coaxial cable and the flexible waveguide by supporting members that are at maximum intervals of 1000 millimeters. Mount a supporting member for the horizontal wiring portion on the compass deck at an angle of 300 to 400 millimeters, and put a protective metal cover over the cable and waveguide.

### 2) Preventing the connecting portion from becoming detached due to vibration

- Keep the connecting portion between the coaxial cable and the flexible waveguide and the scanner's chassis, and provide supporting members, as shown in Fig 2-18 and Fig 2-19, to prevent the connecting portion from becoming detached due to vibration.
- The distance from the connecting portion and the supporting member should be 400 millimeters for the S-band and 300 millimeters for X-band.
- If the distance from the connecting portion and the supporting member is longer than the above distance, vibration may cause metal fatigue, resulting in the occurrence of malfunction even if the connecting portion is not removed.

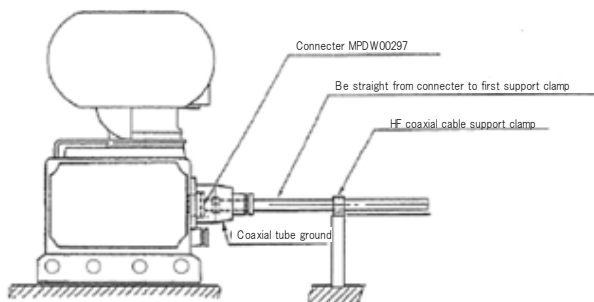


Fig 2-18: Position of S-band supporting member

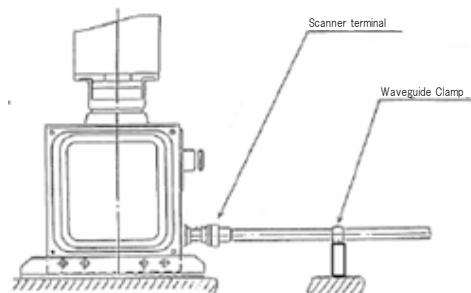


Fig 2-19: Position of X-band supporting member

- For the cable end processing, refer to the procedure manual which comes with the cable.

### 3) Permissible bending radius

- The permissible bending radius R of flexible waveguide is 200mm/400mm (E-bent/H-bent). More sharp bending with less radius than this must be avoided.
- The permissible bending radius R of coaxial cable is 350mm. More sharp bending with less radius than this must be avoided.

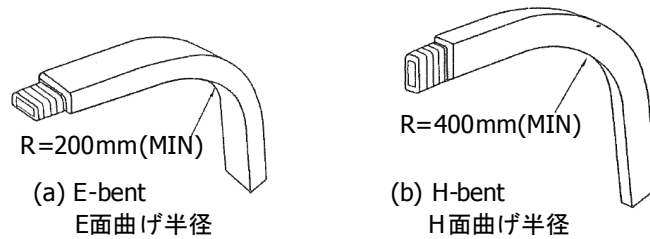


Fig 2-20: The permissible bending radius of flexible waveguide

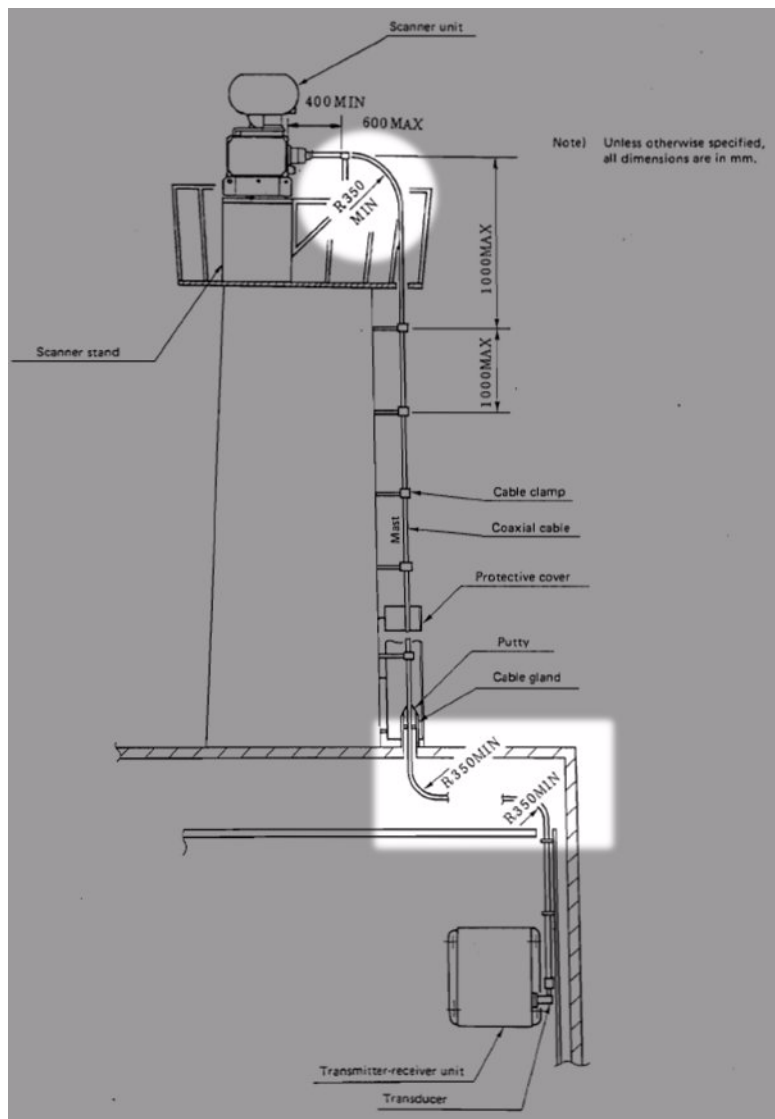


Fig 2-21: The permissible bending radius of coaxial cable

### 2.4.3 Scanner installation position

1) *Physical selection criteria*

- Install the scanner at the center of the mast on the keel line.
- If the scanner cannot be installed at the above position for some reason, the amount of deviation must be minimized. And, reinforce the mount base and the platform and take precautions to protect the scanner from vibration and impact at the installation position.

To avoid the radiating section coming in contact with other installed objects while it is rotating, ensure that there is at least 200 millimeters from the swing circle (turning radius) to other installed objects (Fig 2-22). The swing circle of the JMA-7100/9100 radar's scanner is as shown in Table 2-5.

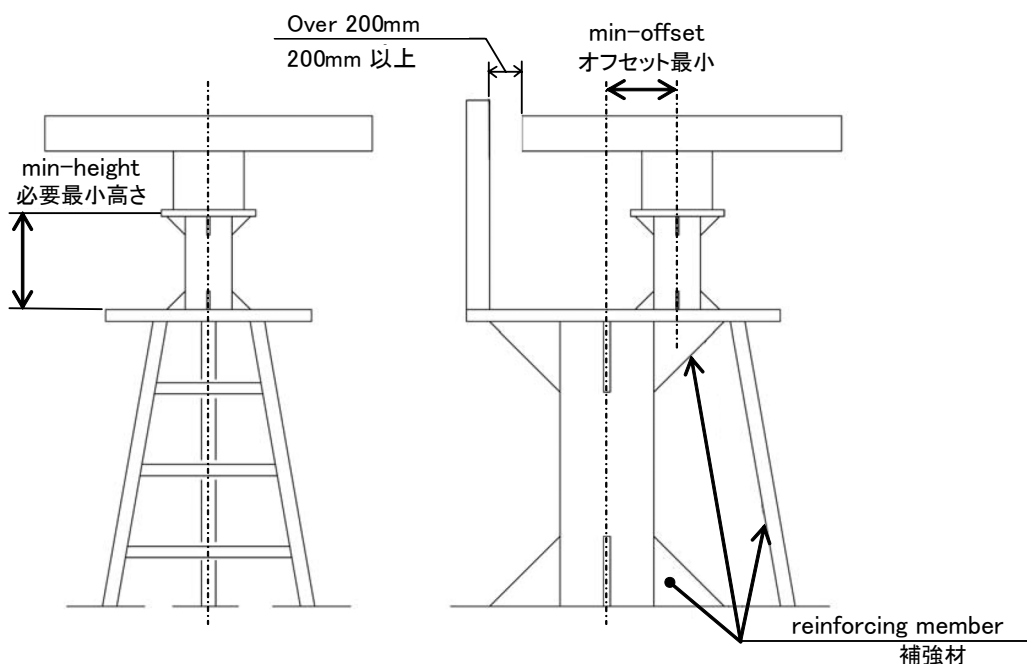


Fig 2-22: Installation of scanner

Table2-5 : Swing circle

Scanner unit (length)	Swing circle
NKE-2103-6/6HS (6ft)	1910mm
NKE-1125-6 (6ft)	
NKE-2254-6HS (6ft)	
NKE-1129-7 (7ft)	2270mm
NKE-1125-9 (9ft)	2825mm
NKE-1129-9 (9ft)	
NKE-1130/1139 (12ft)	4000mm

- Avoid having a rope or signal flag from winding around the radiating section thereby preventing it from rotating.
- Avoid the effects of dust and heat caused by smoke from a chimney.
- When determining the appropriate scanner height and installation location, take into consideration the reduction of vibration, the strength of the hull and the scanner mount base, and maintenance properties.
- Provide for maintenance space: platform, safety link, hand rail, steps, etc. The lower edge of a radar antenna should be a minimum of 500 mm above any safety rail.
- When installing the scanner, select a location where there are the fewest structural objects in the surrounding area so that the capability to drive the motor will not be depressed by the non-equability wind which is likely to rotate the scanner.

## 2) Electrical selection criteria

- The installation height of the scanner relates to the *maximum detection distance*<sup>1</sup>. The higher, the better. However, if it is too high, radio wave energy greatly attenuates above the scanner's vertical beam width (the point -3dB from the peak of the main lobe). As a result, it is difficult to detect a close-in target. Sea clutter also increases. Determine the installation height by taking into consideration the weight, maximum length of the cable, and maintenance after installation.
- If the installation height of the scanner is low, it is difficult to detect a long distance target. The ship's mast, derrick, and chimney interfere with radiating beam causing the range that cannot be viewed on the radar display to increase.

Generally, the lowest scanner installation position is supposed to be on the A-B line shown in Fig 2-23.

In the case of the JMA-7110/7122/7123/9110/9122/9123 type radar,  $\theta$  equals 20°.

In the case of the JMA-7132/7133/9132/9133 type radar,  $\theta$  equals 25°. Specifically, the scanner position is normally elevated so that the chimney and the shrine-gate type mast do not interfere with radiating beam.

The A-B line, or L line of sight from the radar antenna to the bow of the ship should hit the surface of the sea in not more than 500 m or twice the ship length, depending which value is smaller, for all load and trim conditions.

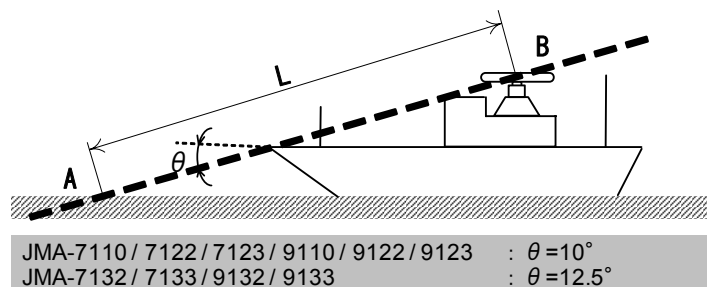


Fig 2-23: Lowest scanner installation height

- If it is considered that sufficient installation height cannot be provided when the scanner is installed directly on the roof of the wheelhouse, use a mounting rack or radar mast (Fig 2-24). Normally, when the scanner installation height is less than 2 meters from the roof of the wheelhouse, provide a mounting rack assembled at an angle frame to install the scanner. When the scanner installation height is 2 meters or higher from the roof of the wheelhouse, provide a cylindrical radar mast to install the scanner. Consider

1.For more detail on THE MAXIMUM DETECTION DISTANCE, refer to the instruction manual chapter 6.



the convenience of the service staff who take care of installation, maintenance, adjustment, and repair of the scanner by providing adequate footholds to the mounting rack and the radar mast.

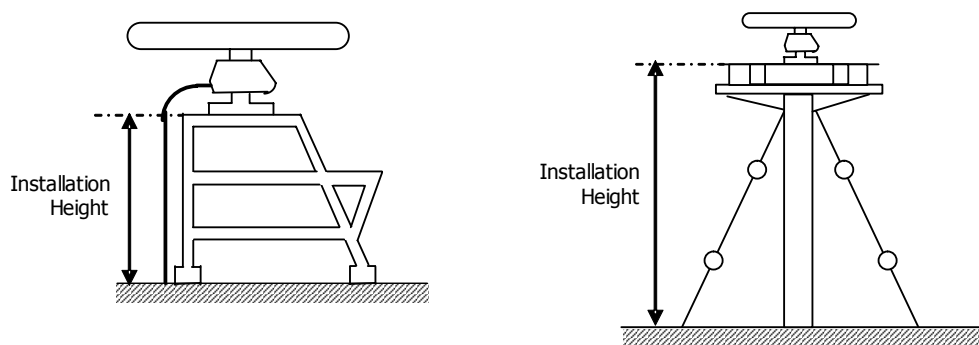


Fig 2-24: Mounting rack and mast for the scanner

- When installing the scanner, select a location where there are the fewest structural objects in the surrounding area so that false echos which interfere with target detection will not be generated by signal reflection from other scanners, deck structures, and cargo. Only as a guide, note that structural objects should not exist within the range of the vertical beam width (Fig 2-25).

Vertical beam width of X-band: Approx. 20 ( 10.0 when the height of the radiating section is 0 )

Vertical beam width of S-band: Approx. 25 ( 12.5 when the height of the radiating section is 0 )

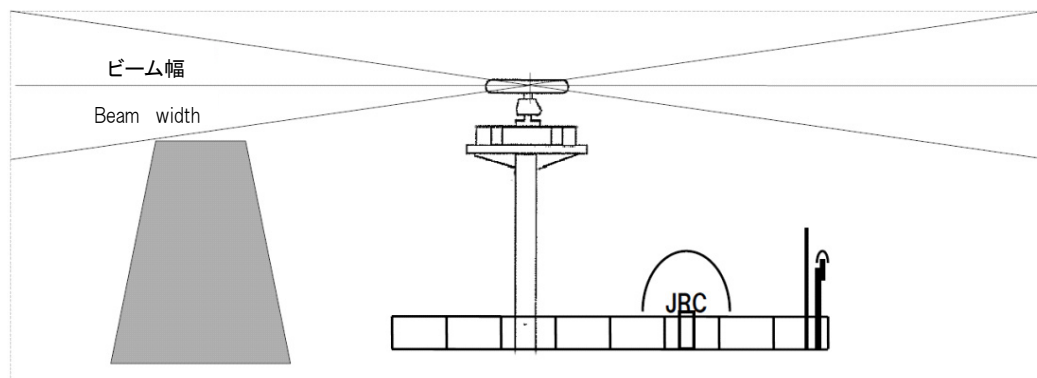


Fig 2-25: Scanner and the surrounding structural objects

- When installing two or more scanners, scanners in close proximity should have a minimum vertical elevation separation angle of 20 and a minimum vertical separation of 1m where possible, so that those scanners do not enter each other's vertical beam width range.

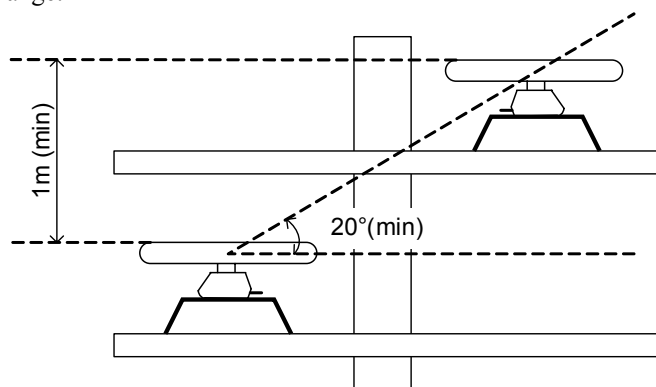


Fig 2-26: Scanners in close proximity

- To avoid interference with other equipment and to prevent radio noise from generating, do not place the VHF antenna, GPS antenna, and INMARSAT's dome within the range of the vertical beam width.
- Keep a record of installation height data. The data is necessary for the initial setting of the display unit.
- Minimize the blind sector, and ensure the adequate view angle so that the blind sector does not exist in the range 22.5° from side to rear (Fig 2-27). Specifically, ensure a sufficient view field in the straight front (relative bearing 000°).
- Individual blind sectors of more than 5°, or a total arc of blind sectors of more than 20°, should not occur in the remaining arc, excluding the arc in Fig 2-27.
- For radar installations with two radar systems, where possible, the antennas should be placed in such a way as to minimize the blind sectors.

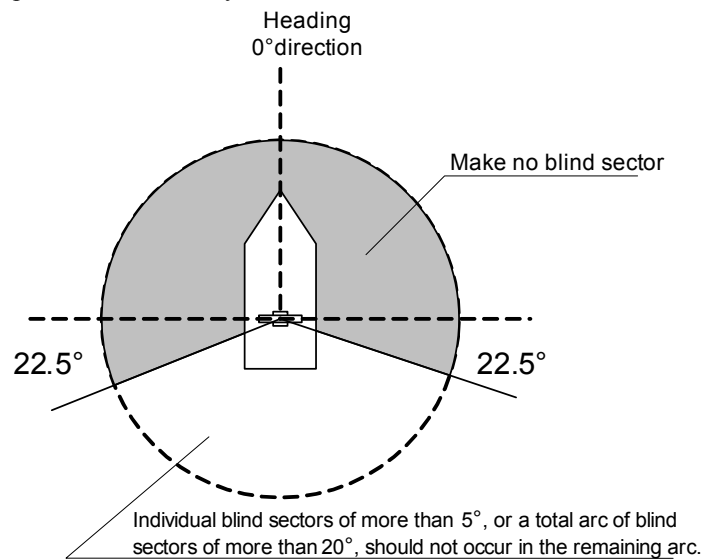


Fig 2-27: Ensuring view angle

- Magnetron which has strong magnetic force is included in the scanner. Install the scanner at least 6 meters away from nautical instruments including magnetic compasses and chronometers.

\* If there is a concern that structural objects existing within the vertical beam width may generate false echo, equip the structural objects with a radio wave absorber. (There are two types of absorbers: broadband type having no specific resonant frequency and narrowband type which can absorb a band with a specific frequency. Use those where applicable.) Furthermore, it is effective to install a metal reflector, which reflects radio waves upwardly, between the scanner and a structural object so that the radar's radio wave will not directly come in contact with the structural object.

When the structural objects exist in the surrounding area of Scanner unit, the false echo may appear. The sector blank function is effective to reduce the signal reflection from the structural objects. Because it can stop transmission. Therefore, it may reduce the false echo appearance.



Because most radio wave absorbers have poor durability, some must be replaced every year. When installing a reflector, the area to the rear of the reflector becomes a blind sector. Therefore, minimize the size of the reflector.

When the sector blank function set to on, ensure a sufficient view field in the straight front.

\* The above procedures for selecting an scanner installation position are described based on the radar's scanner. Comprehensively select the scanner position by considering other scanners' installation procedure manual, hull's structure, strength of the selected position, and vibration.

## 2.4.4 Confirmation during test run

If the scanner vibrates a lot during test run, try to reduce or prevent vibration by reinforcing the scanner mount base or using wire stays attached to the radar mast.

## 2.4.5 Others

- The design of the mounting platform for the scanner should take into account the vibration requirements of resolution A.694(17) and furthermore defined by IEC 60945.

Vibration	2 to 13.2Hz	Amplitude	+/-1mm +/-10%
	13.2 to 100Hz	Acceleration	7m/s <sup>2</sup>

- All installations should facilitate protection of equipment, including cabling, from damage.
- The cables should be kept as short as possible to minimize attenuation of the signal.
- Crossing of cables should be done at right angles(90°) to minimize magnetic field coupling.
- Eliminating the interference on frequencies used for marine communications and navigation due to operation of the radar. All cables of the radar are to be run away from the cables of radio equipment. (ex. Radiotelephone. Communications receiver and direction finder, etc.) Especially inter-wiring cables between scanner unit and display unit of the radar should not be run parallel with the cables of radio equipment.
- Cable, coaxial cable and flexible waveguide should not be exposed sharp bends. See also section 2.4.2 (4) “Permissible bending radius” .
- The grounding of equipment units should be carried out according to INSTALLATION OF SCANNER UNIT and INSTALLATION OF TRANSMITTER RECEIVER UNIT.



# SECTION 3

## INSTALLATION OF DISPLAY UNIT

### INSTALLATION OF DISPLAY UNIT

<b>3.1</b>	<b>INSTALLATION OF DISPLAY UNIT</b> .....	<b>3-1</b>
3.1.1	Exterior Drawing of NCD-4990 .....	3-2
3.1.2	Exterior drawing of NCD-4990T .....	3-3
3.1.3	Exterior drawing of NCD-4790 .....	3-6
3.1.4	Exterior drawing of NCD-4790T .....	3-7
<b>3.2</b>	<b>INSTALLATION OF AC-DC CONVERTER NBA-5135</b> .....	<b>3-10</b>
3.2.1	NBA-5135 Packing List .....	3-10
3.2.2	Exterior drawing of NBA-5135 .....	3-12
3.2.3	NCD-4990 .....	3-13
3.2.4	NCD-4990T .....	3-17
3.2.5	NCD-4790 .....	3-18
3.2.6	NCD-4790T .....	3-20
<b>3.3</b>	<b>CONNECTIONS WITH SCANNER AND TRANSCEIVER</b> .....	<b>3-21</b>
3.3.1	Connections with NKE-1125,NTG-3225,NKE-1130,NTG-3230 .....	3-21
3.3.2	Connections with NKE-2103,NKE-2254 .....	3-22
<b>3.4</b>	<b>CONNECTION WITH GPS</b> .....	<b>3-24</b>
<b>3.5</b>	<b>CONNECTIONS WITH VESSEL SPEED UNIT (2-AXIS LOG)</b> .....	<b>3-26</b>

<b>3.6</b>	<b>CONNECTIONS WITH GYRO AND ELECTROMAGNETIC LOG</b>	<b>.....3-27</b>
<b>3.7</b>	<b>CONNECTION WITH GYRO (IEC61162-1/2)</b>	<b>.....3-29</b>
<b>3.8</b>	<b>CONNECTIONS WITH AIS</b>	<b>.....3-31</b>
<b>3.9</b>	<b>CONNECTIONS WITH ECDIS</b>	<b>.....3-33</b>
<b>3.9.1</b>	<b>Transmission Port Setting (TX Port)</b>	<b>..... 3-34</b>
<b>3.10</b>	<b>CONNECTION WITH ALARM MONITORING SYSTEM</b>	<b>.....3-36</b>
<b>3.11</b>	<b>EXAMPLE OF WIRING IN THE DEVICE</b>	<b>.....3-38</b>
<b>3.12</b>	<b>DISPLAY UNIT LEDS FOR VARIOUS SIGNALS</b>	<b>.....3-39</b>
<b>3.12.1</b>	<b>Serial Signal</b>	<b>..... 3-40</b>
<b>3.12.2</b>	<b>Power supply status</b>	<b>..... 3-41</b>
<b>3.12.3</b>	<b>Alarm Signal</b>	<b>..... 3-42</b>
<b>3.12.4</b>	<b>Fan Alarm</b>	<b>..... 3-43</b>

# 3.1 INSTALLATION OF DISPLAY UNIT

## 3

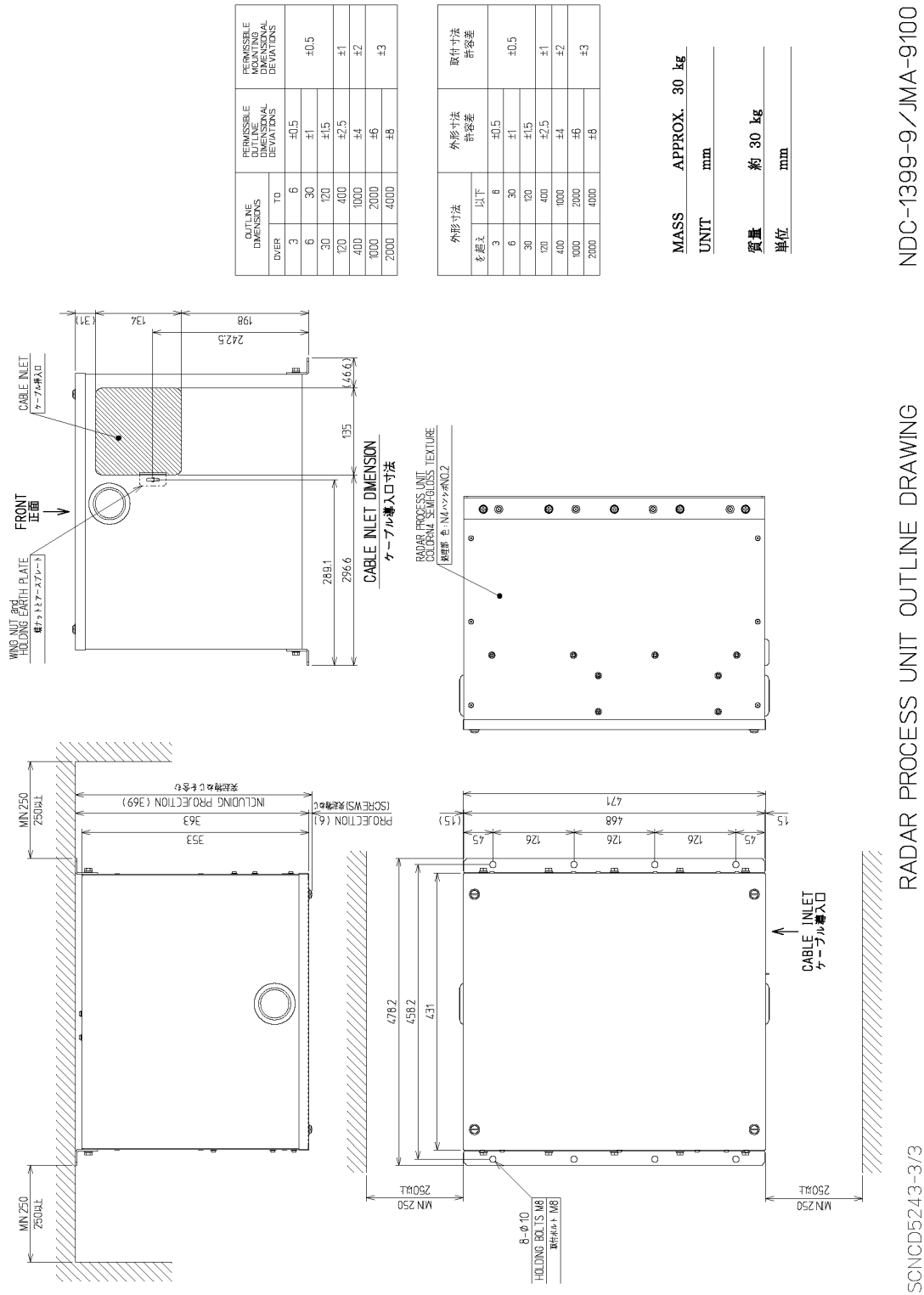
- Installation should be executed in reference to the exterior drawings shown in the following section and those sections thereafter.
- Install the monitor unit so that when the user is looking ahead, the lookout view is not obscured. The orientation of the display unit should be such that the user is looking ahead. The lookout view should not be obscured and the ambient light should cause minimum degradation on the display.
- Install the unit away from direct sunlight and heat source. When the desktop type display unit is installed into the console, pay attention that its ambient temperature does not exceed +55 degrees Celsius.
- Eliminating the interference on frequencies used for marine communications and navigation due to operation of the radar. All cables of the radar are to be run away from the cables of radio equipment. (ex. radiotelephone, communications receiver and direction finder. etc..) Especially inter-wiring cables between scanner unit and display unit of the radar should not be run parallel with the cables of radio equipment.
- By using an attached earth plate<sup>1,2</sup>, be sure to securely ground the display unit to the hull's earth.
- Install the display unit at least the *compass safe distance*<sup>3</sup> away from nautical instruments including magnetic compasses and chronometers.

- 
1. As an earth plate, a JRC code: MTB349814A is included in the self-standing display unit of NCD-4990 and NCD-4790.
  2. As an earth plate, a JRC code: MTB349495 is included in the desktop display unit of NCD-4990T and NCD-4790T.
  3. For more detail on the compass safe distance, refer to the instruction manual chapter 11.





### 3.1.2 Exterior drawing of NCD-4990T



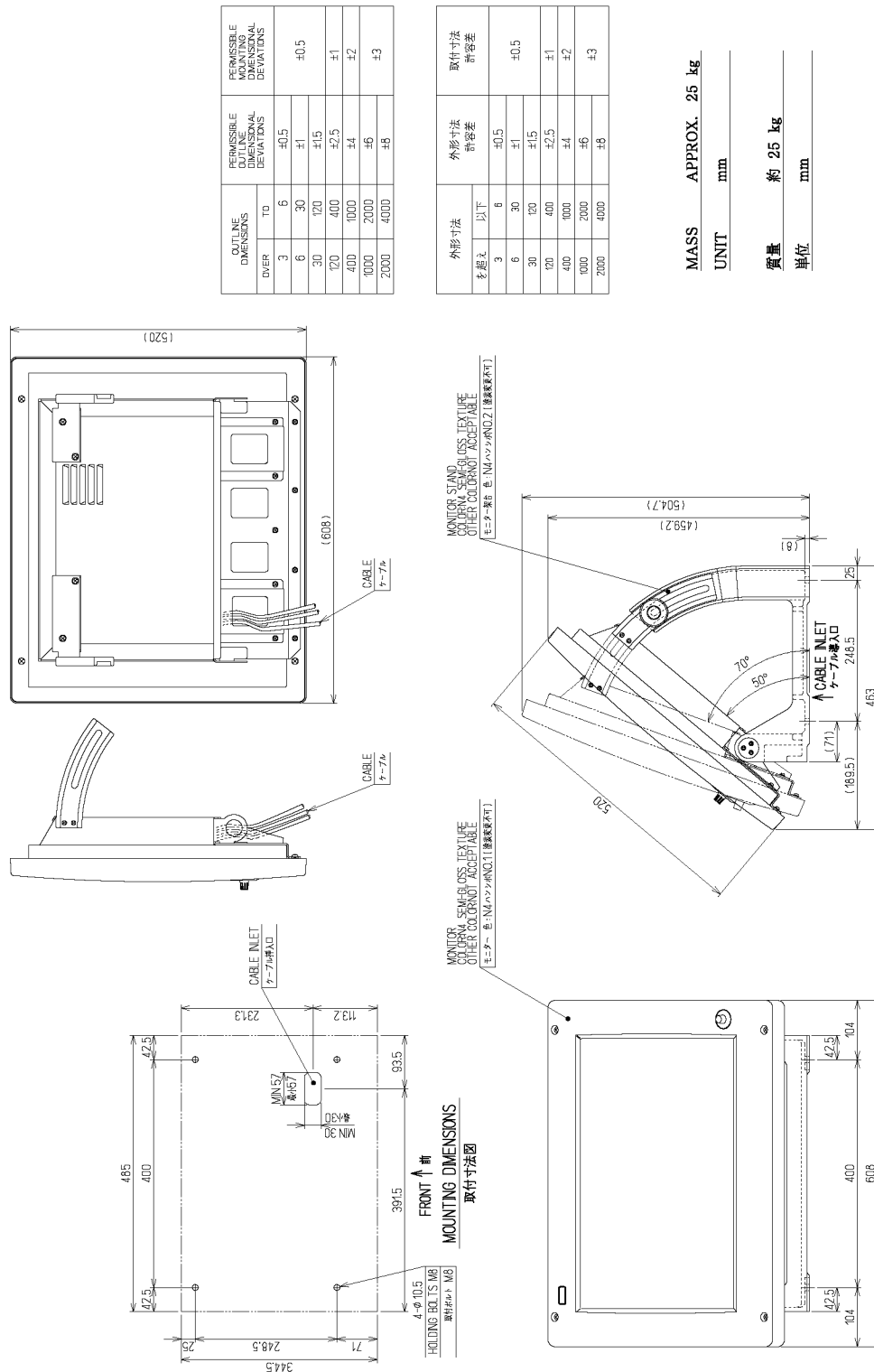
NDC-1399-9/JMA-9100

RADAR PROCESS UNIT OUTLINE DRAWING

SONCD5243-3/3

Fig 3-2: Exterior drawing of NDC-1399-9





OUTLINE DIMENSIONS		PERMISSIBLE OUTLINE DIMENSIONAL DEVIATIONS	PERMISSIBLE MOUNTING DIMENSIONAL DEVIATIONS
OVER	TO		
3	6	±0.5	±0.5
6	30	±1	
30	120	±1.5	±1
120	400	±2.5	
400	1000	±4	±2
1000	2000	±6	
2000	4000	±8	±3

外形寸法		外形寸法許容差	取付寸法許容差
起端	以下		
3	6	±0.5	±0.5
6	30	±1	
30	120	±1.5	±1
120	400	±2.5	
400	1000	±4	±2
1000	2000	±6	
2000	4000	±8	±3

MASS APPROX. 25 kg  
UNIT mm

質量 約 25 kg  
単位 mm

NWZ-170/JMA-9100

23.1 INCH MONITOR UNIT OUTLINE DRAWING

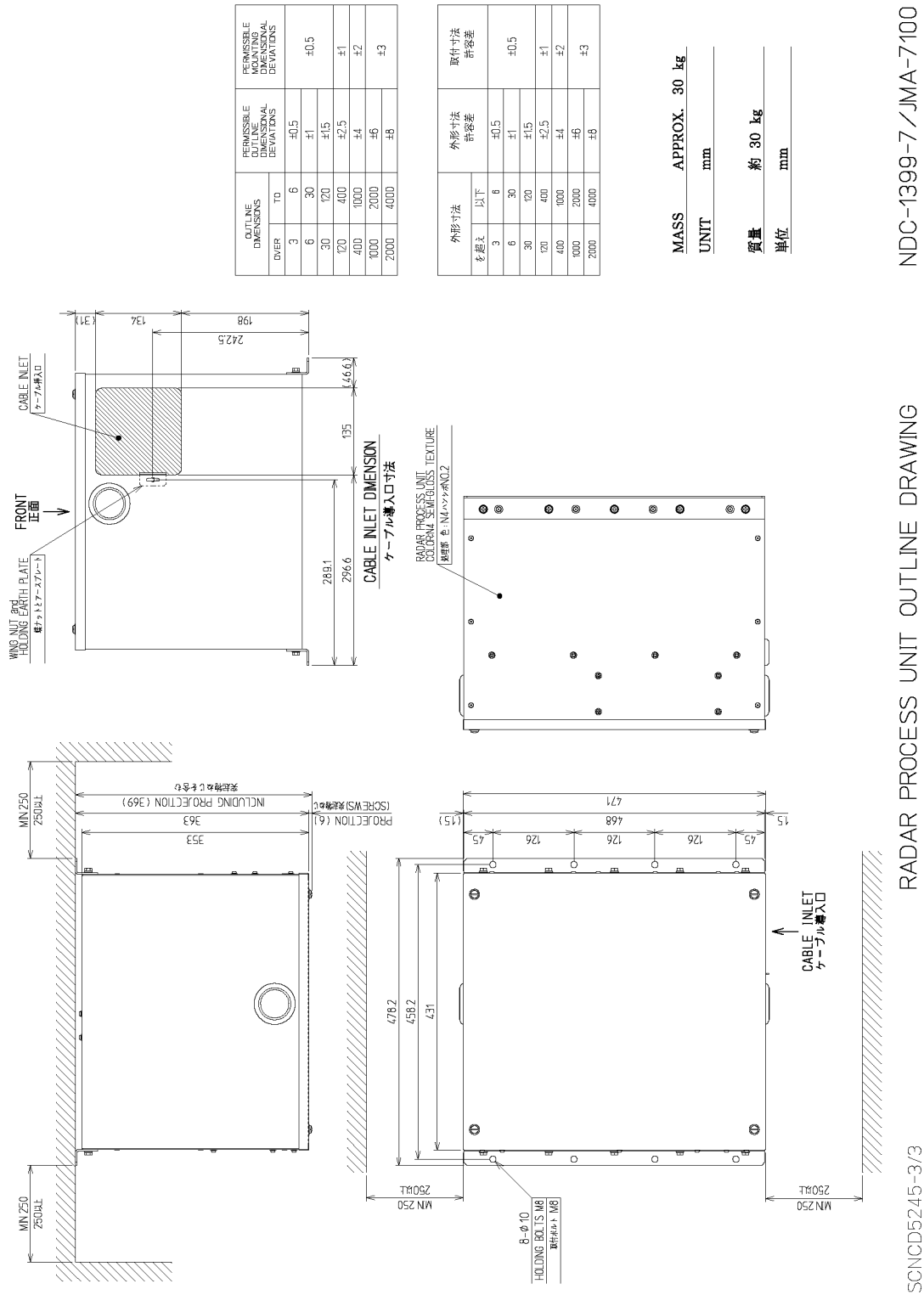
SCNCD5243-2/3

Fig 3-3: Exterior drawing of NWZ-170





### 3.1.4 Exterior drawing of NCD-4790T



NDC-1399-7 / JMA-7100

RADAR PROCESS UNIT OUTLINE DRAWING

SONCD5245-3/3

Fig 3-6: Exterior drawing of NDC-1399-7



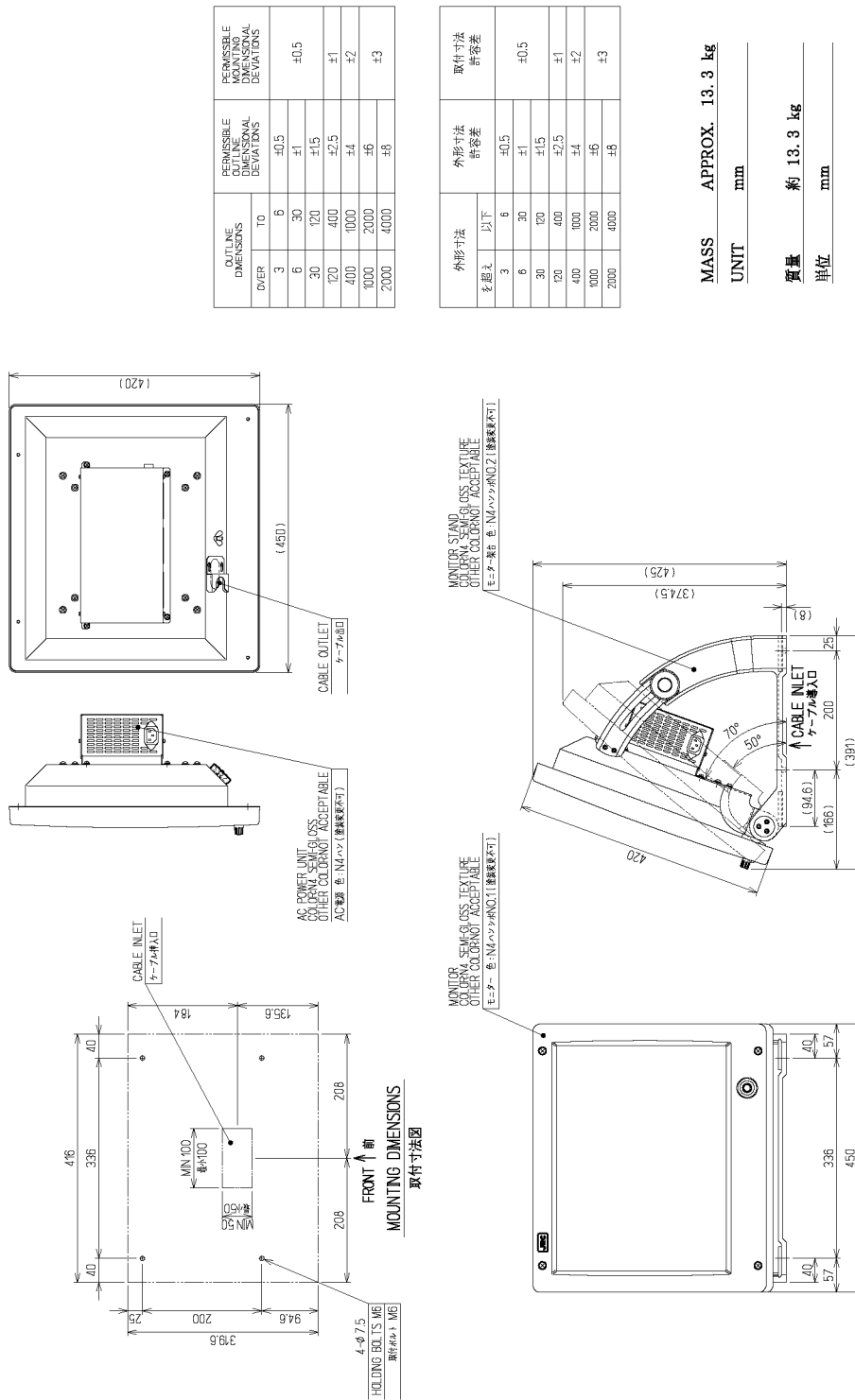
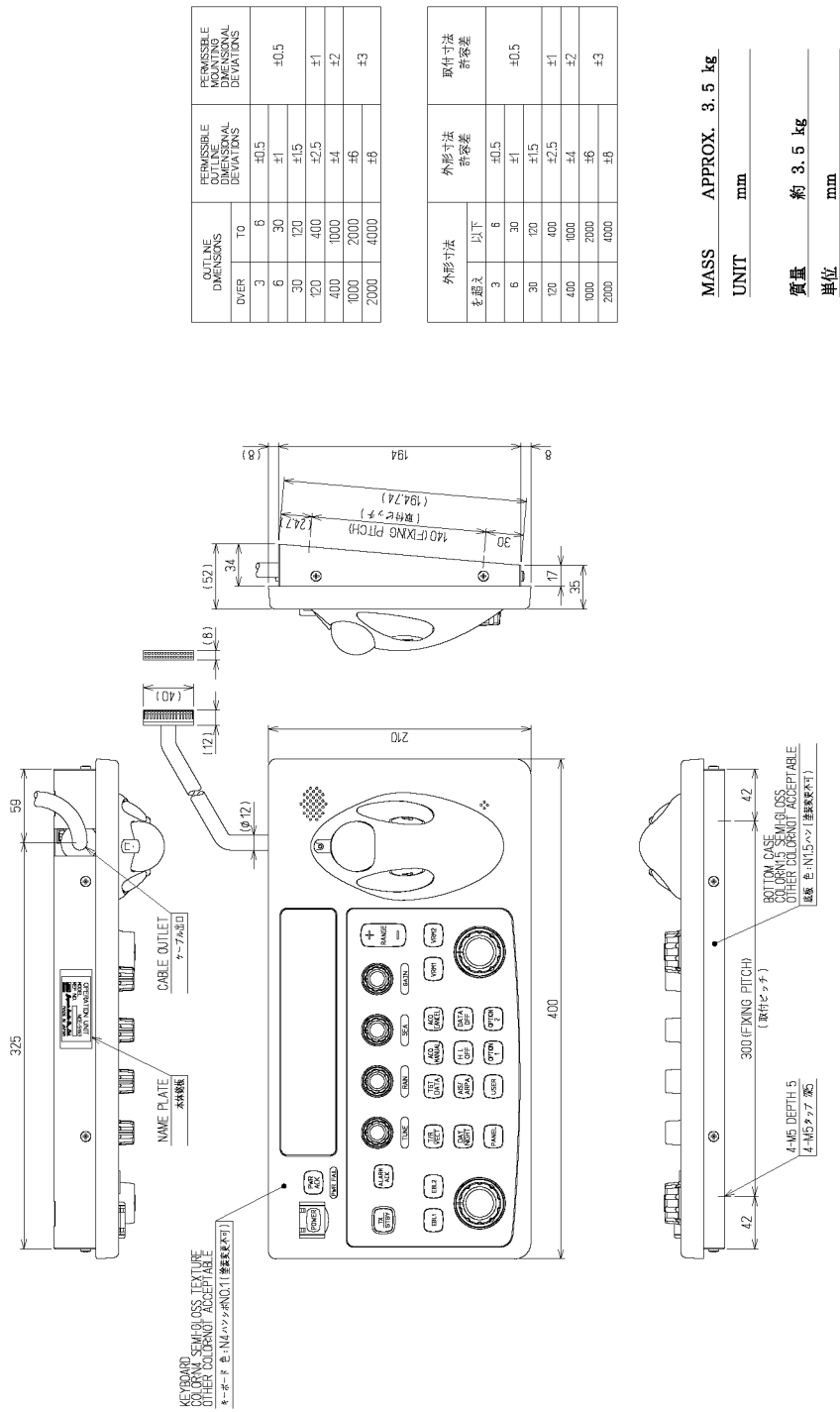


Fig 3-7: Exterior drawing of NWZ-173

NWZ-173/JMA-7100

19 INCH MONITOR UNIT OUTLINE DRAWING

SCNCD5245-2/3



OPERATION UNIT OUTLINE DRAWING

SCNCD5245-1/3

NCE-5163/JMA-7100

Fig 3-8: Exterior drawing of NCE-5163

# 3.2

## INSTALLATION OF AC-DC CONVERTER NBA-5135

When an scanner unit of either NKE-2103-6, NKE-2103-6HS, or NKE-2254-6HS is used, an AC/DC converter NBA-5135 is necessary.

General model: JMA-9110-6XA, JMA-9110-6XAH, JMA-9122-6XAH  
JMA-7110-6XA, JMA-7110-6XAH, JMA-7122-6XAH)

The installation method differs depending on whether the display unit is a model of the JMA-9100 series or the JMA-7100 series, or self-standing or desktop.

### 3.2.1 NBA-5135 Packing List

Table3-1 : NBA-5135 Packing List

No.	Partname/ 部品名	Pcs	Code/ コード	Remark/ 備考
1	GUARD/ ガード	1	MTB389784	
2	AC/DC CONVERTER UNIT AC/DC コンバーター	1	MANBA5087 (NBA-5135)	※ FUSE ST6-10AN (5ZFCA00053)
3	CABLE/ ケーブル	1	7ZCRD1344A	W408 BLACK 3core,3m
4	CABLE/ ケーブル	1	7ZCRD1343A	W407 GRAY 2core,3m
5	CABLE/ ケーブル	1	7ZCRD1342A	W406 GRAY 2core,0.6m
6	TERMINAL BLOCK/ 端子台	1	MDH67A-3P	TB401
7	SEMS SCREWS/ なべ小ねじ	2	NB3X8FE	for GUARD
8	SEMS SCREWS/ なべ小ねじ	4	NC4X14FE	for TERMINAL BLOCK
9	BOLTS/ 十字穴付六角ボルト	5	BRTG08964	for AC/DC CONVERTER UNIT
10	PACKING LIST/ パッキングリスト	1	MTZ303786	

\* Applicable fuse ST6-10AN1 (5ZFCA00053)

(Included in spare parts 7ZXRD0025)



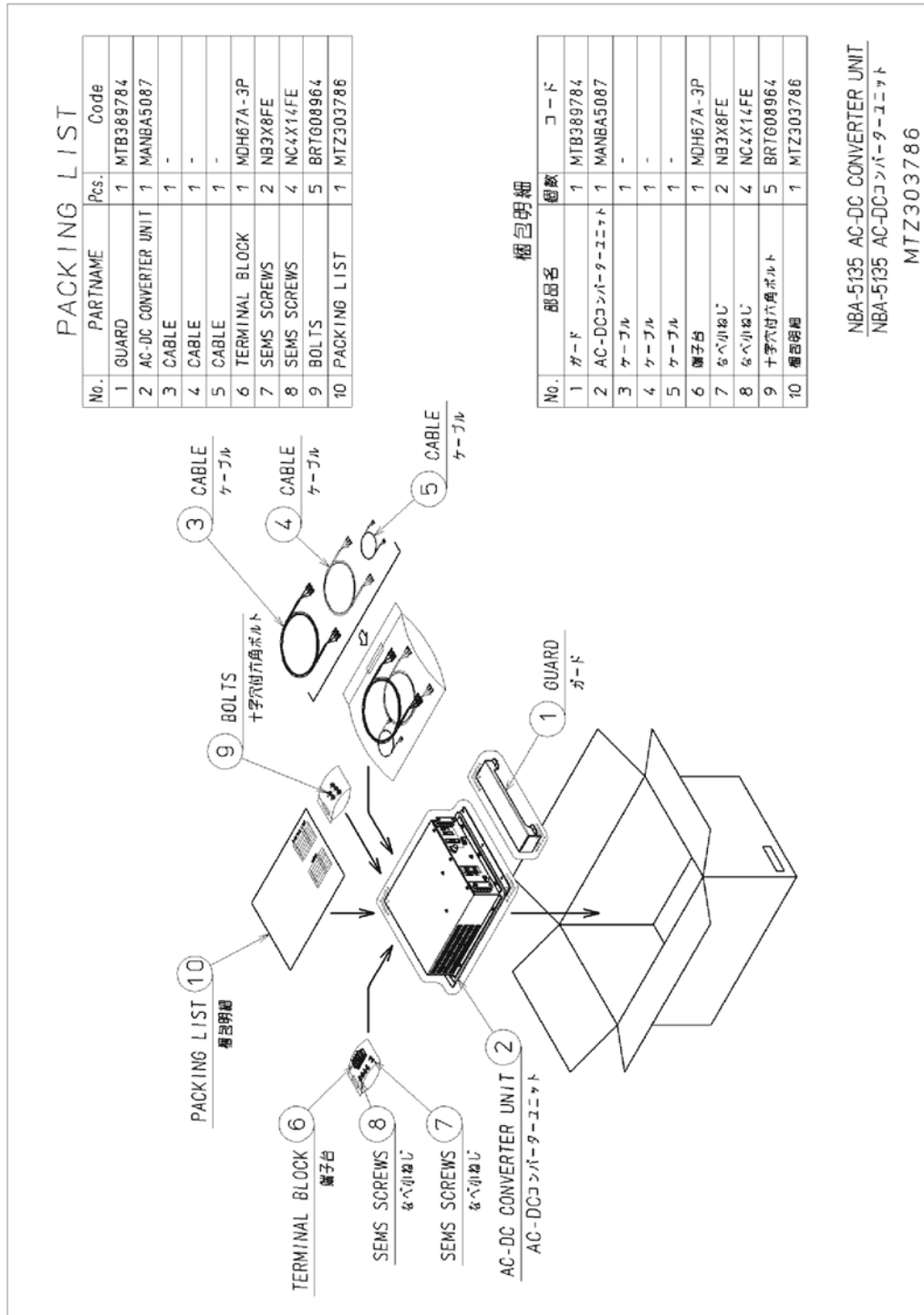


Fig 3-9: NBA-5135 Packing List



### 3.2.3 NCD-4990

Install NBA-5135 in the self-standing display unit NCD-4990 according to the procedure below.

- 1) *Disconnect the AC cable, DVI cable, fan alarm cable, operating unit cable, and the power supply filter cable from the display unit.*
- 2) *Remove eight screws.*
- 3) *Pull out the rack of the processing unit to the front.*
- 4) *By using five hexagon bolts with a cross-shaped hole (No.9 in TTable3-1 : NBA-5135 Packing List) included in NBA-5135, NBA-5135 (No.2 in Table3-1 : NBA-5135 Packing List) shall be installed on the left inside the display unit. First, temporarily install one bolt at the bottom rear and hang the U-shape hole of the NBA-5135. Then, install the remaining four bolts.*
- 5) *Return the rack of the processing unit and securely mount it.*

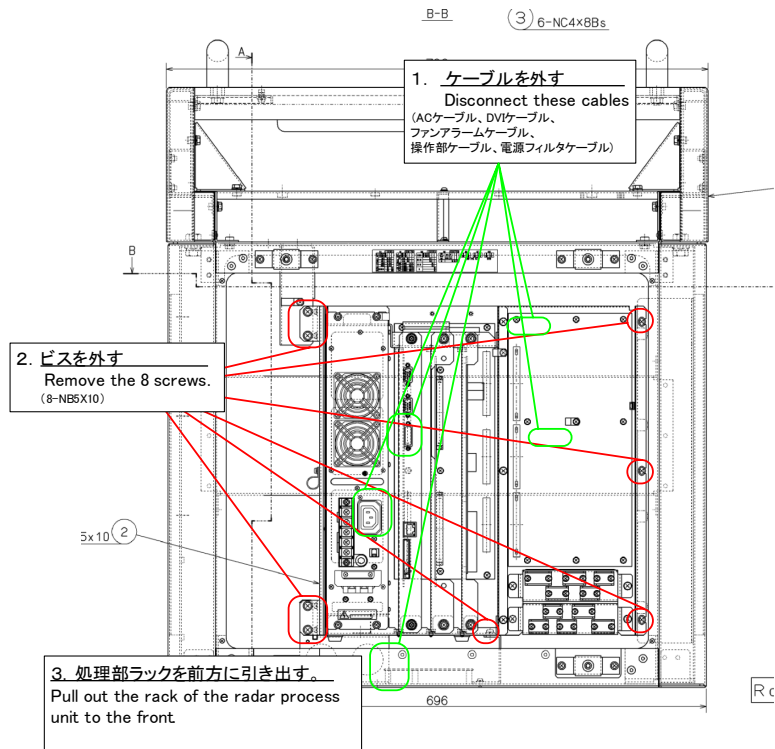


Fig 3-11: Equipment 1 of NBA-5135 (NCD-4990)



Fig 3-12: Equipment 2 of NBA-5135 (NCD-4990)

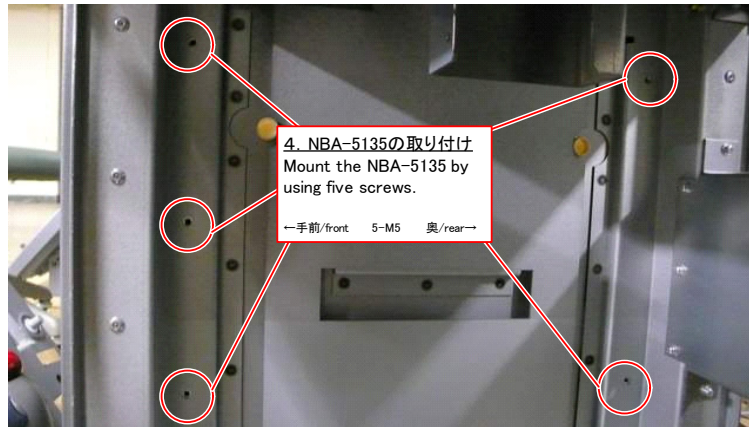


Fig 3-13: Equipment 3 of NBA-5135 (NCD-4990)

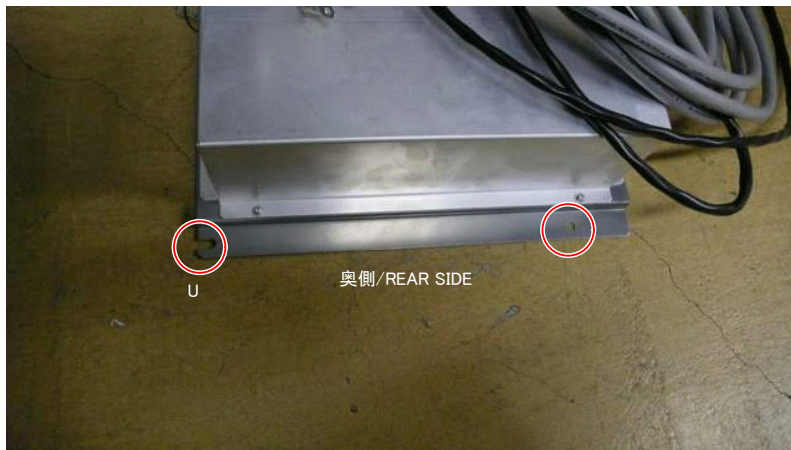


Fig 3-14: Equipment 4 of NBA-5135 (NCD-4990)



Fig 3-15: Equipment 5 of NBA-5135 (NCD-4990)



Fig 3-16: Equipment 6 of NBA-5135 (NCD-4990)

Connect terminal block TB521 located at the upper part of *NBA-5135* to CBD-1661.

Use cable H-7ZCRD1342(W406) (No.5, gray, thin, and 60cm in *Table3-1 : NBA-5135 Packing List*).

Connect U to U, and V to V according to the label of the cable. The FG terminal should be disconnected.

Terminal block TB522 located at the lower part of NBA-5135 is a DC output terminal block.

Connect red, green, white, and orange-color equipment cables (CFQ-6912-\*\*) to the + terminal. Crimp two cables each to the round, crimp-type terminal (V2-M4 recommended) and fasten them tightly.

Connect purple, brown, blue, and gray equipment cables to the - terminal. Crimp two cables each to the round, crimp-type terminal (V2-M4 recommended) and fasten them tightly.

The FG terminal should be disconnected. Confirm proper connection by referring to Section Section 6.3 INTER-BOARD CONNECTION DIAGRAM.

After wiring connection has been done, install the guard (No.1 and 7 in *Table3-1 : NBA-5135 Packing List*).



### 3.2.4 NCD-4990T

In the case of the desktop display unit NCD-4990T, NBA-5135 must be installed outside the processing unit NDC-1399-9. The connection cable is 3 meters long. NBA-5135 cannot be installed in a location which exceeds 3 meters from the processing unit NDC-1399-9.

Install terminal block TB401 (No.6 and 8 in *Table3-1: NBA-5135 Packing List*) inside the processing unit.

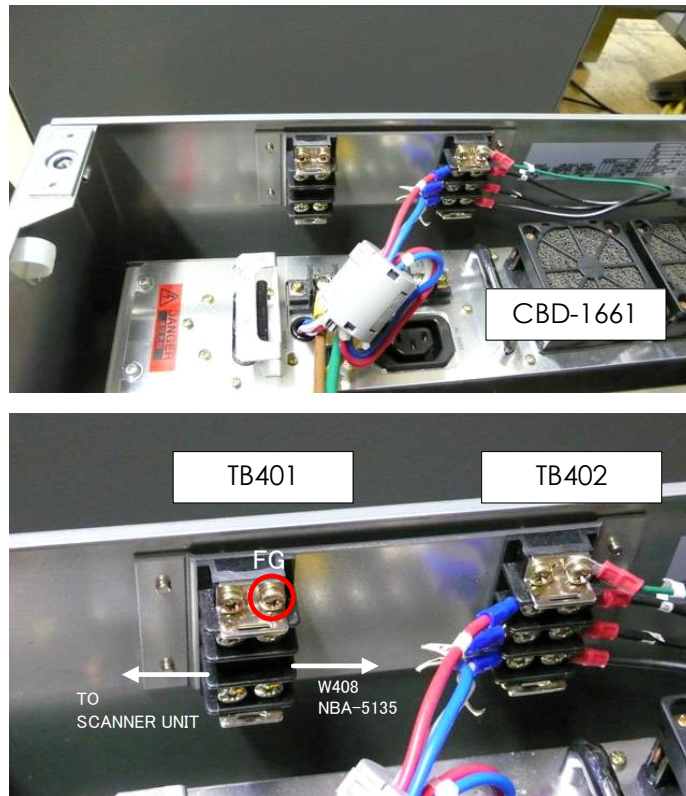


Fig 3-17: Installation position of TB401 and FG terminal

Install *NBA-5135* at a proper location by using five hexagon bolts with a cross-shaped hole. (No.2 and 9 in *Table3-1 : NBA-5135 Packing List*)

W407 (No.4 in *Table3-1 : NBA-5135 Packing List*) connects CBD-1661 to TB521 of *NBA-5135*.

W408 (No.3 in *Table3-1 : NBA-5135 Packing List*) is connected to the upper terminal of TB401. Connect *NBA-5135* to TB401 according to the label of W408.

An scanner equipment cable is connected to a vacant terminal of TB401.

Connect red, green, white, and orange-color equipment cables (CFQ-6912-\*\*) to the + terminal. Crimp two cables each to the round, crimp-type terminal (V2-M4 recommended) and fasten them tightly. (Section 2.1.4 Cable end processing method-CFQ-6912)

Connect purple, brown, blue, and gray equipment cables to the - terminal. Crimp two cables each to the round, crimp-type terminal (V2-M4 recommended) and fasten them tightly. (Section 2.1.4 Cable end processing method-CFQ-6912)

Tightly fasten the FG terminal with the terminal block mounting screw (Fig 3-17:Installation position of TB401 and FG terminal). Confirm proper connection by referring to Section 6.3 INTER-BOARD CONNECTION DIAGRAM.

After the wiring connection is complete, install the guard (No.1 and 7 in *Table3-1 : NBA-5135 Packing List*).

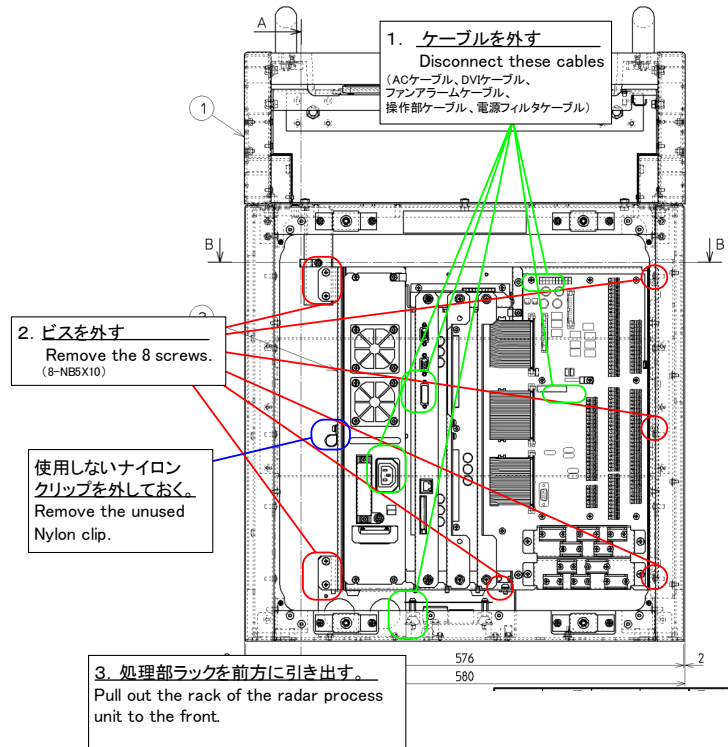
### 3.2.5 NCD-4790

The basic procedure is the same as that for NCD-4990.

Install NBA-5135 into the self-standing display unit NCD-4790. See Section 3.2.3 NCD-4990 as well.

- 1) *Disconnect the AC cable, DVI cable, fan alarm cable, operating unit cable, and the power supply filter cable from the display unit.*
- 2) *Remove eight screws. Remove unused nylon clips.*
- 3) *Pull out the rack of the processing unit to the front.*
- 4) *By using five hexagon bolts with a cross-shaped hole (No.9 in *Table3-1 : NBA-5135 Packing List*) included in NBA-5135, NBA-5135 shall be installed on the left inside the display unit. First, temporarily install one bolt at the bottom rear and hang the U-shape hole of the NBA-5135. Then, install the remaining four bolts.*
- 5) *Return the rack of the processing unit and securely mount it.*





3

Fig 3-18: Installation 1 of NBA-5135 (NCD-4790)

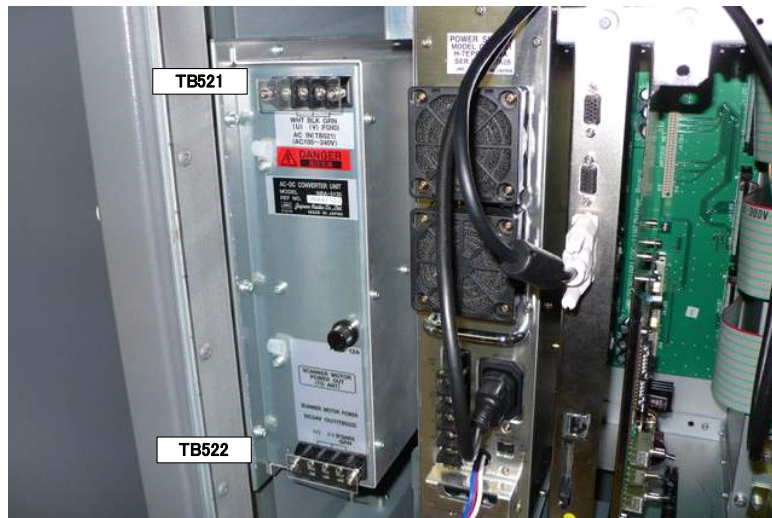


Fig 3-19: Installation 2 of NBA-5135 (NCD-4790)

Connect terminal block TB521 located at the upper part of NBA-5135 to CBD-1661. Use the H-7ZCRD1342 (W406) cable (No.5 gray, thin, 60cm in *Table3-1: NBA-5135 Packing List*). See Section 3.2.3 NCD-4990.

Terminal block TB522 located at the lower part of NBA-5135 is a DC output terminal block. For the wiring procedure, see NCD-4990 in Section 3.2.3 NCD-4990.

Confirm proper connection by referring to Section 6.3 INTER-BOARD CONNECTION DIAGRAM.

### 3.2.6 NCD-4790T

In the case of the desktop display unit NCD-4990T, NBA-5135 must be installed outside the processing unit NDC-1399-9. The connection cable is 3 meters long. NBA-5135 cannot be installed in a location which exceeds 3 meters from the processing unit NDC-1399-9.

Install terminal block TB401 (No.6 and 8 in *Table3-1: NBA-5135 Packing List*) in the processing unit. See Section 3.2.4 NCD-4990T.

Connect W407 and W408 (No.3 and 4 in *Table3-1 : NBA-5135 Packing List*). See Section 3.2.4 NCD-4990T.



### 3.3.2 Connections with NKE-2103,NKE-2254

Connect the device to TB4101(ANT) of terminal board circuit CQD-2097 located in the display unit (radar process unit).

In the case of a self-standing display unit, connect the device to terminal block TB522 of AC/DC converter NBA-5135 in the display unit. In the case of a desktop display unit, connect the device to terminal block TB401 in the processing unit. See Section 3.2 INSTALLATION OF AC-DC CONVERTER NBA-5135.

[Supplementation] When the device is used together with power control unit NQE-3167, the connection of NBA-5135 is not required. In this case, execute wiring by referring to Section 5.2.8 Inter-board connection diagram of power control unit

For the procedure for processing the equipment cable terminal, see Section 2.1.4 Cable end processing method.

For installation to the cable holding fixture, see Fig. 3 33 "Example of actual wiring."

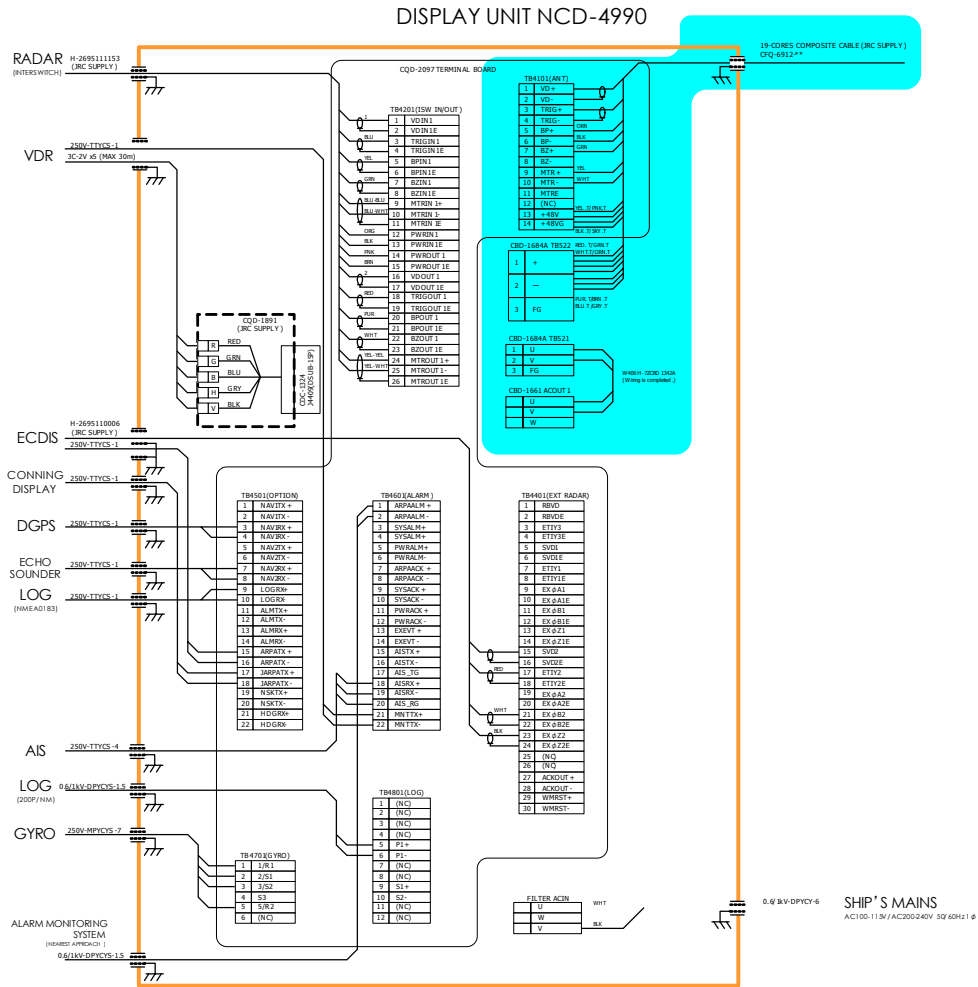


Fig 3-21: Scanner/Transceiver Connection Terminal Block

# 3.4 CONNECTION WITH GPS

Connect the device to TB4501(NAV1RX+, NAV1RX-) of terminal board circuit CQD-2097 located in the display unit (processing unit).

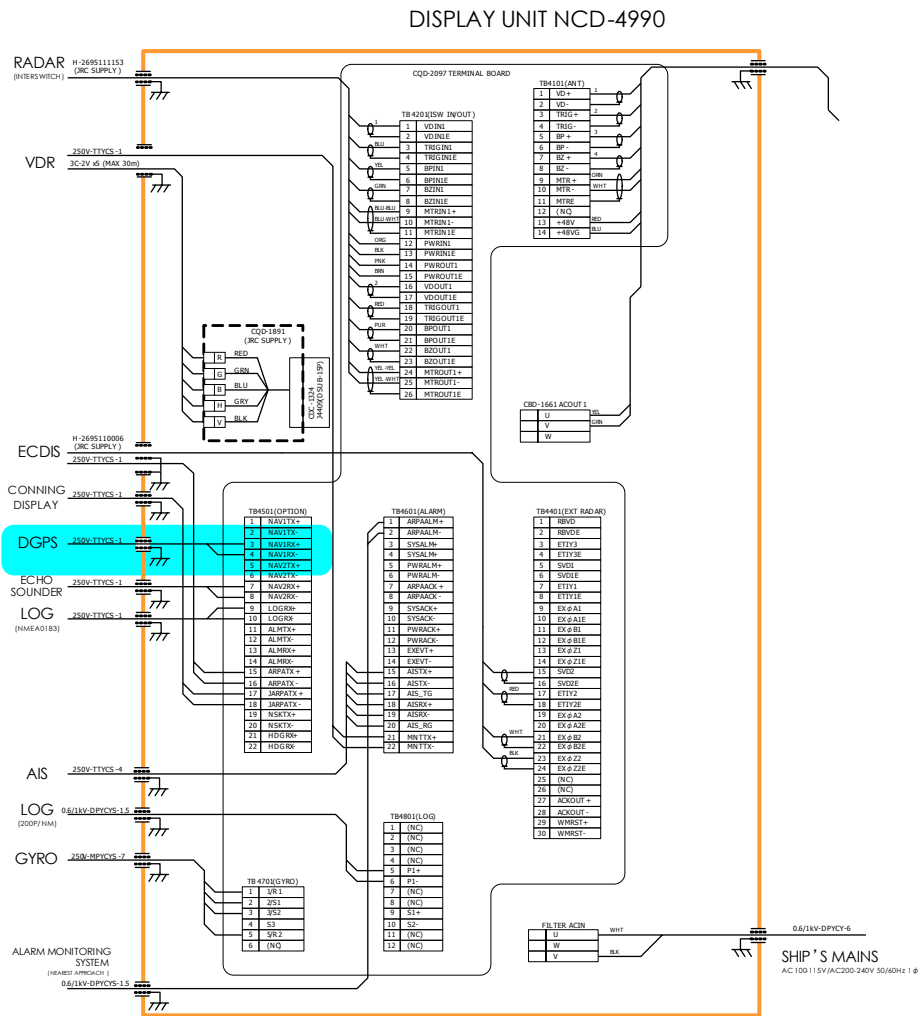


Fig 3-22: GPS Connecting Terminal Block

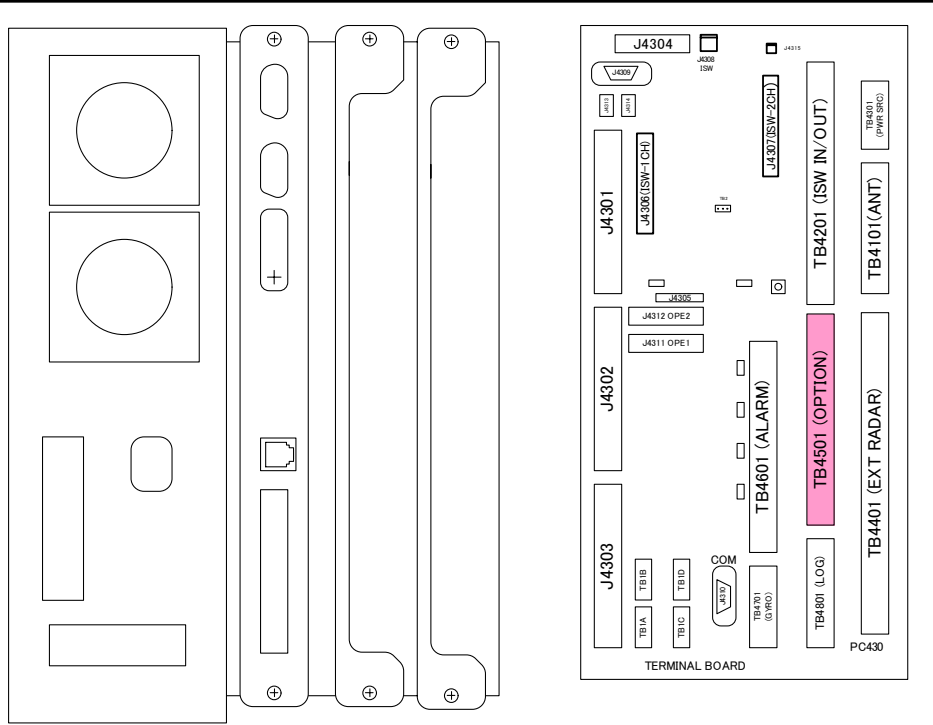


Fig 3-23: Arrangement in TB4501

Operation check is possible by the use of the LED on the terminal board circuit CQD-2097. See Section 3.12.1 Serial Signal.

# 3.5

## CONNECTIONS WITH VESSEL SPEED UNIT (2-AXIS LOG)

Connect the vessel speed unit to TB4501(LOGRX+, LOGRX-) of terminal board circuit CQD-2097 located in the display unit (processing unit).

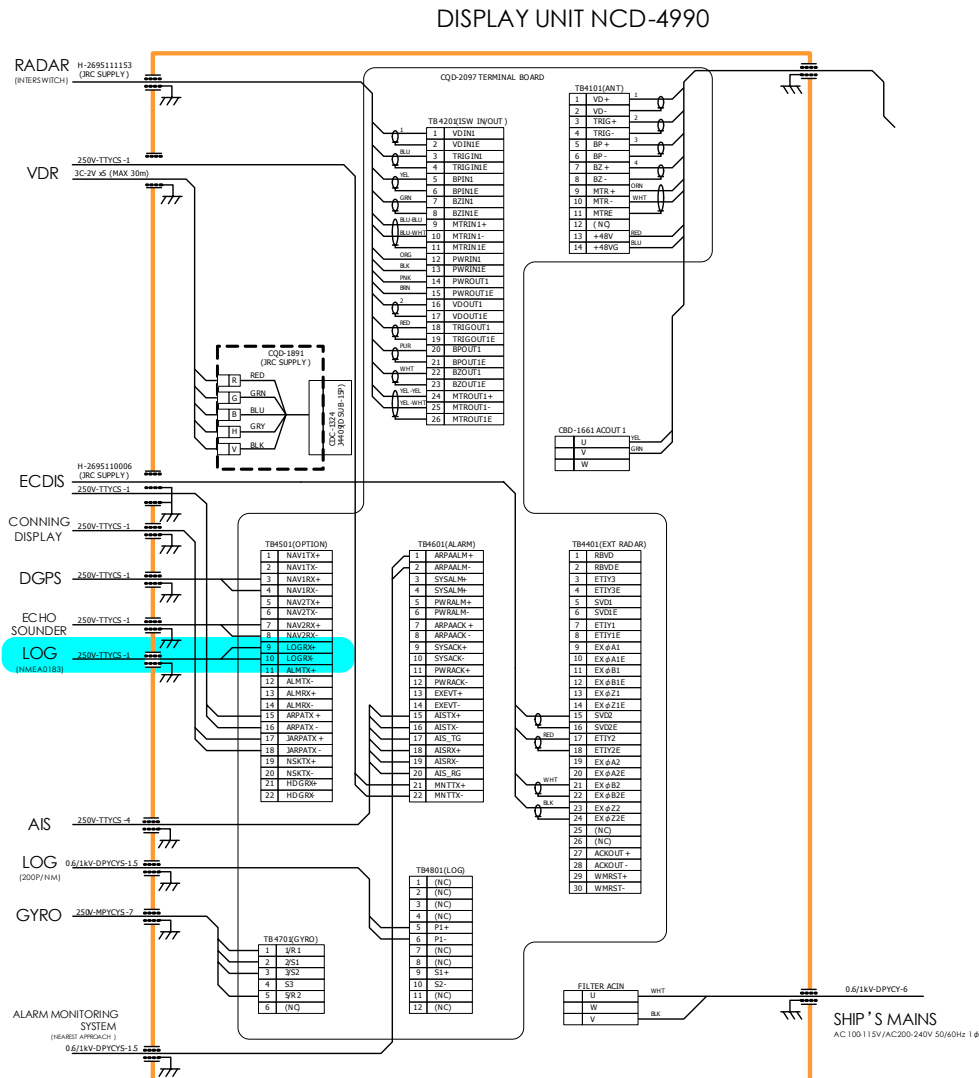


Fig 3-24: LOG (NMEA) Connecting Terminal Block

Operation check is possible by the use of the LED on the terminal board circuit CQD-2097. See Section 3.12.1 Serial Signal.



# 3.6

## CONNECTIONS WITH GYRO AND ELECTROMAGNETIC LOG

The gyro signal should be connected to TB4701 of terminal board circuit CQD-2097 in the display unit (processing unit). Connect synchro-type gyros to R1, S1, S2, S3, and R2, and connect step-type gyros to 1, 2, 3, and 5 (5 for COMMON). The pulse-type log signal should be connected to TB4801(P1+,P1-) of terminal board circuit CQD-2097 located in the display unit (processing unit). The synchro-type log signal should be connected to (S1+,S1-) of TB4801 as well.

Connect a gyro equipment or equivalent that provide a below turn rate, otherwise the performance of signal process and target tracking decrease.

Standard craft 12度/sec

High speed craft 20度/sec

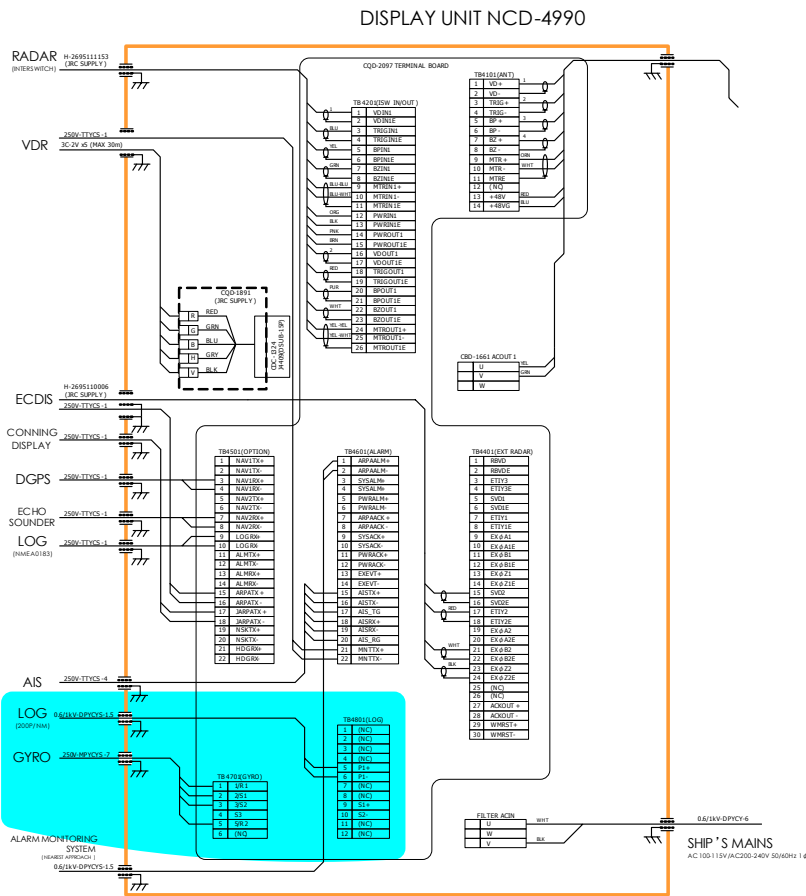


Fig 3-25: GYRO/LOG Connecting terminal block

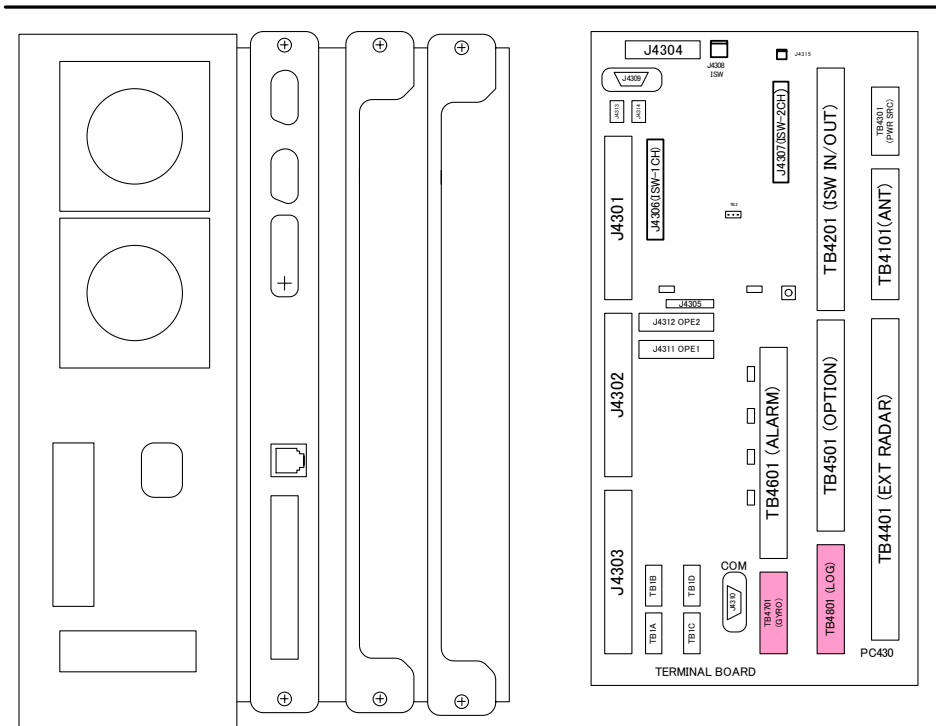


Fig 3-26: Arrangement of TB4701/TB4801

# 3.7

## CONNECTION WITH GYRO (IEC61162-1/2)

The HDM,HDG,HDT and the THS sentence of IEC-61162-1/2 can be received.

The baud rate conforms to 4800/38400 bps.

Connection should be made to TB4501(HDGRX+,HDGRX-) of terminal board circuit CQD-2097 located in the display unit (processing unit). See Fig 3-23:Arrangement in TB4501.



The true bearing update frequency greatly influences the radar signal processing performance and the target tracking performance. It is recommended that the signal output from the heading sensor be updated within time intervals of 50 ms or less.

The bearing signal take from NMEA input, select the heading device to "CMPS".

The gyro interface circuit can be used to interface NMEA to JRC format output that to make correct setting by referring to Section 4.1.2 NMEA Input setting. When the heading signal take from gyro interface circuit, select the heading device to "GYRO".

To make sure the appropriate setting, the heading device selection that are "CMPS" or "GYRO" are both available. Using the gyro interface circuit, there is a limitation of update interval. (Refer to Section 4.1.2 NMEA Input setting) If update interval exceed 60ms, the "GYRO I/F (GYRO)" alarm is displayed on the screen, because of the above precaution.

DISPLAY UNIT NCD-4990

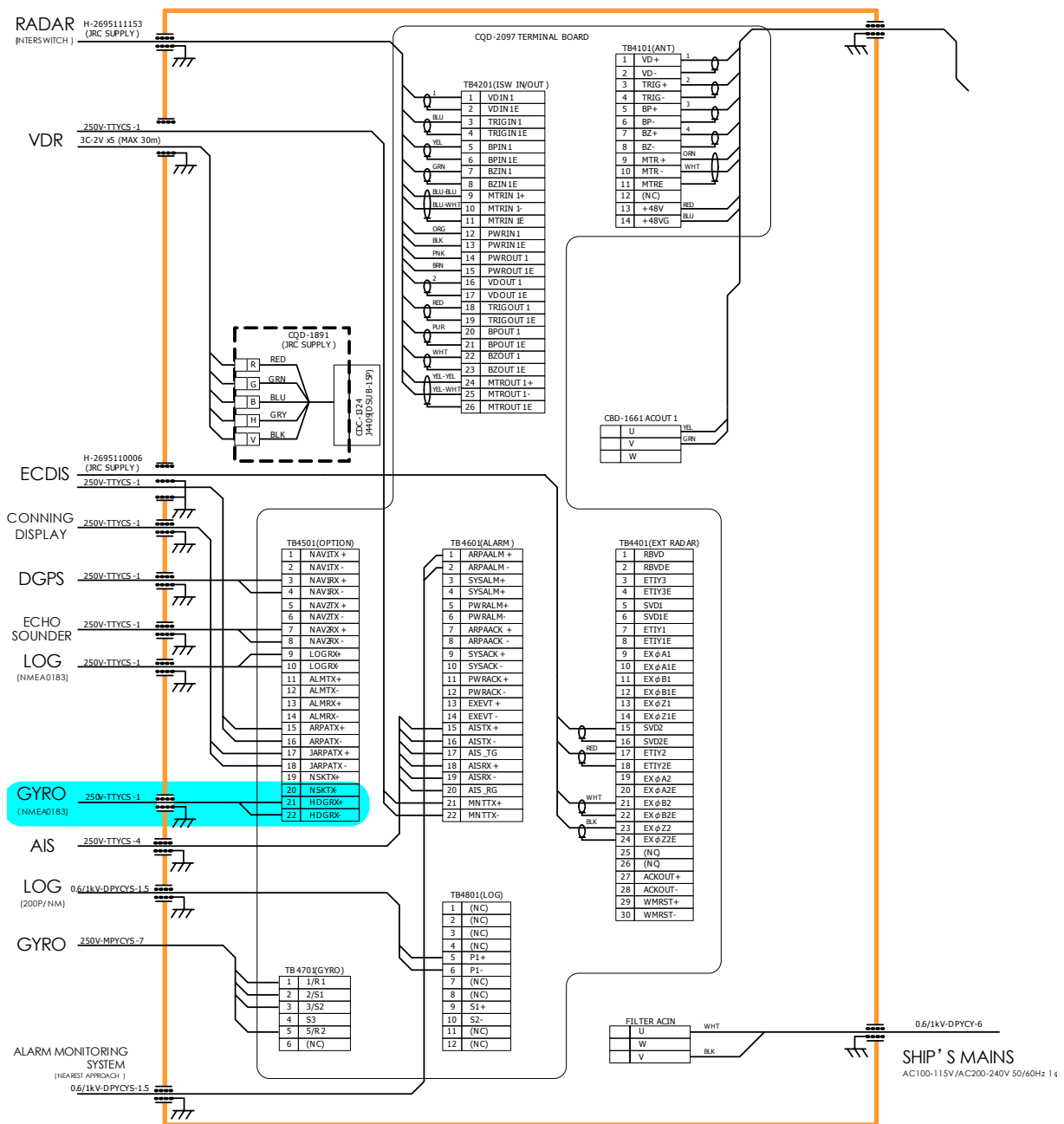


Fig 3-27: GYRO(IEC61162-1/2) Connecting terminal block

Operation check is possible by the use of the LED on the terminal board circuit CQD-2097. See Section 3.12.1 Serial Signal.

# 3.8

## CONNECTIONS WITH AIS

Connect the AIS to TB4601(AISTX+,AISTX-,AIS\_TG,AISRX+,AISRX-,AIS\_RG) of terminal board circuit CQD-2097 located in the display unit (processing unit).

Signal name AIS\_TX is an output from this radar display unit. Connect the signal to the reception port of the AIS display.

Signal name AIS\_RX is an input to this radar display unit. Connect the signal to the transmission port of the AIS display.

3

DISPLAY UNIT NCD-4990

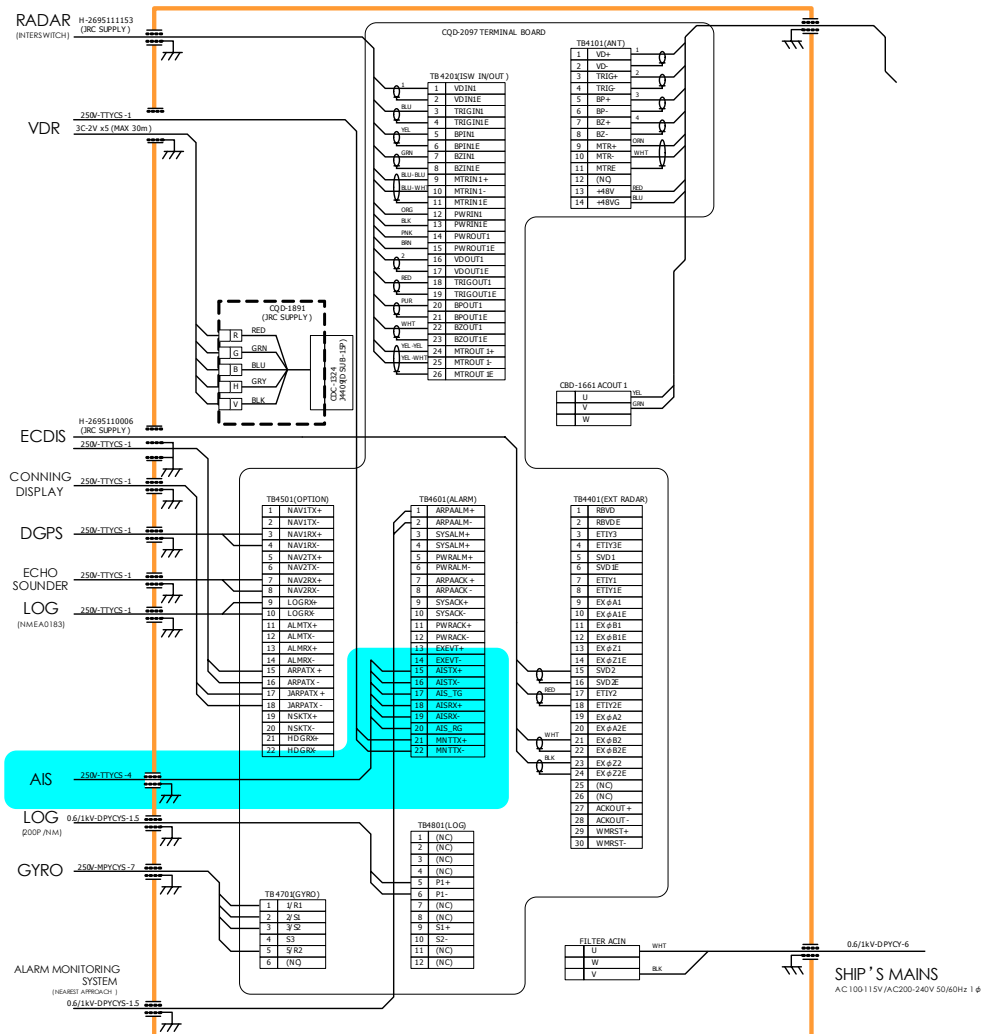


Fig 3-28: AIS Connecting terminal block



# 3.9

## CONNECTIONS WITH ECDIS

The radar video signal is outputted to ECDIS from TB4401 of terminal board circuit CQD-2097 located in the display unit (processing unit). Connect ECDIS to (SVD2, SVD2E, ETIY2, ETIY2E, EXφB2, EXφB2E, EXφZ2, and EXφZ2E).

Target tracking information is outputted to ECDIS from TB4501(ARPATX+,ARPATX-) of terminal board circuit CQD-2097 located in the display unit (processing unit). Target tracking information is outputted from JARPATX+ and JARPATX- in the JRC format.

3

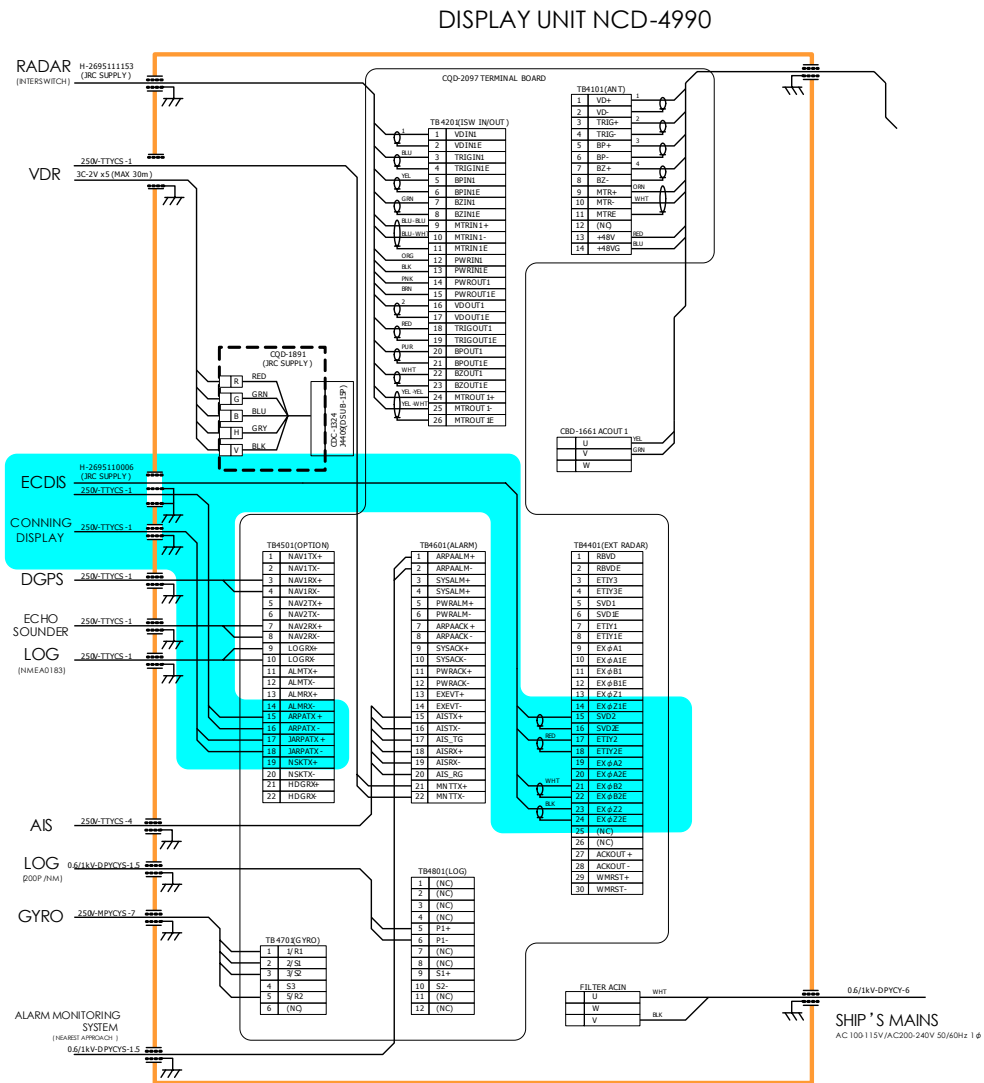


Fig 3-30: ECDIS ECDIS Connecting terminal block





- 3) *Select the communication port through which the sentence to be set is output.*

**Settable sentences**

TTM(TT), TLL(TT), TTD(TT), TLB(TT), OSD, RSD, ALR, ACK, TTM(AIS), TLL(AIS), TTD(AIS), TLB(AIS), RemoteMaintenance, JRC-ARPA, APB, BOD, GGA, GLL, RMC, RMB, VTG, XTE, BWC, HDT, THS

**Selectable ports**

MAINTENANCE/LOG, NAV1, NAV2, ALARM, JARPA, ARPA, COM

- 4) *Select the output format, talker, and transmission interval.*

Signals for which the above items can be set:

**NMEA0183 Output Format**

Signal names: APB, BOD, GGA, GLL, RMC, RMB,VTG, XTE, BWC, HDT

Options: V1.5 V2.0 V2.3

**NMEA0183 Talker**

Signal names: APB, BOD,RMB, XTE, BWC, HDT

Options: STANDARD: The talker is RA.

GP: The talker is GP.

\*For TTM, TLL, OSD, RSD, and ALR, the talker is always RA .

\*For GGA, GLL, RMC, and VTG, the talker is always GP.

**NMEA0183 TX Interval**

Signal names: APB, BOD, GGA, GLL, RMC, RMB,VTG, XTE, BWC, HDT

Options: Set an interval in the range 1 to 9 seconds.

# 3.10

## CONNECTION WITH ALARM MONITORING SYSTEM

This radar display unit has input/output functions for various contact signals intended for the alarm monitoring system. Connect necessary signals by referring to 6.3INTER-BOARD CONNECTION DIAGRAM.

Table3-2 : Contact Signal Input/Output

Terminal block	Signal name	Direction	Description	Note
TB4601	SYSALM	OUT	System alarm status is outputted.	Logic can be reversed by the short plug position of TB11. Default is Normally Closed.
	ARPAALM	OUT	Dangerous ship alarm status is outputted.	Logic can be reversed by the short plug position of TB12. Default is Normally Closed.
	PWRALM	OUT	Disconnection of Ship's Main is detected. DC24V must be connected to CBD-1661 for backup.	Logic can be reversed by the short plug position of TB10. Default is Normally Closed.
	SYSACK	IN	Acknowledge input of system alarm	"False" indicates Open or Disconnection and "True" indicates Closed.
	ARPAACK	IN	Acknowledge input of dangerous ship alarm	"False" indicates Open or Disconnection and "True" indicates Closed.
	PWRACK	IN	Acknowledge input of PWR alarm	"False" indicates Open or Disconnection and "True" indicates Closed.
	EVENT	IN	Used for inputting various events.	
TB4401	ACKOUT	OUT	The ACK signal is outputted in conjunction with the keyboard's ALM ACK key.	Logic can be reversed by the short plug position of TB13. Default is Normally Closed.
	WMRST	OUT	WatchMan alarm reset signal	



# 3.11 EXAMPLE OF WIRING IN THE DEVICE

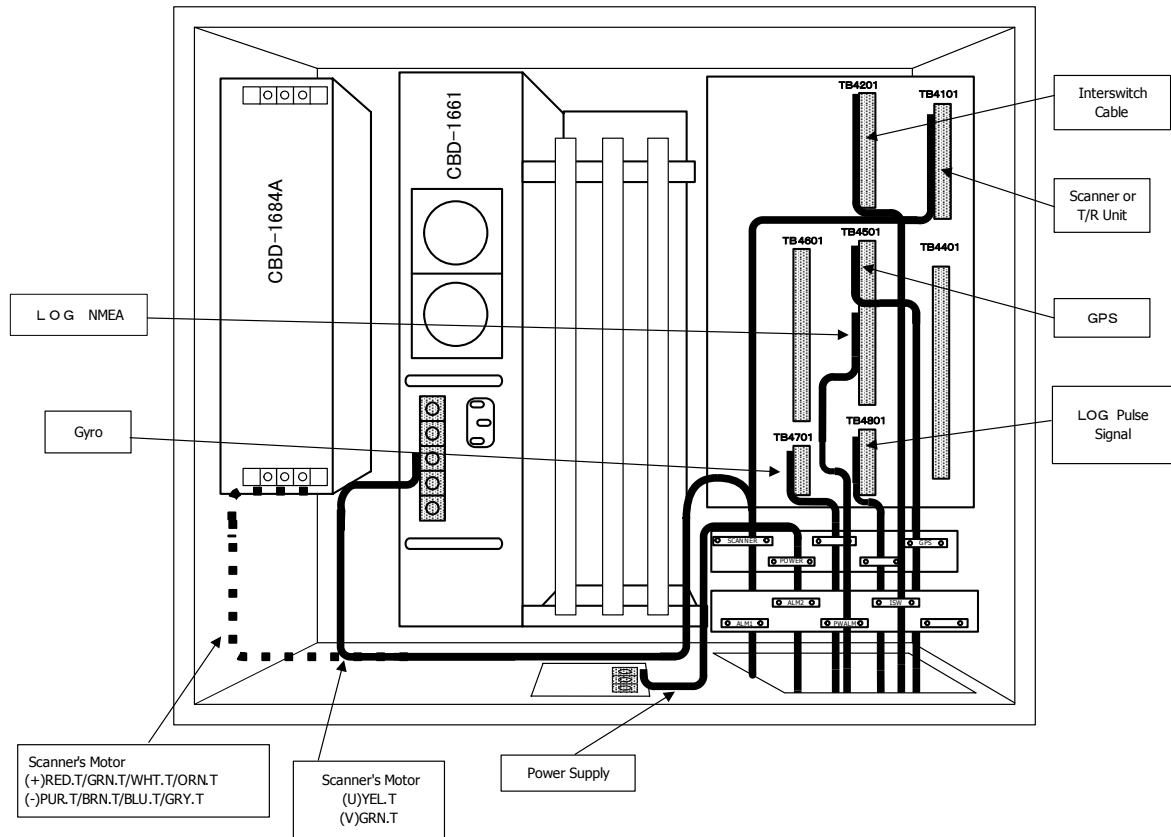


Fig 3-33: Example of actual wiring



### 3.12.1 Serial Signal

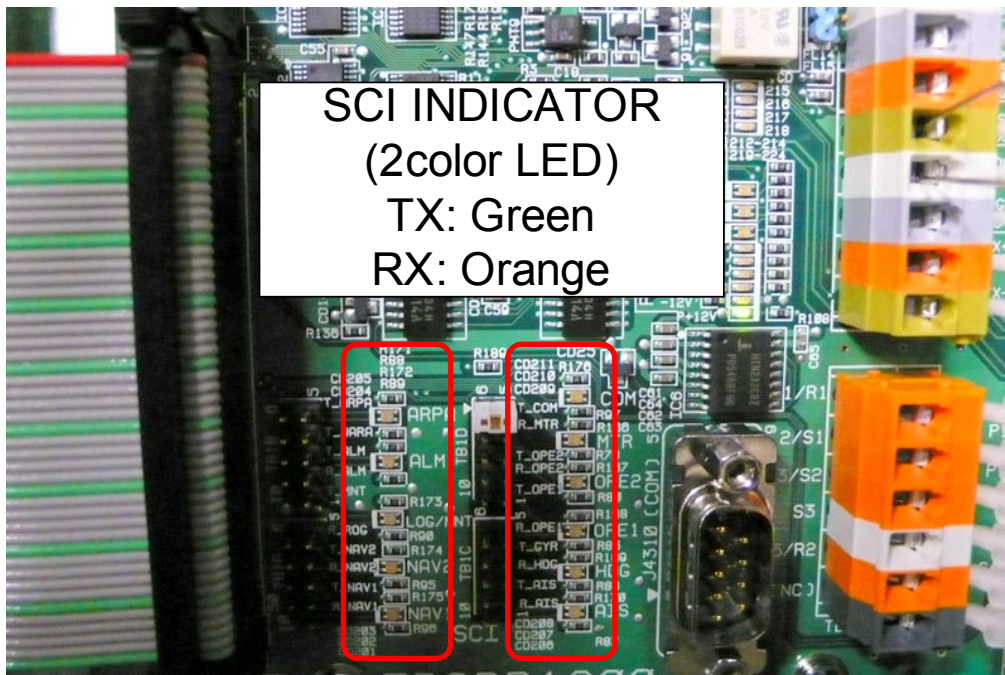


Fig 3-35: Serial Signal Monitor LED

Two color LED: orange and green

An orange LED turns on for reception and a green LED turns on for transmission.

Refer to the function name displayed on the right of each LED.

If an orange LED does not go out although connection has been made and no signal is received, polarity at the connection has been reversed. Properly connect so that the LED is normally turned off but turns on when communication data is present.

Depending on the connected device, the baud rate and signal update rate may be fast. In that case, the LED appears to be turned on.

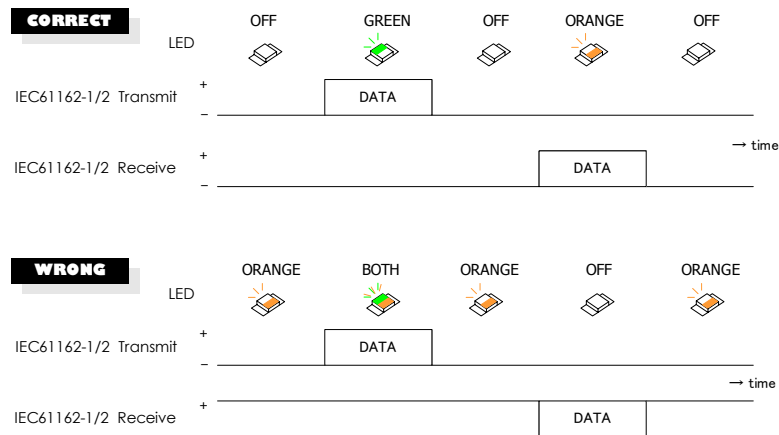


Fig 3-36: Serial Signal LED(when connected to the reception port with reversed polarity)

### 3.12.2 Power supply status

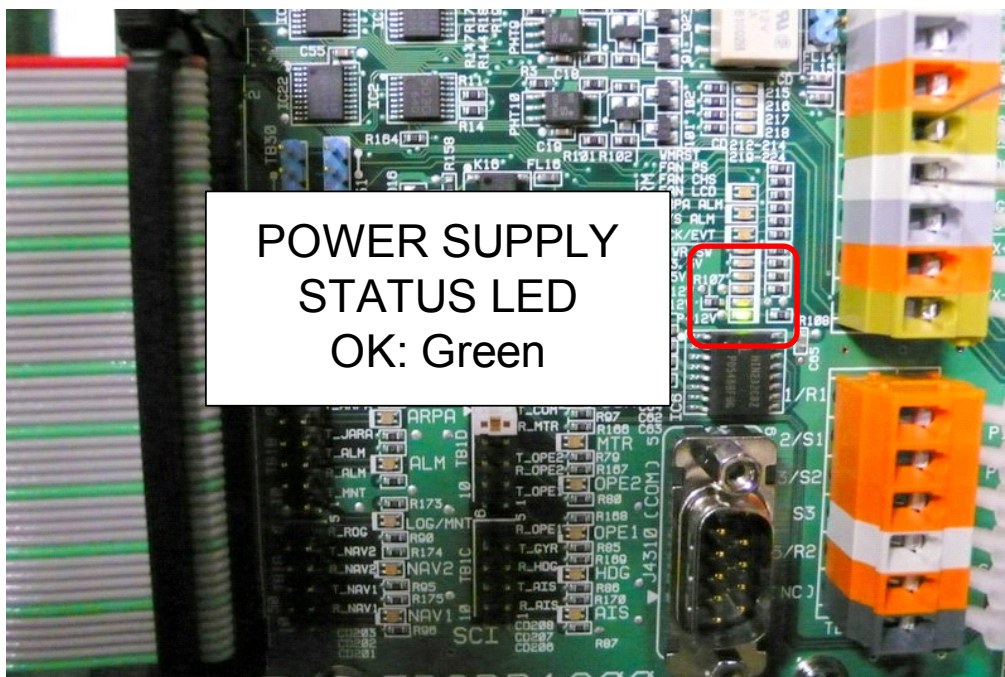


Fig 3-37: Power Supply Status LED

A green LED illuminates during normal operation.

Light turns off in case of an abnormality.



### 3.12.3 Alarm Signal

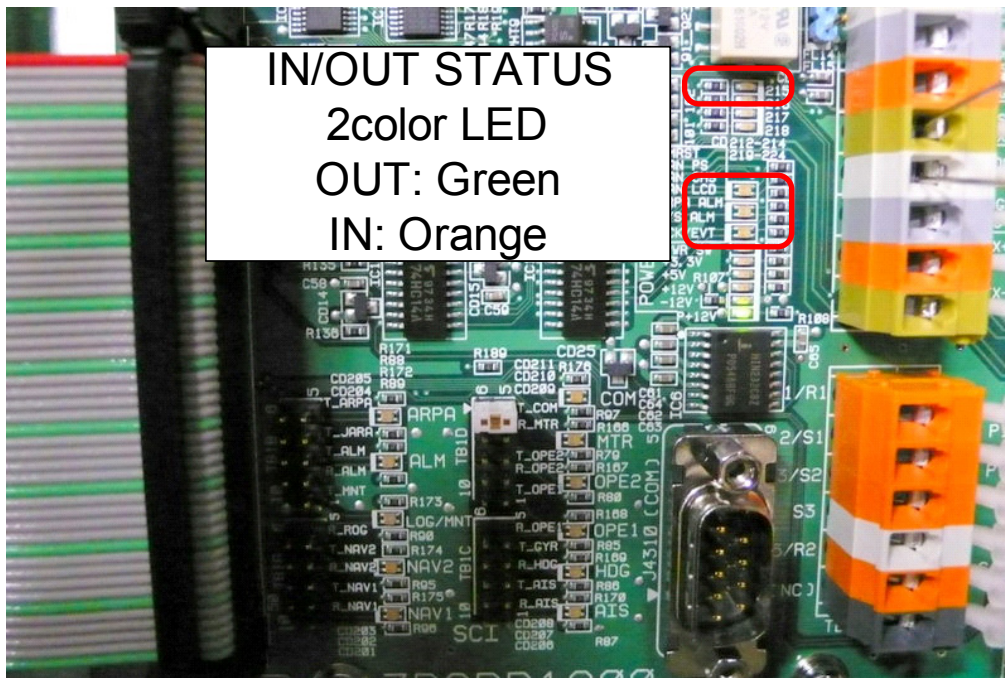


Fig 3-38: Contact Signal Monitor LED

Contact signal conditions are displayed.

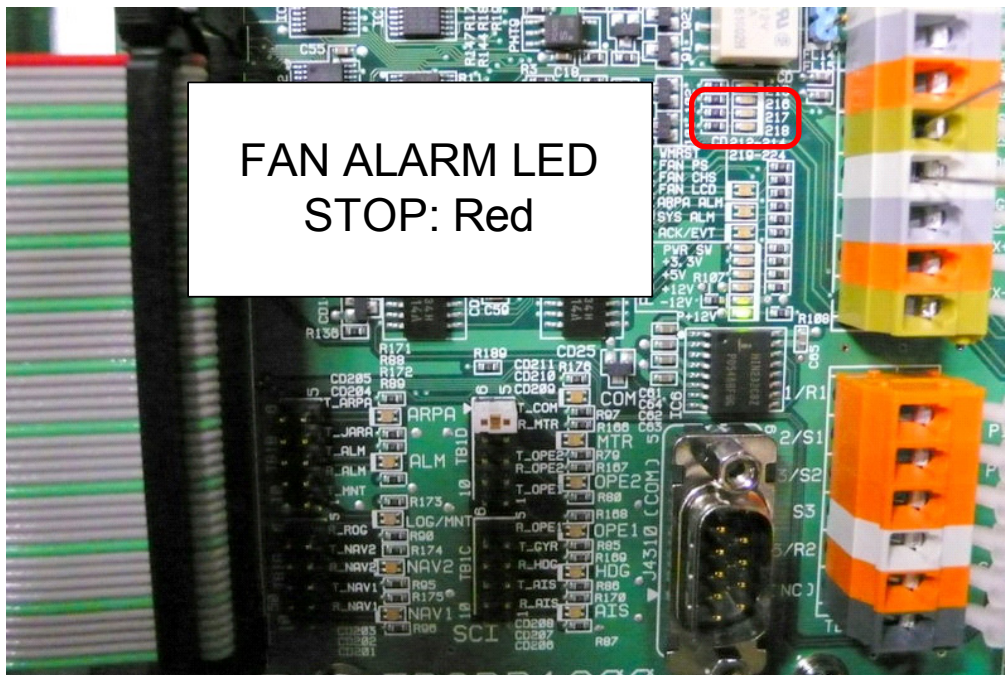
Input is indicated when an orange light is illuminated, and output is indicated when a green light is illuminated.

The logic which turns on the LED is not reversed even if the output signal logic is switched.

WMRST, ARPAALM/ACK, SYSALM/ACK, and ACKOUT/EVENT are indicated from top down.



### 3.12.4 Fan Alarm



3

Fig 3-39: Fan Alarm Monitor LED

This LED is turned off during normal operation.

A red light is turned on when the fan stops operating.

From top down, the CBD-1661 power-supply unit fan, processing unit fan, and monitor unit fan are indicated.



# SECTION 4 INITIAL SETTING

## INITIAL SETTING

4.1	GYRO INTERFACE SETTING .....	4-2
4.1.1	GYRO INPUT SETTING (STEP/SYNC setting) .....	4-2
4.1.2	NMEA Input setting .....	4-5
4.2	TUNE ADJUSTMENT .....	4-7
4.3	BEARING ADJUSTMENT .....	4-8
4.4	RANGE ADJUSTMENT .....	4-9
4.5	NAVIGATOR SETTING .....	4-10
4.6	TRUE BEARING SETTING .....	4-11
4.7	ANTENNA HEIGHT SETTING .....	4-12
4.8	CCRP SETTING .....	4-13
4.9	MAIN BANG SUPPRESSION SETTING .....	4-14
4.10	PERFORMANCE MONITOR SETTING .....	4-16
4.11	DATE/TIME DISPLAY SETTING .....	4-18
4.12	INITIALIZATION OF SCANNER OPERATION TIME .....	4-20



## Opening the [Service Man Menu] screen

### Procedures

- 1) Use left key to hold down [Main] button located at the bottom right on the screen.

The [CODE Input] screen will appear.

- 2) Left-click 0 button.

- 3) Left-click ENT button.

The [Service Man Menu] screen will appear.

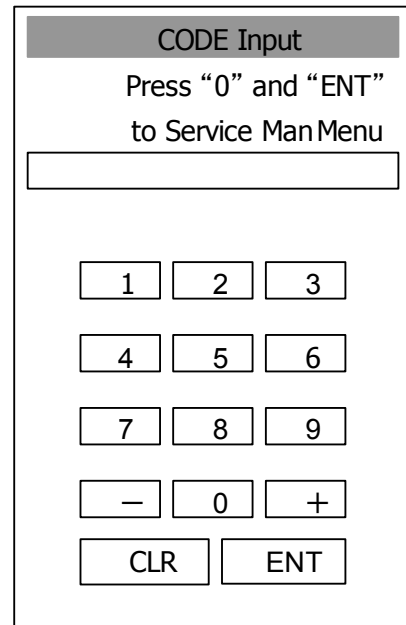


Fig 4-1: Code Input

# 4.1 GYRO INTERFACE SETTING

## 4.1.1 GYRO INPUT SETTING (STEP/SYNC setting)

The gyro interface circuit of this apparatus is designed to be compatible with almost all types of gyro compasses by flipping of a switch.

Step-motor type: DC24V to DC100V

Synchro-motor type: The primary excitation voltage is AC50V to 115V

Before the power is turned on, switches S1, S2, S5, S6, S7 and jumper JP1 on the gyro interface circuit (PC4201) shall be set in accordance with the type of the compass being used according to the procedures described below. Those have been set at the gyration ratio of 180X and are compatible with the step type before delivery from factory. Be sure to check the type of the gyro compass used in own ship and make settings according to the procedures below.

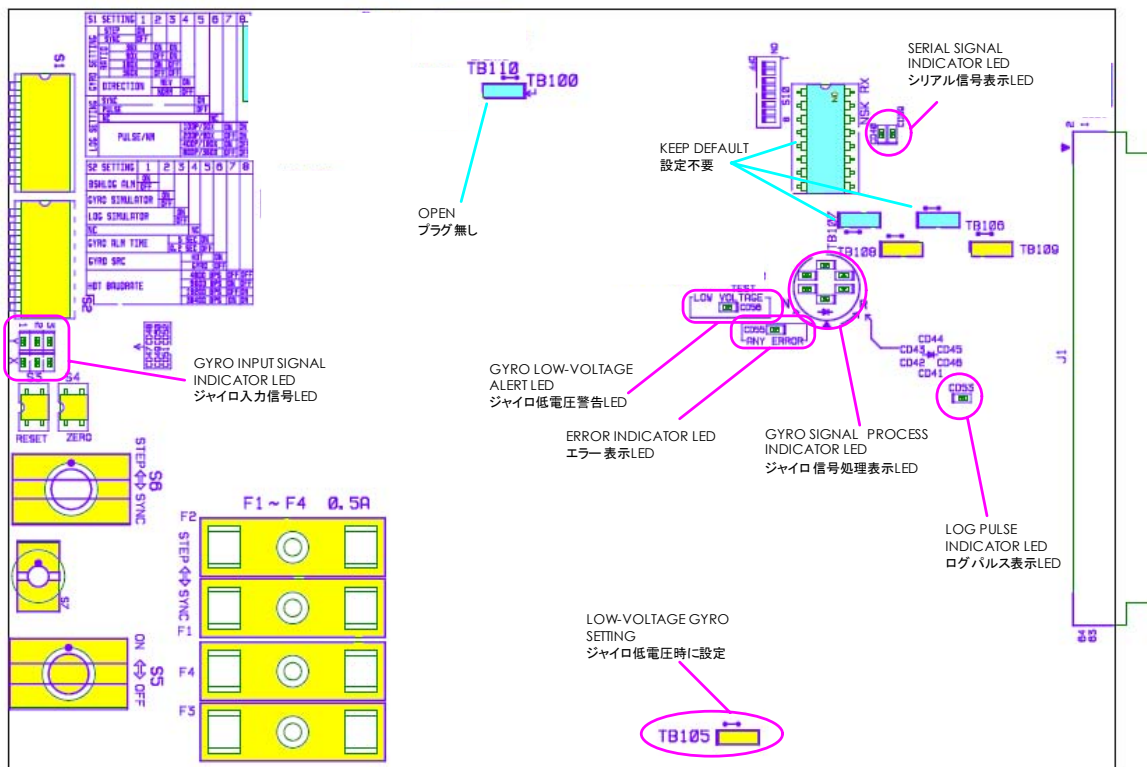


Fig 4-2: Gyro Interface Circuit Setting Location

## Procedures

- 1) Set S5 at [OFF].

The connection between the gyro compass and the gyro interface are shut off.

- 2) Set S6/S7 in accordance with the type of the compass being used.

There are two types of gyro compasses: one type outputs a step signal and the other outputs a synchro signal. Confirm the type of the gyro compass used on own ship before setting the S6/S7.

Synchro signal: On the [SYNC] side

Step signal: On the [STEP] side

- 3) Set dip switch S1 in accordance with the type of the compass being used.

Items to be set are described below. For settings, see Table4-1 : Gyro and Log Select Switches (S1 Dip Switch).

S1-1: Type of gyro signal (step/synchro)

S1-2/3: Gyration ratio of gyro compass

S1-4: Gyration direction of gyro compass

S1-5: Type of log signal (pulse/synchro)

S1-7/8: Log signal ratio

- 4) Confirm the settings for dip switch S2.

Items to be set are described below. For settings, see Table4-2 : Gyro and Log Select Switches (S2 Dip Switch).

1	2	3	4	5	6	7	8
ON	OFF	OFF	OFF	ON	OFF	ON	OFF

- 5) Confirm the settings for dip switch S10.

Items to be set are described below. Do not change the settings.

1	2	3	4	5	6	7	8
OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

6) *Set jumper TB105.*

Settings for TB105 are intended for the use of a low-voltage step signal.

Between 1 and 2: Normally used

Between 2 and 3: Set for the step signal of 22V or less

7) *Connect the gyro signal cable and the log signal cable to the terminal block.*

8) *Set S5 at [ON].*

The gyro compass is connected to the gyro interface.

9) *After the power has been turned on, conduct operation check by setting radar image and the value of true bearing.*

See Section4.6 TRUE BEARING SETTING for setting the value of true bearing.

10) *If own ship's true bearing value is reversed, change S1-4.*

Table4-1 : Gyro and Log Select Switches (S1 Dip Switch)

		1	2	3	4	5	6	7	8	
GYRO SIG	STEP	ON								
	SYNC	OFF								
	360X		OFF	OFF						
	180X		ON	OFF						
	90X		OFF	ON						
	36X		ON	ON						
	DIRECTION		REV		ON					
		NOR		OFF						
LOG SIG	TYPE	SYNC				ON				
		PULSE				OFF				
	PULSE	Don't care						OFF		
	PULSE/NM	800P / 360X							OFF	OFF
		400P / 180X							ON	OFF
		200P / 90X							OFF	ON
100P / 30X							ON	ON		



Table4-2 : Gyro and Log Select Switches (S2 Dip Switch)

S2 SETTING TABLE		1	2	3	4	5	6	7	8
OTHER SETTING	LOG ALARM	ON							
		OFF							
	GYRO SIMULATOR	ON							
		OFF							
	LOG SIMULATOR	ON							
		OFF							
	N.A.	Don't care		any					
	GYRO ALARM TIME	5s				ON			
		0.2s				OFF			
	HEADING SENSOR SOURCE			NMEA(HDT/THS)		ON			
				GYRO SIGNAL		OFF			
	NMEA BAUDRATE SETTING			4800			OFF	OFF	
		9600			ON	OFF			
		19200			OFF	ON			
		38400			ON	ON			




### 4.1.2 NMEA Input setting

Sentences HDT and THS are effective.

The baud rate can be selected from either 4800, 9600, 19200, or 38400.

Data must be updated within 60 ms. The sensor which outputs updated data with an interval longer than 60 ms cannot be used. (An error is indicated)

#### Procedures

- 1) To activate NMEA Input, set S2-6 at [ON].
- 2) Set the baud rate for S2-7,8 in accordance with the heading sensor signal output specifications.
- 3) Make sure that the short plug of TB108 and 109 is located in the opposite position of the standard position printed on the board. If it is inserted in the default position (1-2), change it to the position between 2 and 3 as shown in  4-3 "TB108, TB109."

\*When NMEA Input is activated, settings for 1-4 of S1 do not influence operation. (Don't care)

\*Do not change settings for 1-5 of S2 from default settings made upon shipment.

(1-2-3-4-5 → ON-OFF-OFF-OFF-ON)

\*With regard to the settings for 5-8 of S1, when there is a log to be connected, set an appropriate type and ratio in accordance with the log.

\*When NMEA Input is enabled, the true bearing value in Section 4.6 TRUE BEARING SETTING cannot be set.

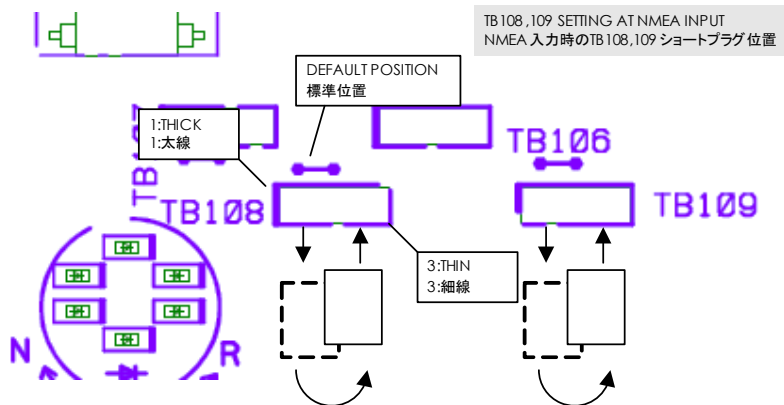


Fig 4-3: TB108, TB109

## 4.2 TUNE ADJUSTMENT

Tune control of the transmitter and the receiver is conducted.

This adjustment is made at the installation and the replacement of magnetron.

### Procedures

- 1) *Open the [Service Man Menu] screen.*
- 2) *Open the [1.Tune Adjustment] screen according to the operation shown below.*

1. Adjust Menu

→ 1. Tune Adjustment

For how to input values on the value input screen, see Section 3.3.4 in the instruction manual.

- 3) *Operate the + or - button to set the tune adjustment value so that the tune bar at the upper left on the screen is maximized.*
- 4) *Left-click the ENT button to confirm the value.*

## 4.3 BEARING ADJUSTMENT

Adjust the bearing so that bearing of the target measured by the ship's compass matches the bearing of the target image shown on the radar screen.

### Procedures

- 1) *Select the bearing display [H UP] mode. Set Image Processing (PROC) at OFF.*
- 2) *Use own ship's compass to measure the bearing of an appropriate target (for example, a ship at anchor, a breakwater or a buoy) relative to the heading of the own ship.*
- 3) *Open the [Service Man Menu] screen.*
- 4) *Open the [2.Bearing Adjustment] screen according to the operation shown below.*

1. Adjust Menu

→ 2. Bearing Adjustment

For how to input values on the value input screen, see Section 3.3.4 in the instruction manual.

- 5) *Operate the + or - button to set the bearing adjustment value so that the target measured in procedure 2 is located in the appropriate bearing.*
- 6) *Left-click the ENT button to confirm the value.*

# 4.4

## RANGE ADJUSTMENT

Adjust the range so that the range of the target on the radar video screen is indicated correctly.

### Procedures

- 1) *Search the radar display for a known target of which range has been confirmed.*
- 2) *Open the [Service Man Menu] screen.*
- 3) *Open the [3.Range Adjustment] screen according to the operation shown below.*

1. Adjust Menu

→ 3. Range Adjustment

For how to input values on the value input screen, see Section 3.3.4 in the instruction manual.

- 4) *Operate the + or - button to set the range adjustment value so that the target measured in procedure 1 is located in the appropriate range.*
- 5) *Left-click the ENT button to confirm the value.*

# 4.5 NAVIGATOR SETTING

Set ON or OFF to indicate whether a navigator is connected to this apparatus or not. Only the navigator set at ON can be used.

## Procedures

- 1) *Open the [Service Man Menu] screen.*
- 2) *Open the [3.Device Installation] screen according to the operation shown below.*

2. Installation Menu

→ 9. Next

→ 3. Device Installation

- 3) *Set ON when a navigator is connected, and set OFF when a navigator is not connected.*

Gyro : Gyro (via gyro interface)

Compass : Compass (IEC61162 specification)

GPS Compass : GPS compass made by JRC

LOG : Log (via gyro interface)

2AXW : Log over water (IEC61162 specification)

2AXG : Log over ground (IEC61162 specification)

GPS : GPS(IEC61162 specification)

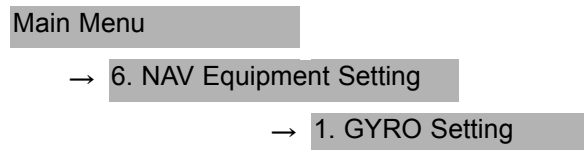
## 4.6 TRUE BEARING SETTING

When a gyro signal is inputted by using GYRO I/F, there is a rare case in which the true bearing value indicated by the master gyro does not match the true bearing value indicated by this apparatus.

In that case, make adjustments so that the true bearing value of this apparatus matches the true bearing value indicated by the master gyro.

### Procedures

- 1) *Open the [1.GYRO Setting] screen according to the operation shown below.*



- 2) *Enter the value indicated by the master gyro on the value input screen.*

For how to input values on the value input screen, see Section 3.3.4 in the instruction manual.

## 4.7 ANTENNA HEIGHT SETTING

Set the radar antenna height above sea level, but do not change this setting casually.

### Procedures

- 1) *Measure the height from the sea level to the radar antenna in advance.*
- 2) *Open the [Service Man Menu] screen.*
- 3) *Open the [1.Antenna Height] screen according to the operation shown below.*

1. Adjust Menu

→ 4. TXRX Adjustment

→ 1. Antenna Height

The Antenna Height menu will appear.

- 4) *Select the antenna height measured in procedure 1 from the pull-down menu.*



# 4.8 CCRP SETTING

Set the CCRP position of own ship and the installation position of the radar scanner and the GPS.

CCRP: Up to four locations can be inputted (select only one when in use)

Radar scanner: Up to eight scanners can be inputted (automatically selected according to operation of ISW)

GPS: Up to four locations can be inputted (select one when in use)

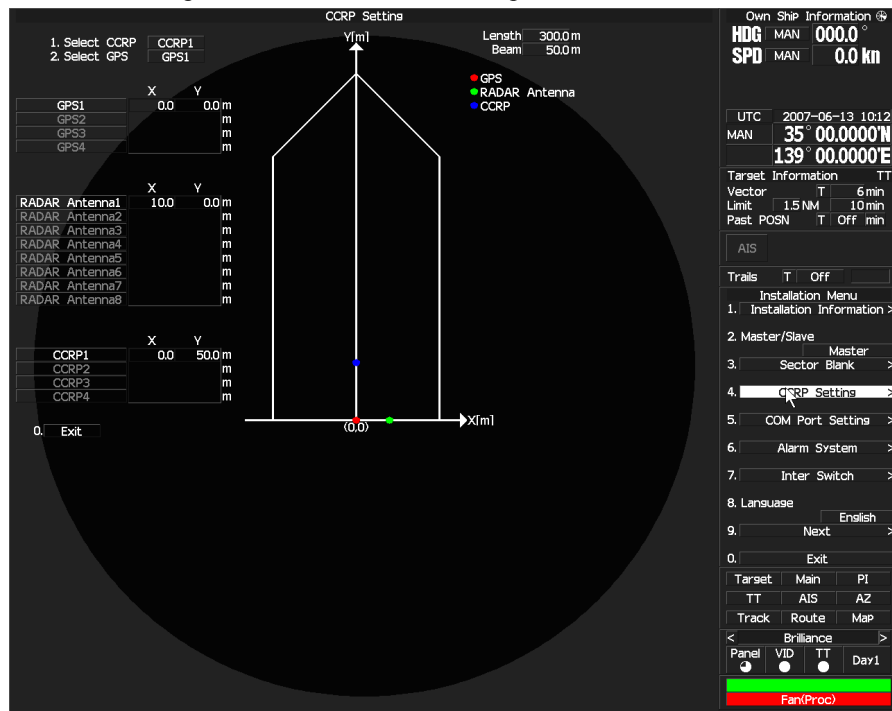
## Procedures

- 1) Measure the CCRP position, radar antenna position, and the GPS antenna position in advance.
- 2) Open the [Service Man Menu] screen.
- 3) Open the [4.CCRP Setting] screen according to the operation shown below.

### 2. Installation Menu

→ 4. CCRP Setting

Enter the hull length, hull width, GPS antenna position, radar antenna position, and the CCRP position, press 1.Select CCRP button and 2.Select GPS button located on the upper left on the screen to select the CCRP position and the GPS antenna position to be used.




- 4) Press 0.Exit button to finish input.

# 4.9

## MAIN BANG SUPPRESSION SETTING


Main Bang Suppression is adjusted to suppress main bang, a reflection signal from a 3D circuit including wave guide tube, which generally appears as a circular image focusing on the center of the radar display. Optimum adjustment allows main bang image to be dimly lit on the display.

This adjustment is made for settings in the processing circuit of the display unit.



### WARNING

Do not change this adjusted level casually.



Incorrect adjustment may erase targets located in point-blank range and may cause a collision resulting in death or serious injury

### [I] Main Bang Suppression Level Adjustment (MBS Level)

#### Procedures

- 1) *Open the [Service Man Menu] screen.*
  
- 2) *Open the [1.MBS Level] screen according to the operation shown below.*

9. RADAR/TT Initial Setup

→ 3. MBS

→ 1. MBS Level

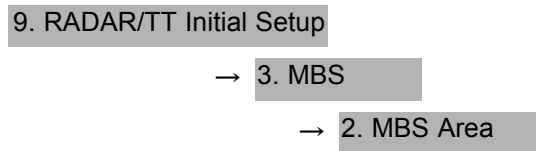
- 3) *Set the radar as shown below.*
  - Set the range to 0.125 nm.
  - Set the radar video enhance function (ENH) at OFF.
  - Set the correlation processing function (PROC) at OFF.
  - Rotate [RAIN] control to the minimum position (counterclockwise fully).

- Rotate [GAIN] control to the maximum position (clockwise fully).
  - Rotate the [SEA] control to achieve the strength with which main bang can be judged.
- 4) *Adjust the value to eliminate the main bang.*

[II] Main Bang Suppression Area Adjustment (MBS Area)

**Procedures**

- 1) *Open the [Service Man Menu] screen.*
- 2) *Open the [2.MBS Area] screen according to the operation shown below.*



- 3) *Set the radar as shown below.*
  - Set the range to 0.125 nm.
  - Set the radar video enhance function (ENH) at OFF.
  - Set the correlation processing function (PROC) at OFF.
  - Rotate [RAIN] control to the minimum position (counterclockwise fully).
  - Rotate [GAIN] control to the maximum position (clockwise fully).
  - Rotate the [SEA] control to achieve the strength with which main bang can be judged.
- 4) *Adjust the value to eliminate the main bang.*



# 4.10 PERFORMANCE MONITOR SETTING

When the following units are replaced, adjust the performance monitor according to the procedures shown in this section.

- Performance monitor
- Scanner unit

## [I] Receiving monitor adjustment (MON Adjustment)

Make adjustments of the circuit that monitors the reception performance of the radar apparatus.

### Procedures

- 1) When the radar apparatus has an inter-switch function, make settings for a master display unit.
- 2) Open the [Service Man Menu] screen.
- 3) Open the [4.MON Adjustment] screen according to the operation shown below.

1. Adjust Menu

→ 4. TXRX Adjustment

→ 4. MON Adjustment

- 4) Increase or decrease the adjustment value so that the farthest end of the MON pattern is 18.0 nm.

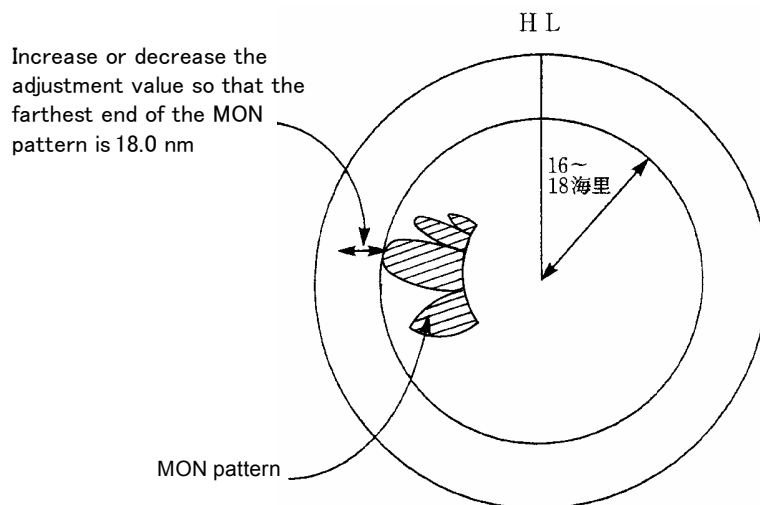


Fig 4-4: MON adjustment

## [II] Transmitting monitor adjustment (MON Indicator Adjustment)

Make adjustments of the circuit that monitors the transmission performance of the radar apparatus.

**Procedures**


- 1) *When the radar apparatus has an inter-switch function, make settings for a master display unit.*
- 2) *Open the [Service Man Menu] screen.*
- 3) *Open the [4.MON Indicator Adjustment] screen according to the operation shown below.*

1. Adjust Menu

→ 4. TXRX Adjustment

→ 4. MON Indicator Adjustment

- 4) *Increase or decrease the adjustment value so that the MON level indicates "8".*

MON 

<=> Adjust the level to 8.

- 5) *Attach INFORMATION LABEL included in the performance monitor at an appropriate location on the display unit board surface.*
- 6) *Write down the value of the MON bar and the check date on the INFORMATION LABEL.*



All target acquisitions by the ARPA function will be cancelled when MON is adjusted. The target acquisition cancelled will not be recovered.

# 4.11

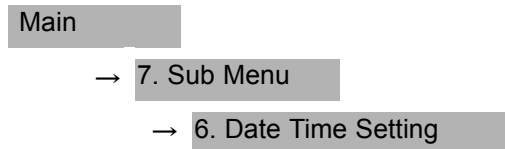
## DATE/TIME DISPLAY SETTING

To display the time, it is necessary to set the LOCAL TIME, LOCAL DATE and TIME ZONE.

When the "ZDA" sentence of NMEA0183 is received, Date/Time is displayed automatically.

### Procedures

- 1) *Open the [6.Date Time Setting] screen according to the operation shown below.*



The Date Time Setting menu will appear.

- 2) *Set the information about date and time.*

#### 1.UTC/LMT Time display

UTC : UTC(Coordinate Universal Time)

LMT : LOCAL(Local Mean Time)

#### 2.LMT Date

Enter date according to local date.

#### 3.LMT Time

Enter time according to local time.

#### 4.Time Zone

Enter the time difference between coordinate universal time and local time.

#### 5.Display Style

Set the preferred way the date is to be displayed.

YYYY-MM-DD Example:2007-12-31

MMM DD, YYYY Example:DEC 31, 2007

DD MMM, YYYY Example:31 DEC, 2007

## 6.Synchronize with GPS

By using the ZDA sentence sent from GPS, date and time synchronized with GPS are displayed.

On: Time is synchronized with GPS.

Off: Time is not synchronized with GPS.

Even if this item is set at On, if the ZDA sentence is not inputted, date and time are displayed by using the clock function provided in the apparatus.

# 4.12 INITIALIZATION OF SCANNER OPERATION TIME

This apparatus accumulates and stores the following operation time in the scanner.

- Transmission time
- Motor rotation time

The above accumulated time is initialized when magnetron is replaced, or an scanner motor is replaced.

## [I] Transmission time (Clear TX Time)

Transmission time of the scanner is initialized.

When magnetron is replaced, initialize transmission time according to the following procedures.

### Procedures

- 1) *Open the [Service Man Menu] screen.*
- 2) *Open the [1.Clear TX Time] screen according to the operation shown below.*

3. Maintenance Menu

→ 5. TXRX Time

→ 1. Clear TX Time

- 3) *Select YES on the confirmation screen.*

Transmission time stored in the control circuit located in the antenna is initialized to 0.



## [II] Motor rotation time (Clear Motor Time)

Motor rotation time of the scanner is initialized.

When an scanner motor is replaced, initialize motor rotation time according to the following procedures.

### Procedures

- 1) *Open the [Service Man Menu] screen.*
- 2) *Open the [2.Clear Motor Time] screen according to the operation shown below.*

3. Maintenance Menu

→ 5. TXRX Time

→ 2. Clear Motor Time

- 3) *Select YES on the confirmation screen.*

Motor rotation time stored in the control circuit located in the scanner is initialized to 0.

## [III] Storage of Scanner time (TXRX To Display Unit)

Scanner time that has been stored in the scanner is stored in the display unit.

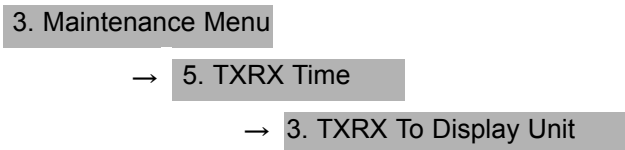
When a control circuit in the scanner is replaced, store scanner unit time according to the following procedures.

1. Storage of scanner time
2. Replacement of control circuit in the scanner unit
3. Recovery of scanner time

### Procedures

- 1) *Open the [Service Man Menu] screen.*

- 2) *Open the [3.TXRX To Display Unit] screen according to the operation shown below.*



- 3) *Select YES on the confirmation screen.*

Scanner time stored in the control circuit located in the scanner is transferred to the display unit and stored.

#### [IV] Recovery of scanner unit time (Display Unit To TXRX)

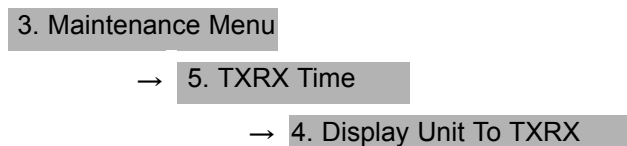
Scanner unit time stored in the display unit is recovered in the control circuit located in the scanner.

When a control circuit in the scanner is replaced, store scanner unit time according to the following procedures.

1. Storage of scanner time
2. Replacement of control circuit in the scanner unit
3. Recovery of scanner time

### Procedures

- 1) *Open the [Service Man Menu] screen.*
- 2) *Open the [4.Display Unit to TXRX] screen according to the operation shown below.*



- 3) *Select YES on the confirmation screen.*

Antenna time stored in the display unit is transferred to the control circuit located in the antenna and recovered.

# SECTION 5 OPTION UNIT

## OPTION UNIT

<b>5.1</b>	<b>INSTALLATION OF INTERSWITCH UNIT</b>	<b>5-1</b>
5.1.1	Equipment cable end processing	5-1
5.1.2	Plug terminal block connection procedures	5-2
5.1.3	Installation of interswitch unit	5-3
5.1.4	Setting	5-6
5.1.5	Confirmation after installation	5-10
5.1.6	Inter-board connection diagram	5-11
<b>5.2</b>	<b>INSTALLATION OF POWER CONTROL UNIT</b>	<b>5-13</b>
5.2.1	Connection with NKE-2103 type and NKE-2254-6HS type scanners	5-13
5.2.2	Connections to NKE-1125, NTG-3225, NKE-1130, and NTG-3230	5-15
5.2.3	Equipment cable end processing	5-15
5.2.4	End processing of each cable core	5-15
5.2.5	Connection to display unit	5-15
5.2.6	General system diagram of power control unit (JMA-7100)	5-17
5.2.7	General system diagram of power control unit (JMA-9100)	5-35
5.2.8	Inter-board connection diagram of power control unit	5-53
5.2.9	Exterior drawing of Power Control Unit	5-59
<b>5.3</b>	<b>INSTALLATION OF VDR</b>	<b>5-61</b>

5.3.1	Connections .....	5-61
5.3.2	VDR I/F kit .....	5-62
5.4	INSTALLATION OF SUB-OPERATION UNIT AND EXPANSION OF TRACKBALL	5-63
5.4.1	Sub Operation Unit .....	5-63
5.4.2	Expansion of trackball .....	5-64

# 5.1 INSTALLATION OF INTERSWITCH UNIT

## 5.1.1 Equipment cable end processing

### 1) *Equipment cable end processing*

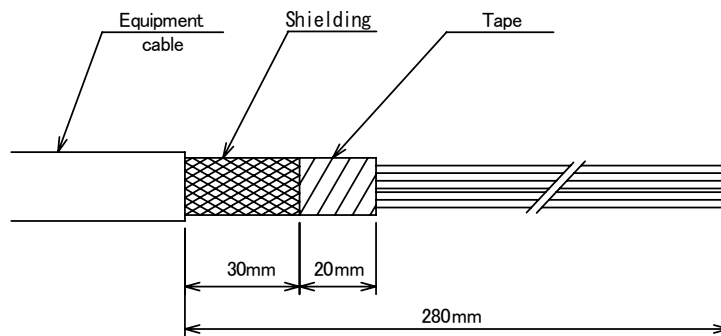


Fig 5-1: *Equipment cable end processing*

### 2) *End processing of each cable core*

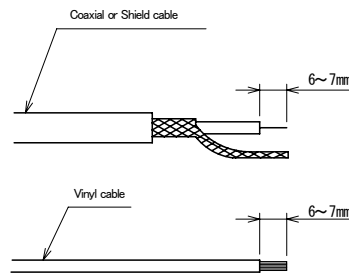


Fig 5-2: *End processing of each cable core*

### Connection of equipment cable

- 1) *Remove the cable retainer.*
- 2) *Connect each cable core to terminal board circuit TB4201 by referring to Section 5.1.6 Inter-board connection diagram. (For the method for connecting the plug terminal block, see Section 5.1.2 Plug terminal block connection procedures)*
- 3) *Securely mount the cable by using the cable retainer.*

## 5.1.2 Plug terminal block connection procedures

The terminal block of the display unit's terminal board circuit is a plug terminal block which does not require a crimp-type terminal. Connection procedures are described below.

- 1) *Use a tool, such as a flathead screwdriver, to press the control so as to open the inlet.*
- 2) *Check the length of the uninsulated portion of the electric wire and alignment, and then insert the electric wire until the end comes in contact with the rear.*
- 3) *Remove the tool from the control and securely tighten the cable. Properly connect the cable in reference to the inter-board connection diagram.*
- 4) *After the cable has been connected, gently tug the cable to ensure that it is securely fastened.*

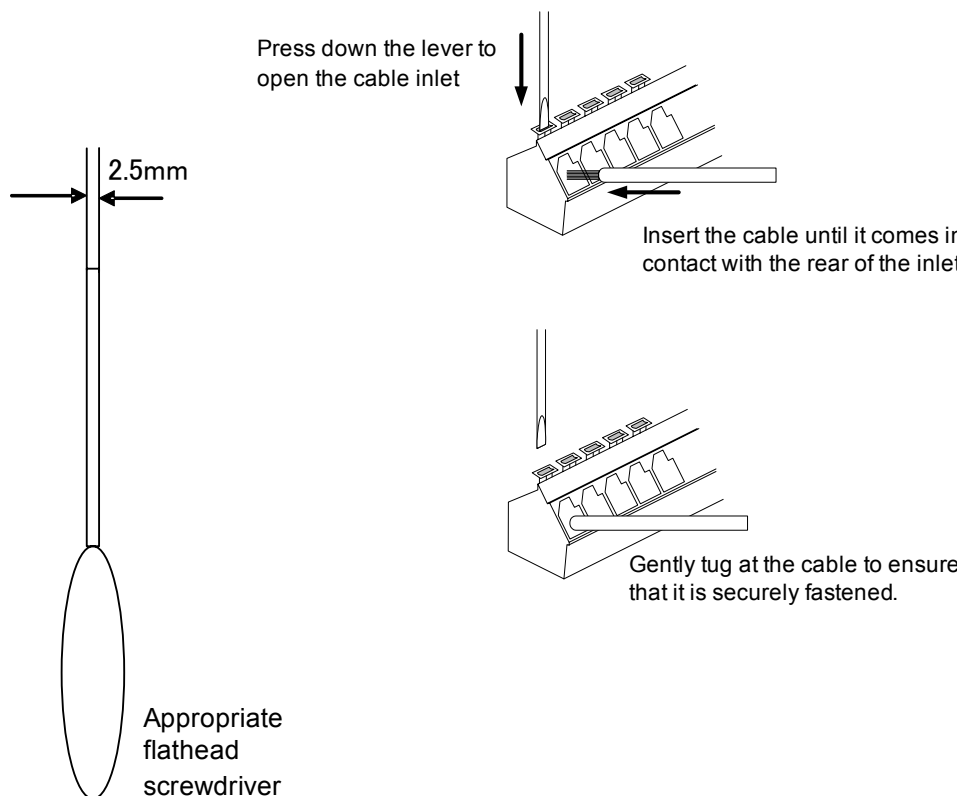


Fig 5-3: Plug terminal block connection procedures

### 5.1.3 Installation of interswitch unit

#### a. NQE-3141-2A

Basically, the interswitch unit is incorporated into the display unit and delivered with the wiring completed.

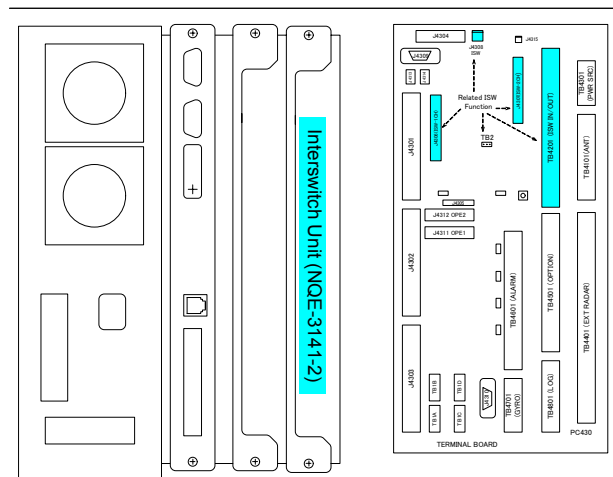
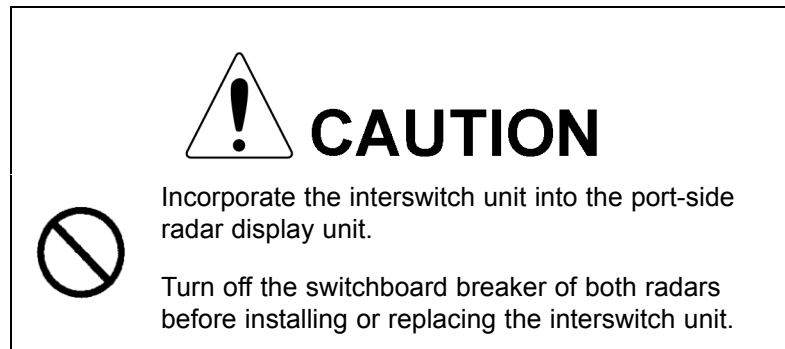


Fig 5-4: Device Arrangement

When incorporating interswitch unit NQE-3141-2A later, follow the procedures below.

- 1) Disconnect the cable (W404 H-7ZCRD1340A) connected between terminal board circuits J4306 (ISW-1CH) and J4307 (ISW-2CH) located on the port-side radar display unit.
- 2) Disconnect the cable (WZ,H-7ZCRD0970A) connected to connector J3 located on the interswitch board (CCL-304R) CH1 port and connect it to terminal board circuit J4306.
- 3) Disconnect the cable (WZ,H-7ZCRD0970A) connected to connector J3 located on the interswitch board (CCL-304R) CH2 port and connect it to terminal board circuit J4307.
- 4) Disconnect the cable (WZ,H-7ZCRD0971) connected to J1 in the power-supply section (CBD-1675) mounted in the interswitch unit and connect it to terminal board circuit J4308.
- 5) Incorporate the interswitch unit into a vacant slot of the rack (right end, see Fig 5-4: Device Arrangement).

- 6) *Connect the cable (2695111153) between terminal board circuit TB4201 located on the port-side radar display unit and on the starboard-side radar display unit.*

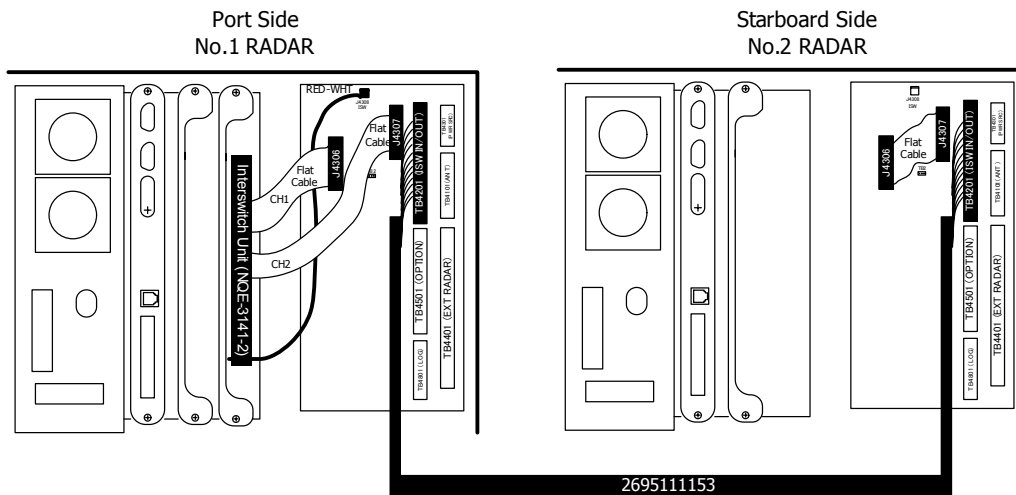


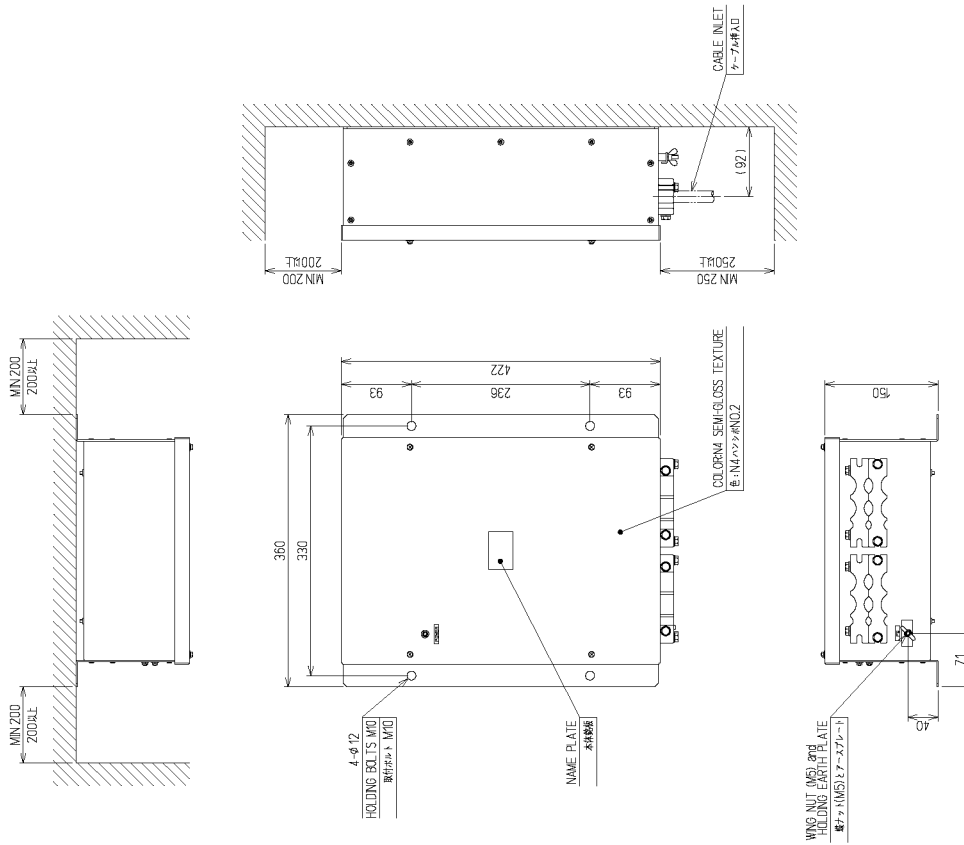
Fig 5-5: Installation of NQE-3141-2

- 7) *Confirm the installation. See Section 5.1.5 Confirmation after installation.*

**b. NQE-3141-4A**

- 1) *Securely ground the included earth plate to the hull's earth.*
- 2) *Connect the cable (2695111153) between interswitch unit NQE-3141-4A and terminal board TB4201 located on the each radar display unit. See Fig 5-13: NQE-3141-4A Inter-board connection diagram.*
- 3) *Confirm the installation. See Section 5.1.5 Confirmation after installation.*





OUTLINE DIMENSIONS		PERMISSIBLE OUTLINE DIMENSIONAL DEVIATIONS	PERMISSIBLE MOUNTING DIMENSIONAL DEVIATIONS
DIVER	TO		
3	6	±0.5	
6	30	±1	±0.5
30	120	±1.5	
120	400	±2.5	±1
400	1000	±4	
1000	2000	±6	±2
2000	4000	±8	±3

外形寸法		外形寸法 許容差	取付寸法 許容差
参考値	以下		
3	6	±0.5	
6	30	±1	±0.5
30	120	±1.5	
120	400	±2.5	±1
400	1000	±4	
1000	2000	±6	±2
2000	4000	±8	±3

MASS APPROX. 6 kg  
UNIT mm

質量 約 6 kg  
単位 mm

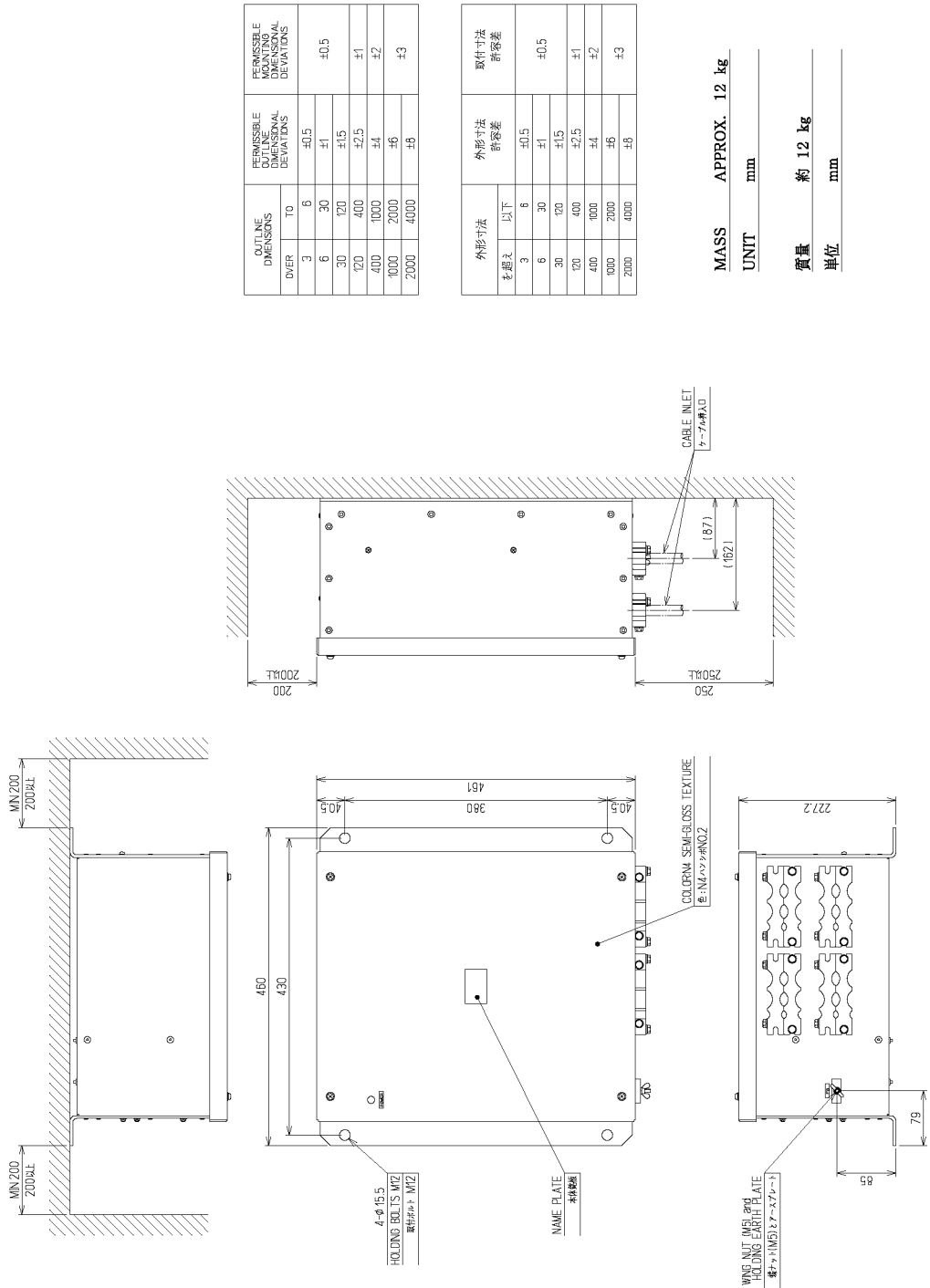
INTERSWITCH UNIT OUTLINE DRAWING

NQE-3141-4A

SCNQE5084

Fig 5-6: Exterior drawing of NQE-3141-4A

c. NQE-3141-8A



OUTLINE DIMENSIONS		PERMISSIBLE DIMENSIONAL DEVIATIONS
DIVER	TO	
3	6	±0.5
6	30	
30	120	±1.5
120	400	±2.5
400	1000	±4
1000	2000	±6
2000	4000	±6

外形寸法		外形寸法許容差	取付寸法許容差
寸法	以下		
3	6	±0.5	±0.5
6	30		
30	120	±1.5	±1
120	400	±2.5	±1
400	1000	±4	±2
1000	2000	±6	±3
2000	4000	±6	±3

MASS APPROX. 12 kg

UNIT mm

質量 約 12 kg

単位 mm

NQE-3141-8A

INTERSWITCH UNIT OUTLINE DRAWING

SCNQE5085

Fig 5-7: Exterior drawing of NQE-3141-8A

- 1) Securely ground the included earth plate to the hull's earth.
- 2) Connect the cable (2695111153) between interswitch unit NQE-3141-8A and terminal board TB4201 located on the each radar display unit. See Fig 5-13: NQE-3141-4A Inter-board connection diagram.
- 3) Confirm the installation. See Section 5.1.5 Confirmation after installation.

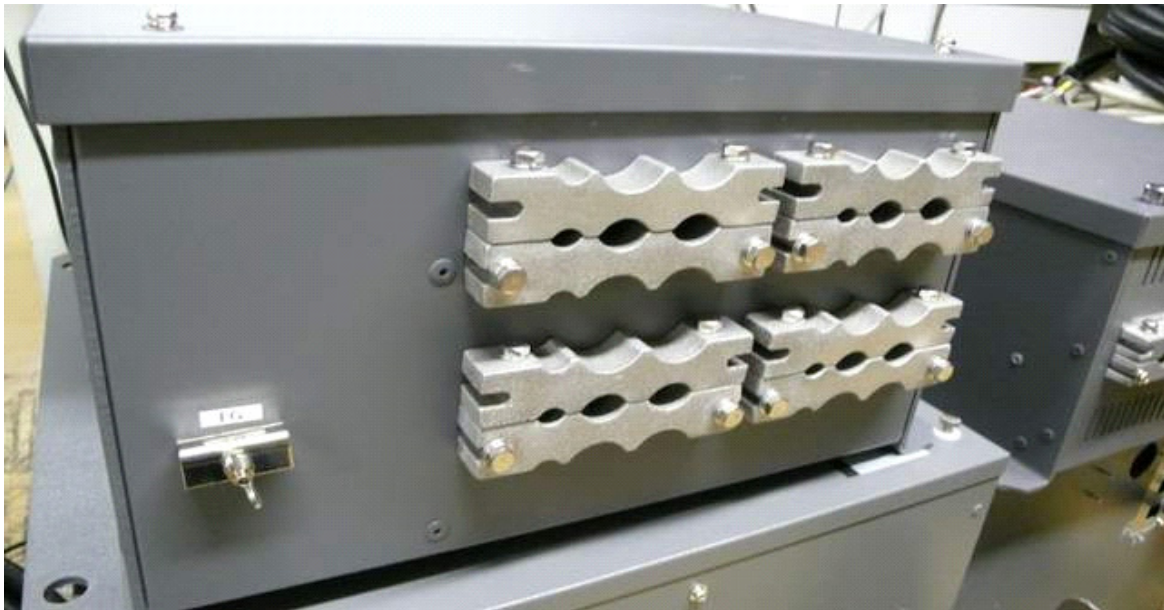


Fig 5-8: NQE-3141-8A Cable Entrance

### 5.1.4 Setting

Since settings have been normally made upon shipment from factory, it is advised to only confirm the settings.

#### a. Setting of NQE-3141-2A, NQE-3141-4A

Set dip switches SW11, SW12, and SW13 as shown below.

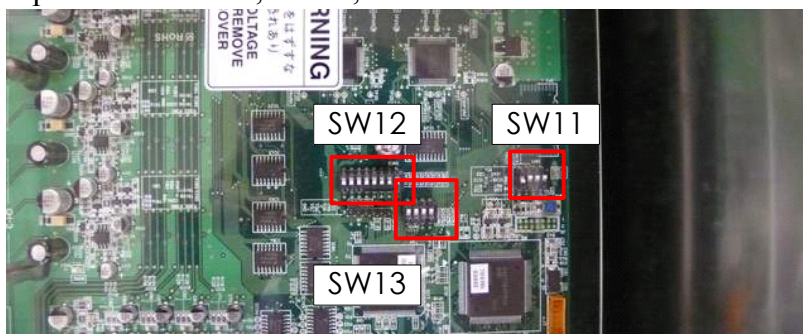
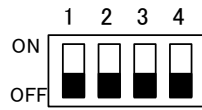


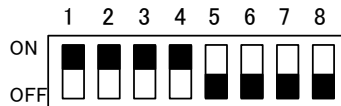
Fig 5-9: CML-304R DIP Switch

1) *SW11 setting (expansion mode, master/slave setting)*



Set all OFF.

2) *SW12 setting (radar connection setting)*



Radar Connection Setting

1	ON	No. 1 display unit connected
	OFF	No. 1 display unit NOT connected
2	ON	No. 1 antenna connected
	OFF	No. 1 antenna NOT connected
3	ON	No. 2 display unit connected
	OFF	No. 2 display unit NOT connected
4	ON	No. 2 antenna connected
	OFF	No. 2 antenna NOT connected
5	ON	No. 3 display unit connected
	OFF	No. 3 display unit NOT connected
6	ON	No. 3 antenna connected
	OFF	No. 3 antenna NOT connected
7	ON	No. 4 display unit connected
	OFF	No. 4 display unit NOT connected
8	ON	No. 4 antenna connected
	OFF	No. 4 antenna NOT connected

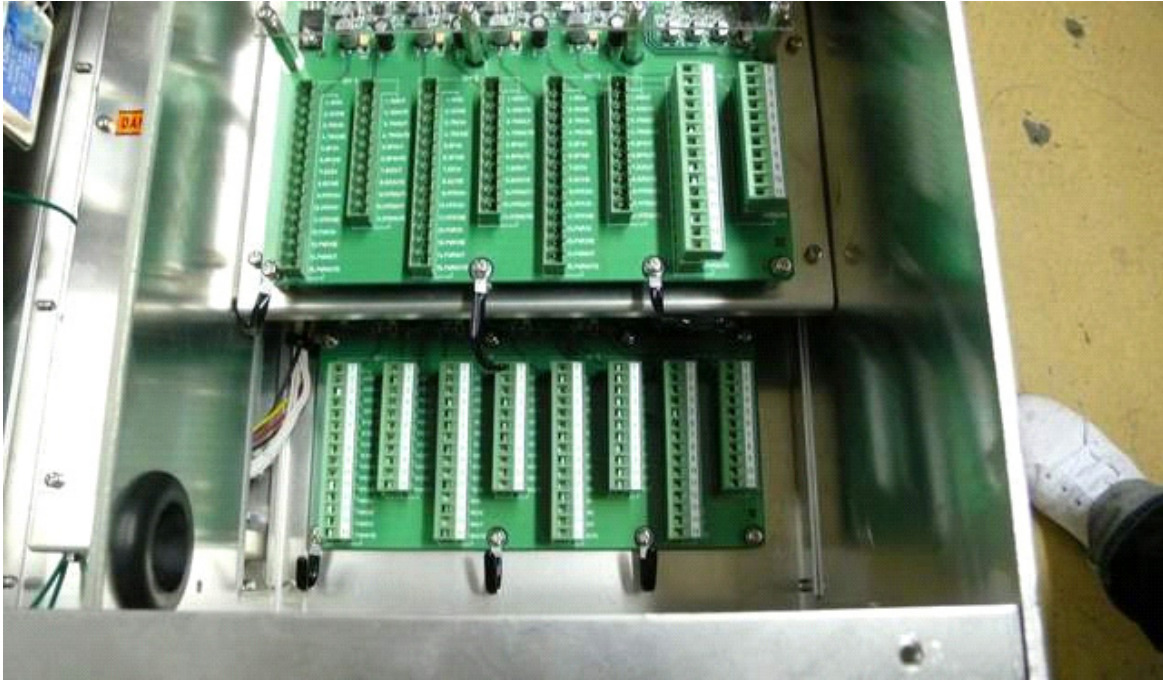
3) *SW13 (unused)*



Set all OFF.

**b. NQE-3141-8A setting**

The internal structure of NQE-3141-8A includes two units of CCL-304R in the two-storied structure.



5

Fig 5-10: NQE-3141-8A Internal structure

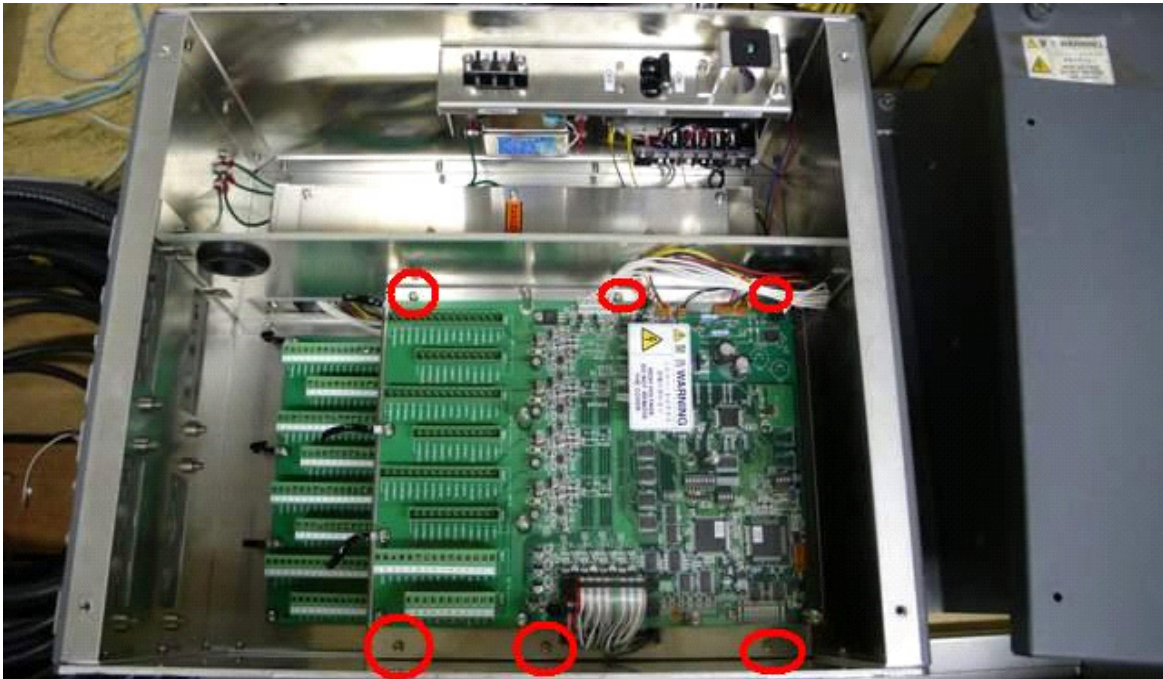


Fig 5-11: Access to Lower Board of NQE-3141-8A

- Although dip switch settings are basically the same as the settings shown in Fig 5-11: Access to Lower Board of NQE-3141-8A, it is necessary to make settings for each of the two SW12.
- It is necessary to remove six screws marked in the above drawing in order to access the first story portion.
- With regard to SW12 board located at the upper position, make settings for CH1 to CH4.
- With regard to SW12 board located at the lower position, make settings for CH5 to CH8.
- CH1 to CH4 displayed on the terminal block mean CH5 to CH8.
- Settings have been made for SW11 and SW13 upon shipment. Do not change those settings.

Factory default setting (bit1-bit2-bit3-bit4)

SW11-upper OFF-OFF-OFF-ON

SW11-lower OFF-OFF-ON-ON

SW13-both OFF-OFF-OFF-OFF

- Setting of upper CCL-304R, SW12 (radar connection setting)



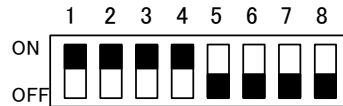
#### Radar Connection Setting

1	ON	No. 1 display unit connected
	OFF	No. 1 display unit NOT connected
2	ON	No. 1 antenna connected
	OFF	No. 1 antenna NOT connected
3	ON	No. 2 display unit connected
	OFF	No. 2 display unit NOT connected
4	ON	No. 2 antenna connected
	OFF	No. 2 antenna NOT connected
5	ON	No. 3 display unit connected
	OFF	No. 3 display unit NOT connected
6	ON	No. 3 antenna connected
	OFF	No. 3 antenna NOT connected



7	ON	No. 4 display unit connected
	OFF	No. 4 display unit NOT connected
8	ON	No. 4 antenna connected
	OFF	No. 4 antenna NOT connected

- Setting of lower CCL-304R, SW12 (radar connection setting)



### RadAR Connection Setting

1	ON	No. 5 display unit connected
	OFF	No. 5 display unit NOT connected
2	ON	No. 5 antenna connected
	OFF	No. 5 antenna NOT connected
3	ON	No. 6 display unit connected
	OFF	No. 6 display unit NOT connected
4	ON	No. 6 antenna connected
	OFF	No. 6 antenna NOT connected
5	ON	No. 7 display unit connected
	OFF	No. 7 display unit NOT connected
6	ON	No. 7 antenna connected
	OFF	No. 7 antenna NOT connected
7	ON	No. 8 display unit connected
	OFF	No. 8 display unit NOT connected
8	ON	No. 8 antenna connected
	OFF	No. 8 antenna NOT connected

### 5.1.5 Confirmation after installation

- 1) After having checked connections, turn on the switchboard breaker.
- 2) Turn on the power to the radar display unit, and make sure that the interswitch button is displayed on the screen and pressing the button will switch antennas.

- 3) When a system consists of two devices, make sure that both left and right radars conform to the screen indication.
- 4) When a system consists of three devices, make sure that the CH number and the display unit position are arranged as intended.

### 5.1.6 Inter-board connection diagram

- 1) NQE-3141-2A

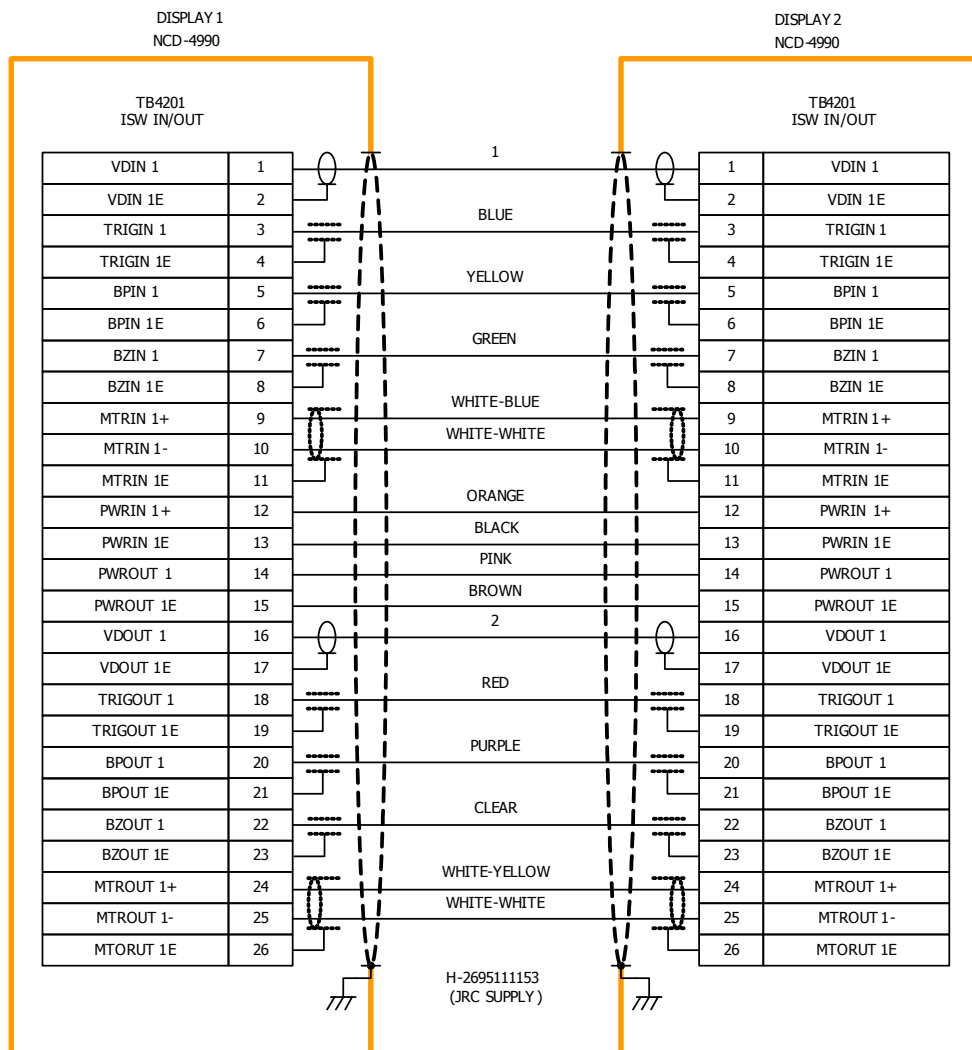


Fig 5-12: NQE-3141-2A Inter-board connection diagram



2) NQE-3141-4A

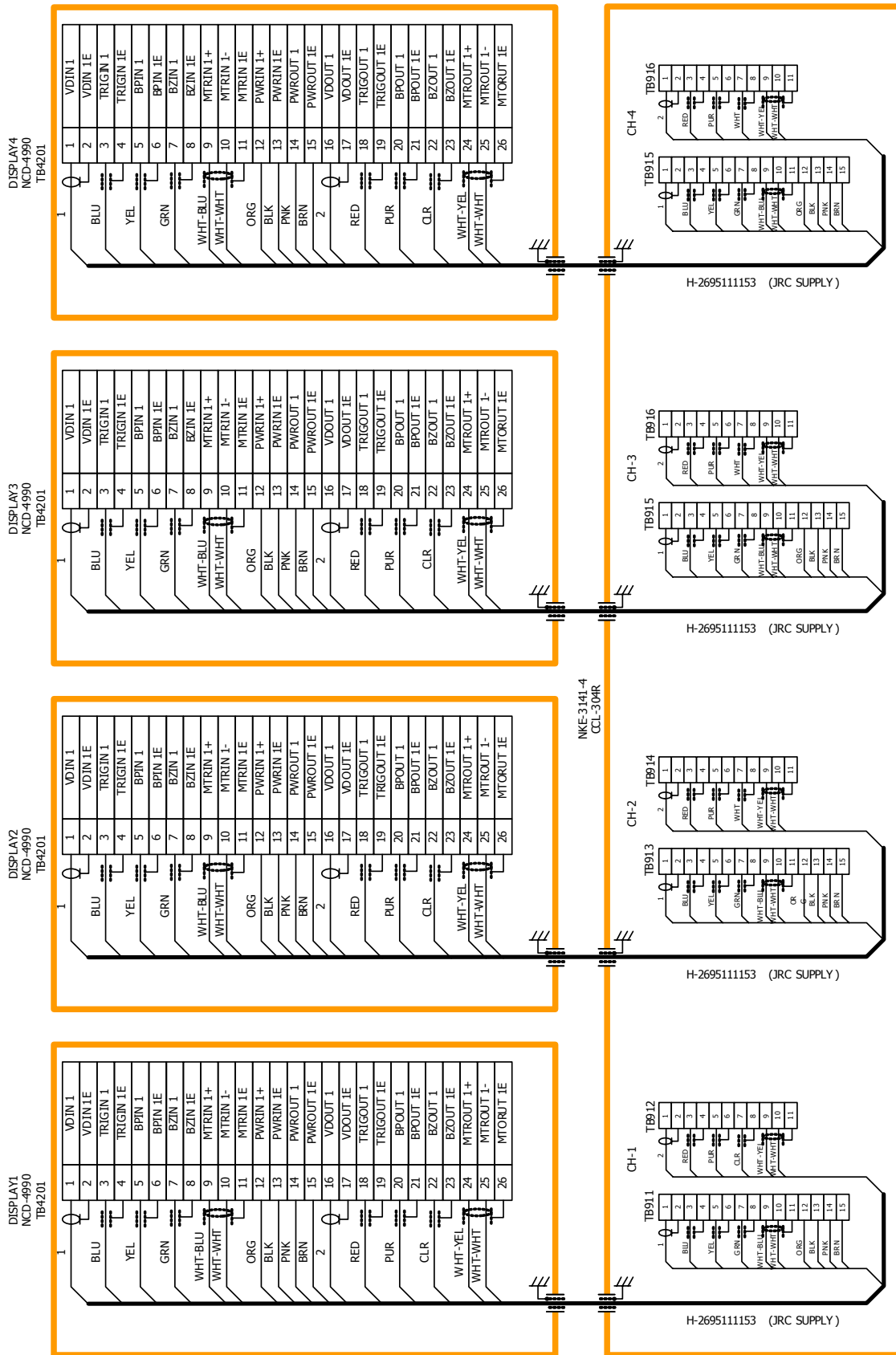


Fig 5-13: NQE-3141-4A Inter-board connection diagram

## 5.2

# INSTALLATION OF POWER CONTROL UNIT

Power control unit NQE-3167 is used when an antenna and a transmitter-receiver are installed at a location away from the bridge, such as a foremast.

In the case of a two-unit type antenna, the maximum length of the cable that connects between the display unit and the antenna is 65 meters. In the case of a three-unit type antenna, the maximum length of the cable that connects between the display unit and the transmitter-receiver is 35 meters.

By using NQE-3167 power control unit, the maximum length of the cable that connects between the display unit and the antenna (transmitter-receiver) can be extended up to 400 meters.

Maximum length of the cable connecting between the antenna and the transmitter-receiver:	30m
Maximum length of the cable connecting between the transmitter-receiver and the display unit:	35m
Maximum length of the cable connecting between the display unit and the antenna (transmitter-receiver):	400m (when NQE-3167 is used)

### 5.2.1 Connection with NKE-2103 type and NKE-2254-6HS type scanners

Use 19-core composite cable CFQ-6912-\*\* for the installation of those types of antennas (Asterisks \*\* use the cable length, and the available cable length is 5, 10, 20, 30, 40, 50, and 65)

The display-unit side end of this cable is a metal shell round connector. (See Section 2.1.1CFQ-6912-\*\*) Connect that cable to J2 of the power control unit.

If the metal shell round connector is cut, connect the cable to TB3 located in the power control unit. For procedures for processing the cable end, see Section 2.1.4Cable end processing method.

With regard to six devices, such as MOTOR+(2P), MOTOR-(2P), 1A(+48V), and 2A(48VG), two AWG16 cables must be connected to one terminal block. As necessary, use a bar-mould crimp-type terminal or the like. (See Fig 5-14: Connection of CFQ-6912)

The connection between scanner unit and AC/DC converter NBA-5135 is not necessary. Instead, power control unit NQE-3167 supplies DC power.

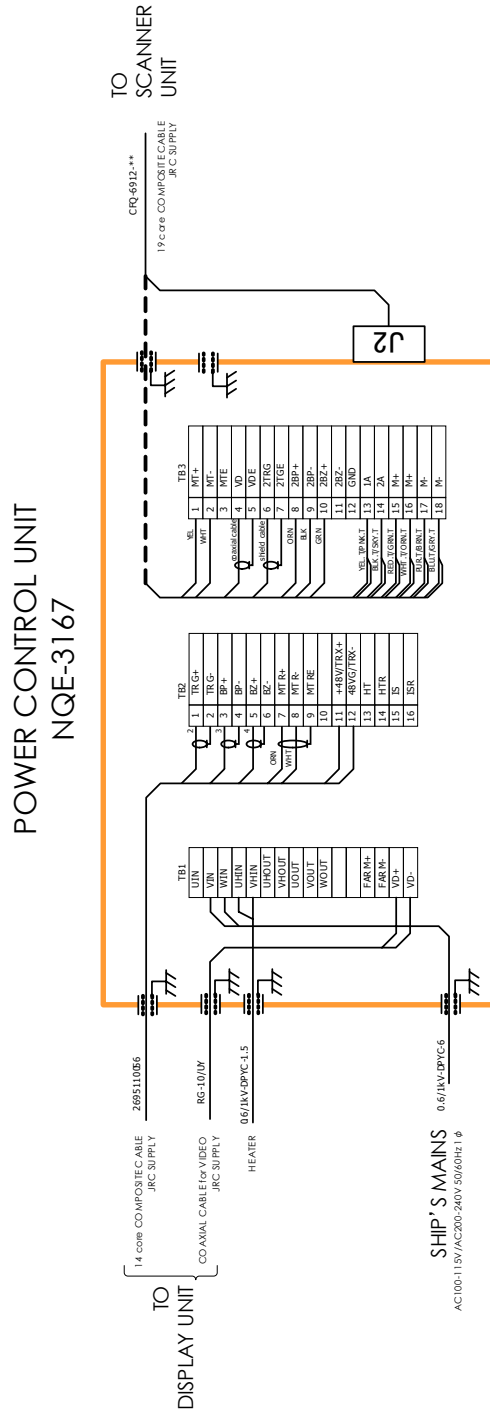


Fig 5-14: Connection of CFQ-6912

## 5.2.2 Connections to NKE-1125, NTG-3225, NKE-1130, and NTG-3230

Use 14-core composite cable 2695110056 for the installation of those types of antennas.

For the procedures for processing the cable end, see Fig 5-15: Equipment cable end processing.

For the wiring procedures, see Section 5.2.8 Inter-board connection diagram of power control unit.

## 5.2.3 Equipment cable end processing

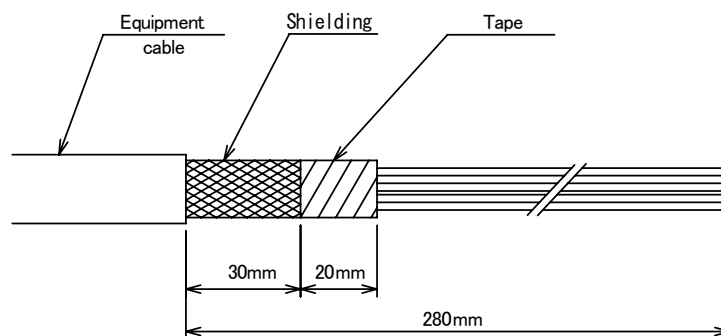


Fig 5-15: Equipment cable end processing

## 5.2.4 End processing of each cable core

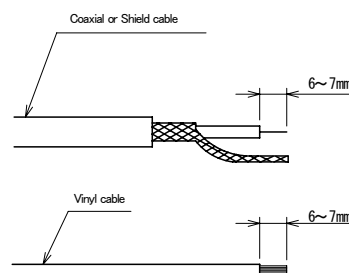


Fig 5-16: End processing of each cable core

## 5.2.5 Connection to display unit

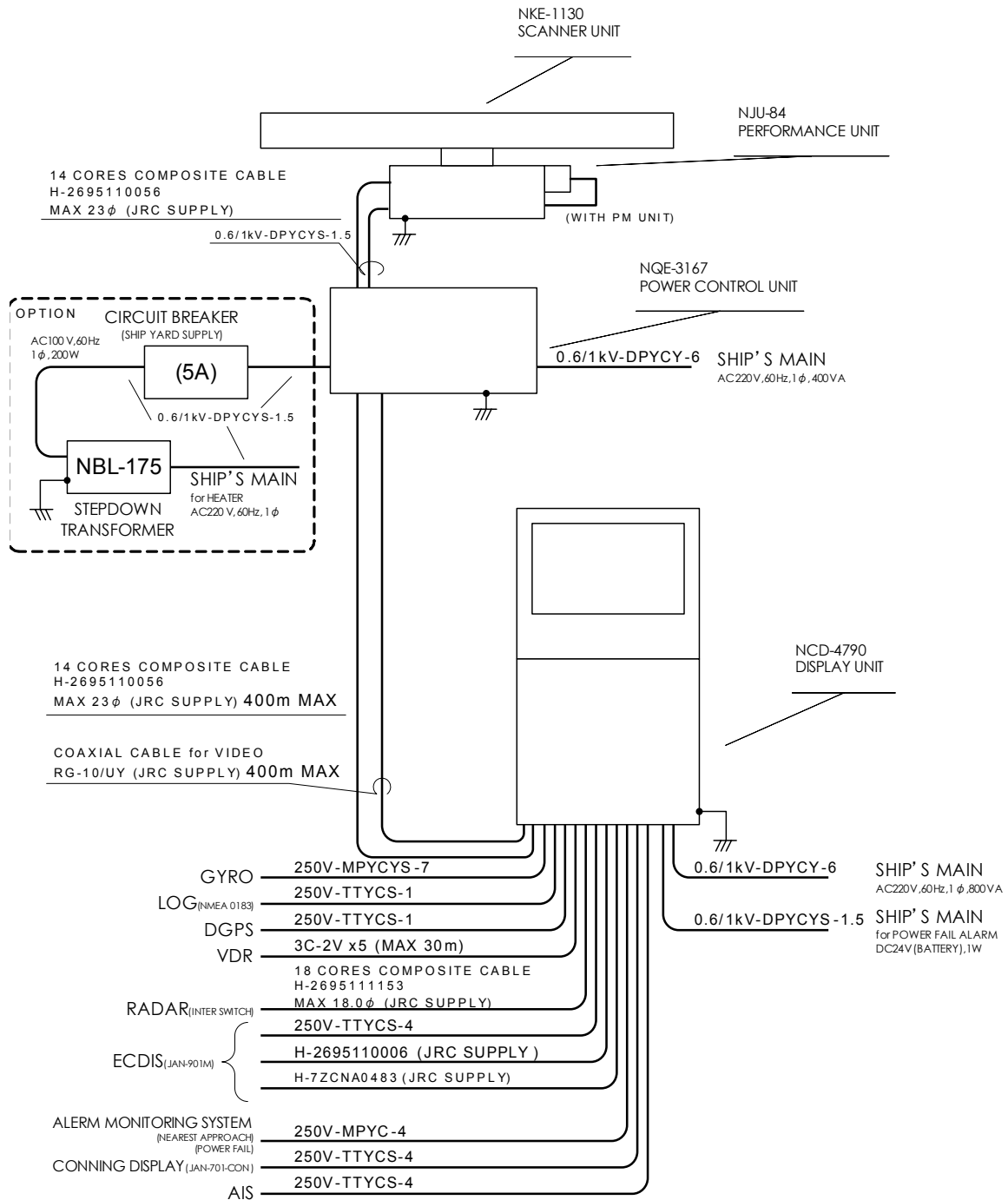
Use 14-core composite cable 2695110056 and coaxial cable RG-10/UY to connect power control unit NQE-3167 to each display unit of NCD-4790/T and NCD-4990/T.

Among the two cables, use coaxial cable RG-10/UY to connect the radar video signal.

For the procedures for processing the cable end and the wiring procedures, see Fig 5-15: Equipment cable end processing.

For the wiring procedures, see Section 5.2.8 Inter-board connection diagram of power control unit.

## 5.2.6 General system diagram of power control unit (JMA-7100)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

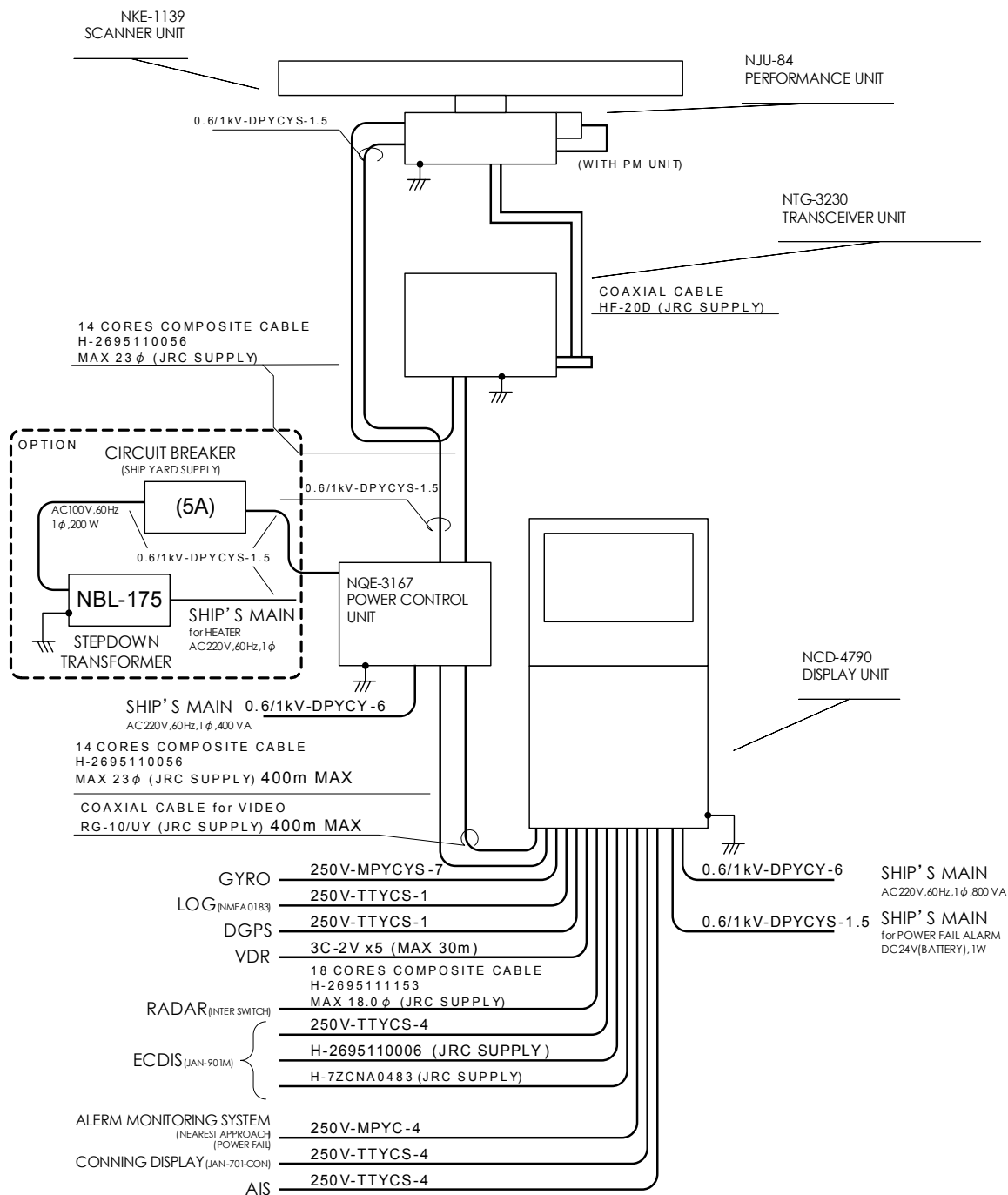
NOTE: ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(S-BAND 30kW RADAR)

JMA-7132-SA形レーダー総合系統図

GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7132-SA

Fig 5-17: JMA-7132SA (w/ NQE-3167)

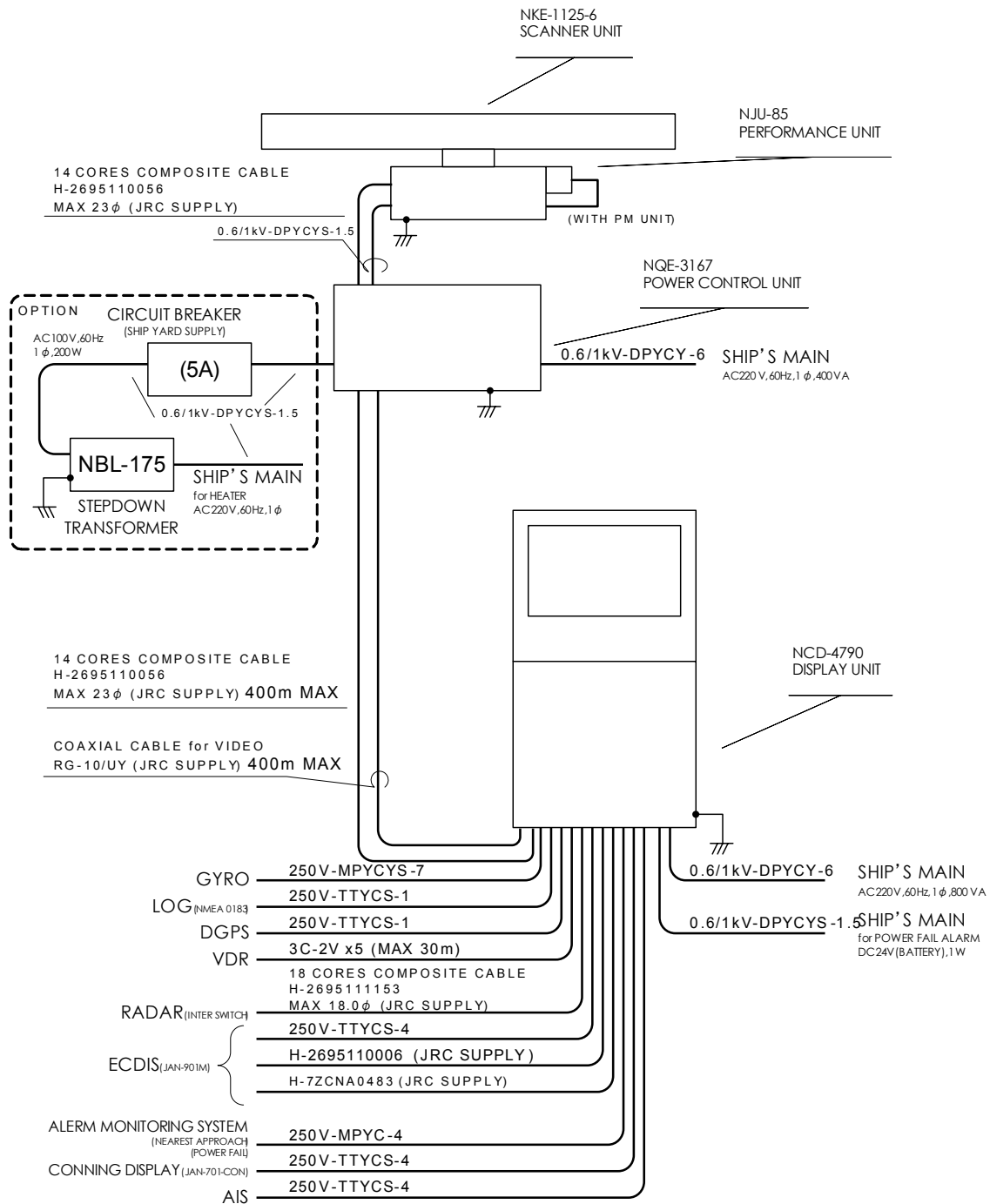


注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

NOTE) ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(S-BAND 30kW RADAR)  
JMA-7133-SA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7132-SA

Fig 5-18: JMA-7133-SA (w/ NQE-3167)



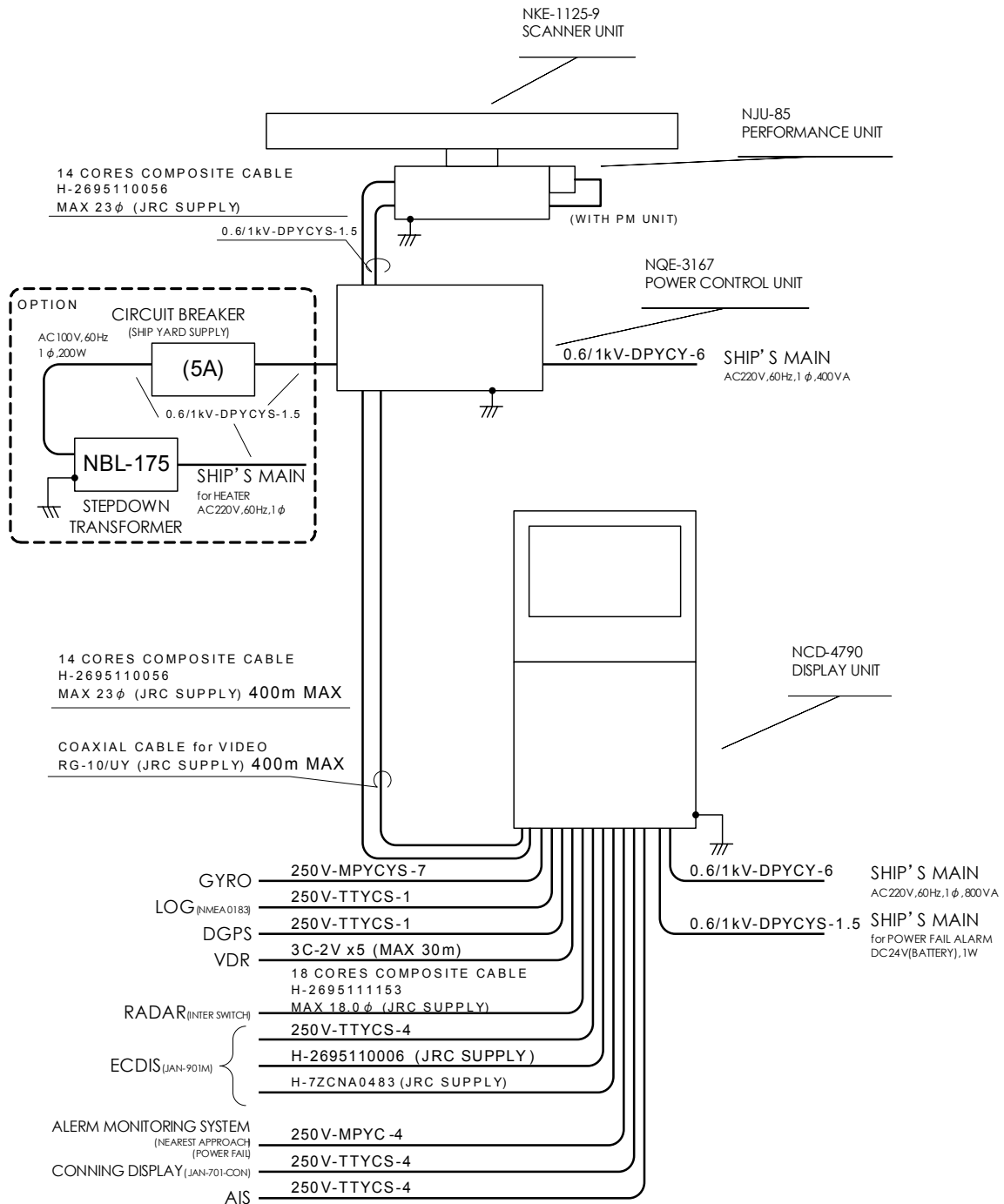
注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

NOTE: ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(X-BAND 25kW RADAR)  
JMA-7122-6XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7122-6XA

Fig 5-19: JMA-7122-6XA (w/ NQE-3167)



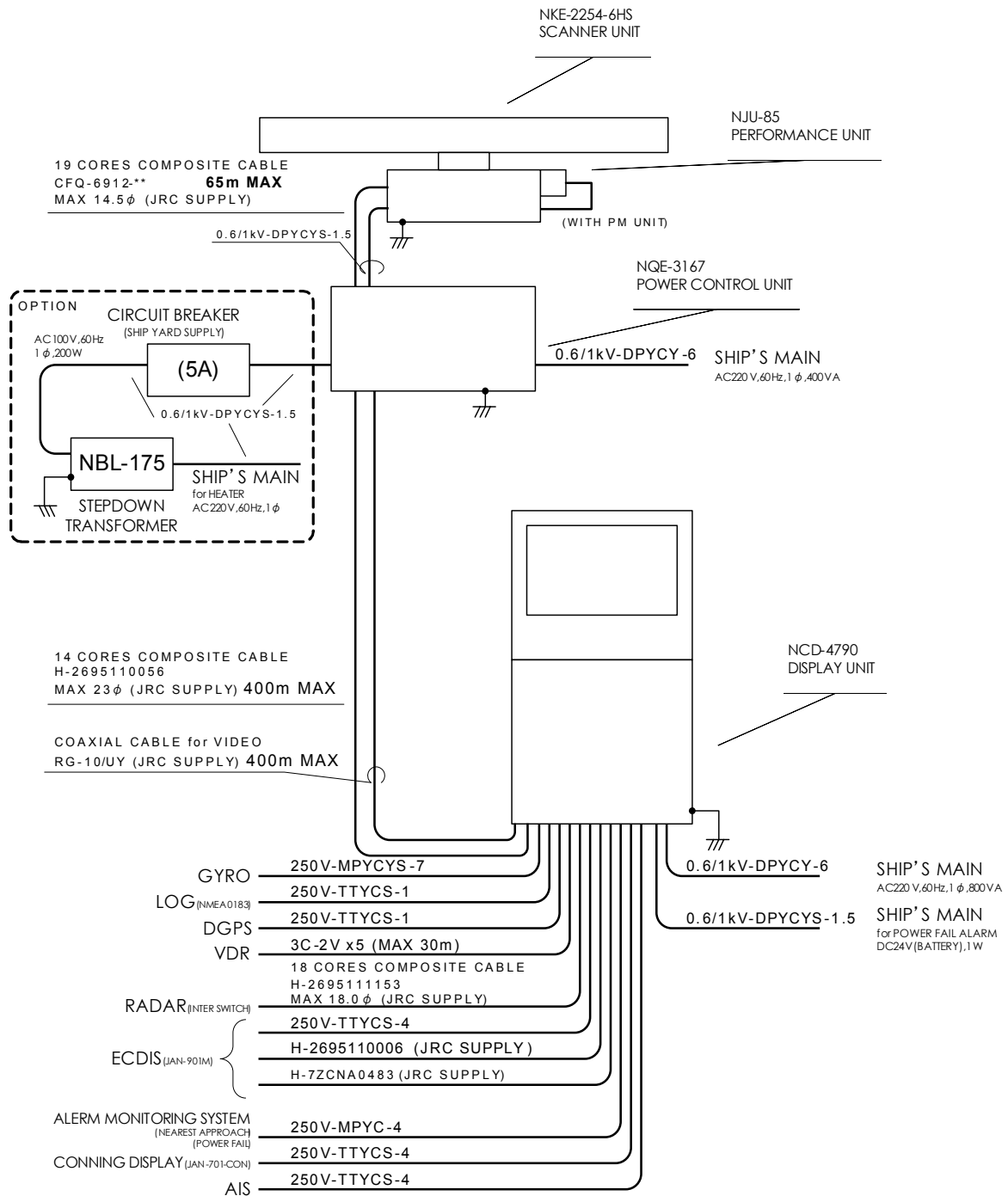


注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

NOTE ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(X-BAND 25kW RADAR)  
JMA-7122-9XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7122-9XA

Fig 5-20: JMA-7122-9XA (w/ NQE-3167)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

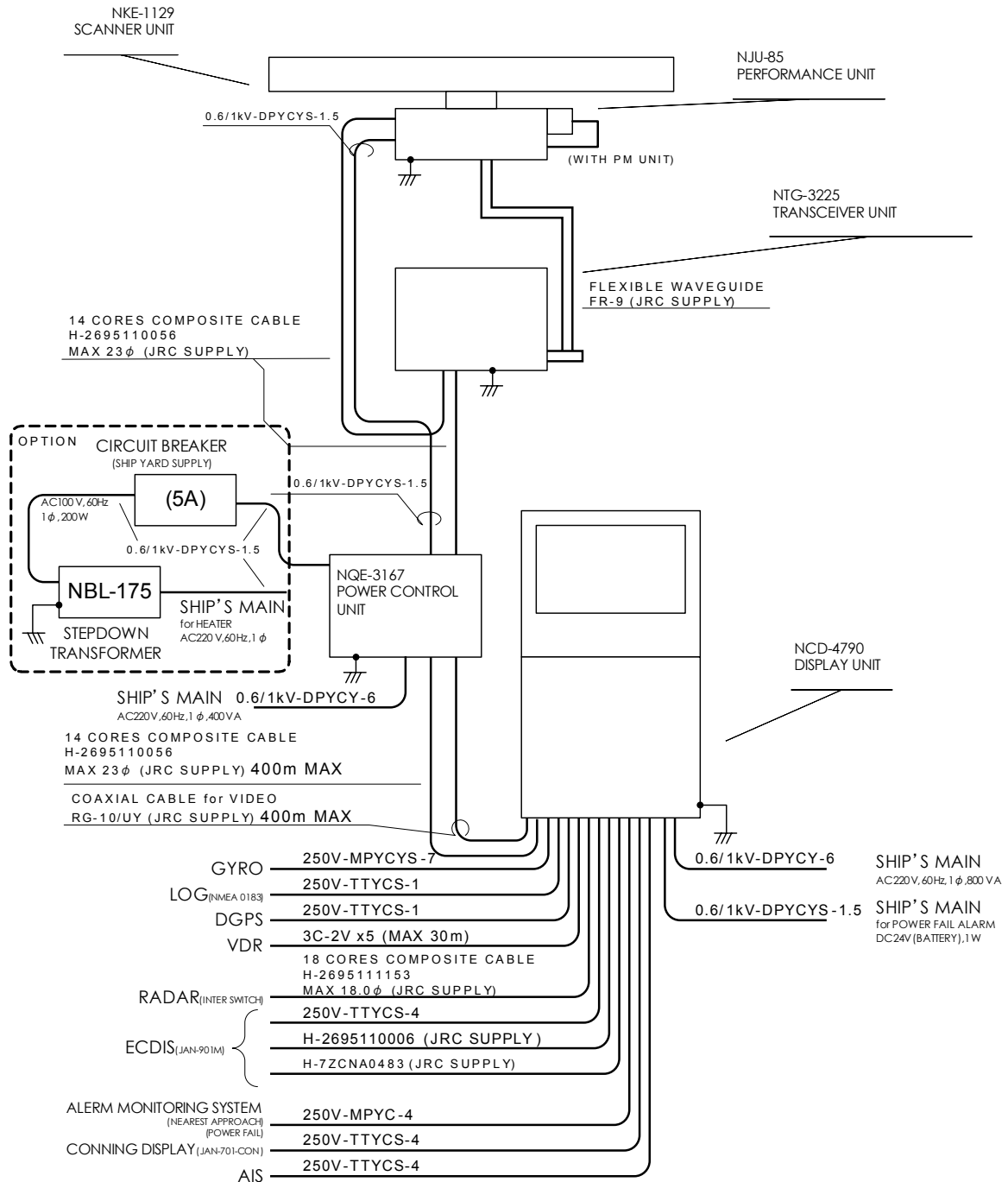
NOTE) ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(X-BAND 25kW RADAR)

JMA-7122-6XAH形レーダー総合系統図

GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7122-6XAH

Fig 5-21: JMA-7122-6XAH (w/ NQE-3167)

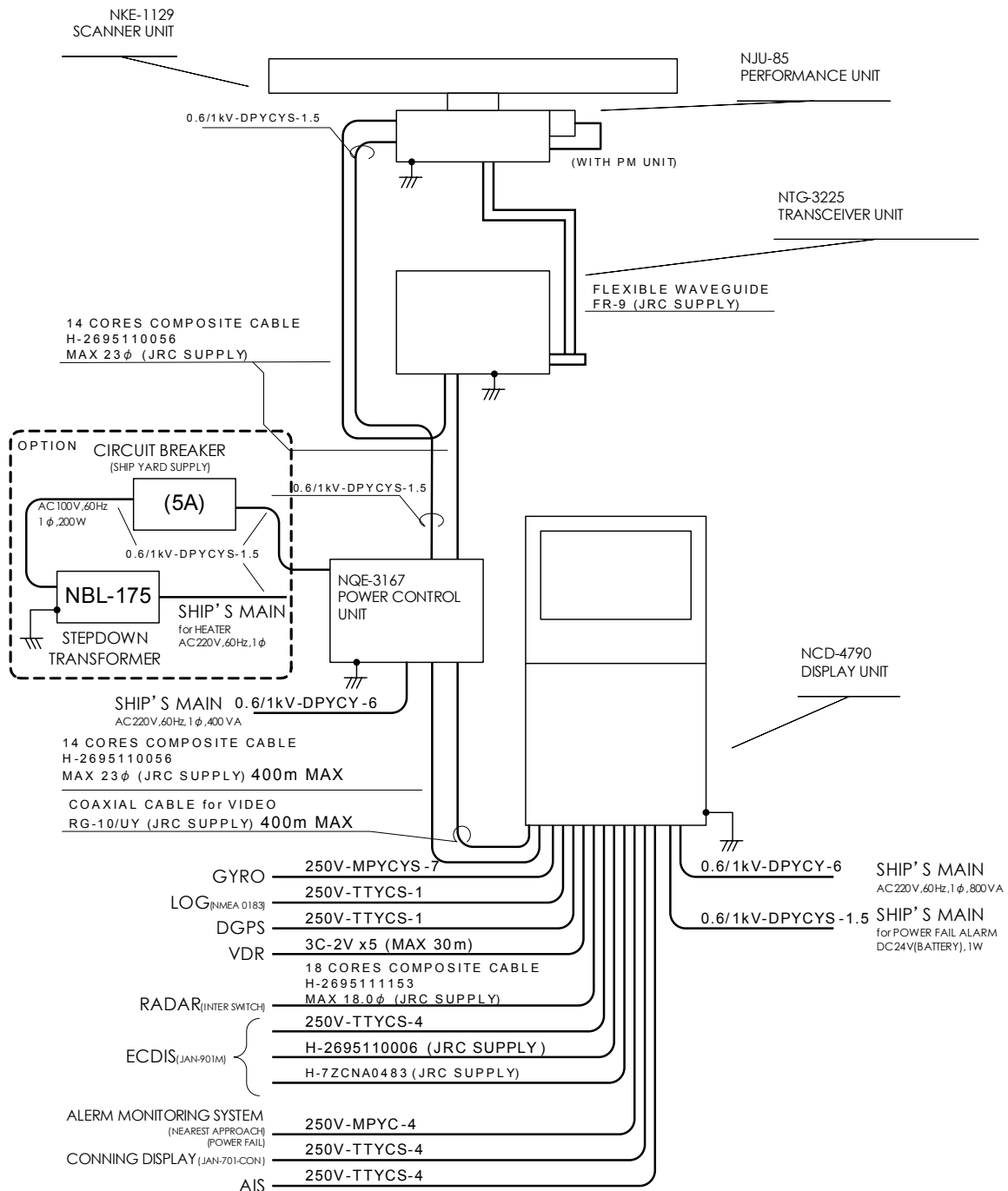


注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

NOTE: ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(X-BAND 25kW RADAR)  
JMA-7123-7XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7123-7XA

Fig 5-22: JMA-7123-7XA (w/ NQE-3167)



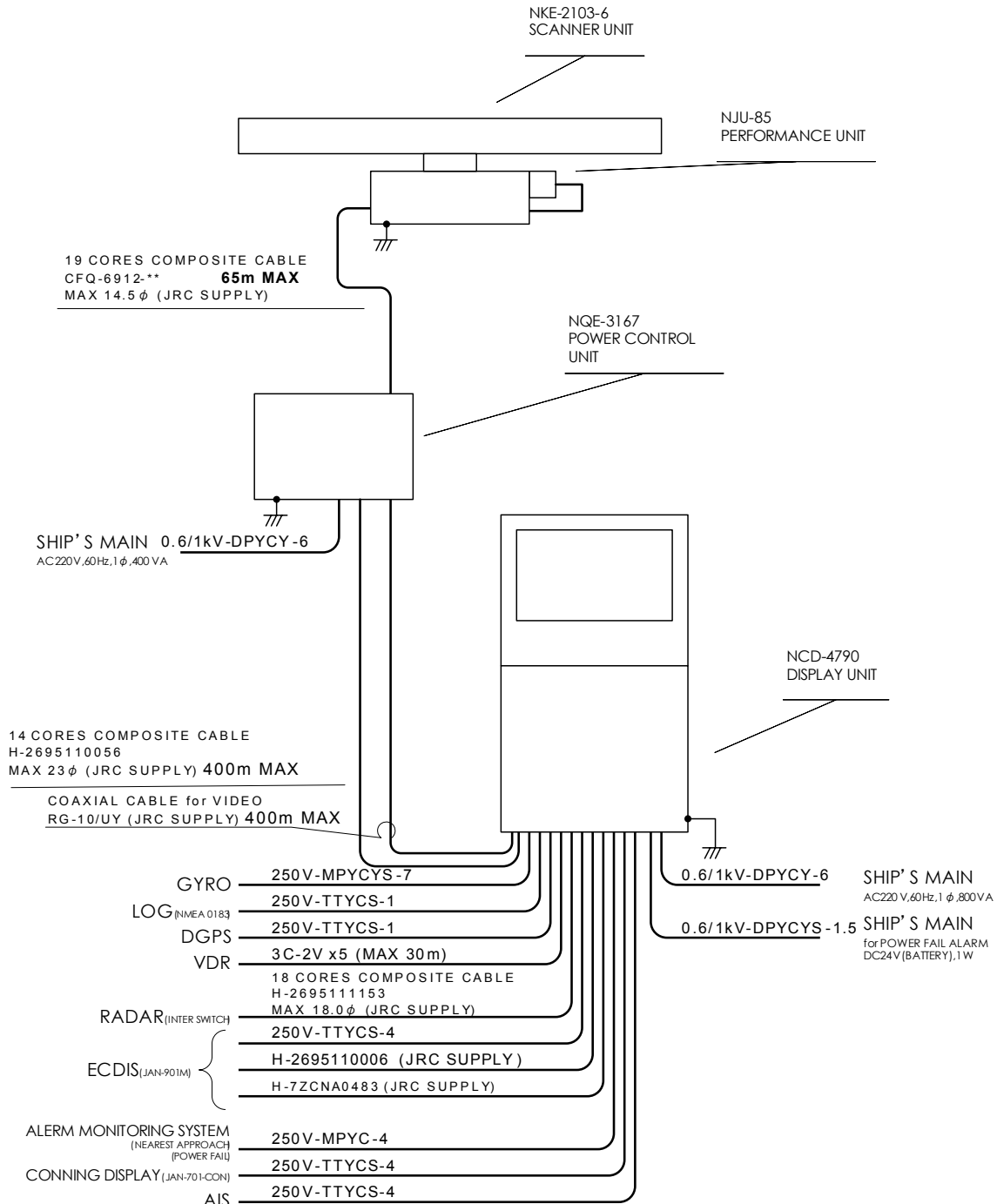
注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

NOTE: ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(X-BAND 25kW RADAR)

JMA-7123-9XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7123-9XA

Fig 5-23: JMA-7123-9XA (w/ NQE-3167)

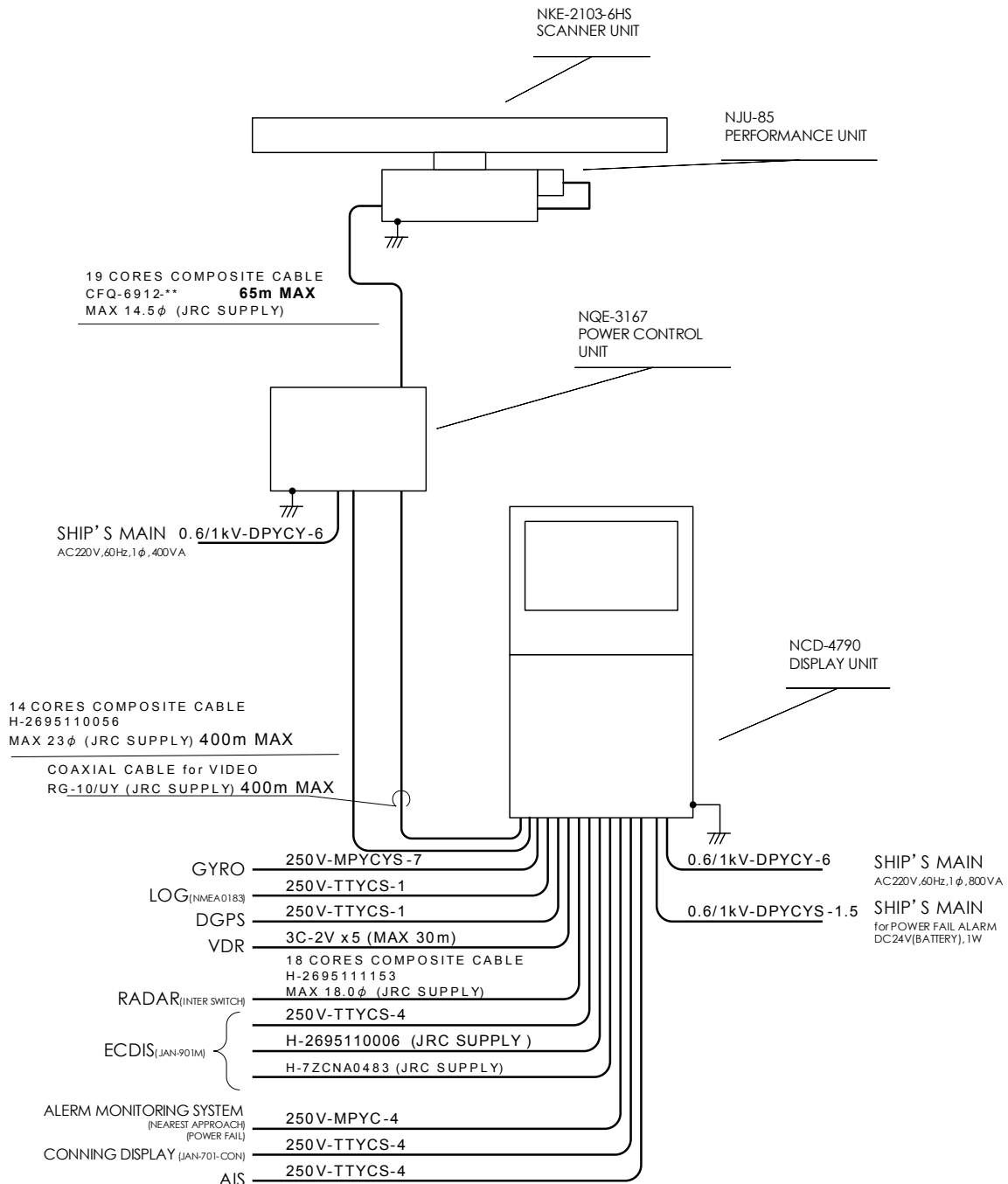


注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

NOTE: ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDE etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(X-BAND 10kW RADAR)  
JMA-7110-6XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7110-6XA

Fig 5-24: JMA-7110-6XA (w/ NQE-3167)

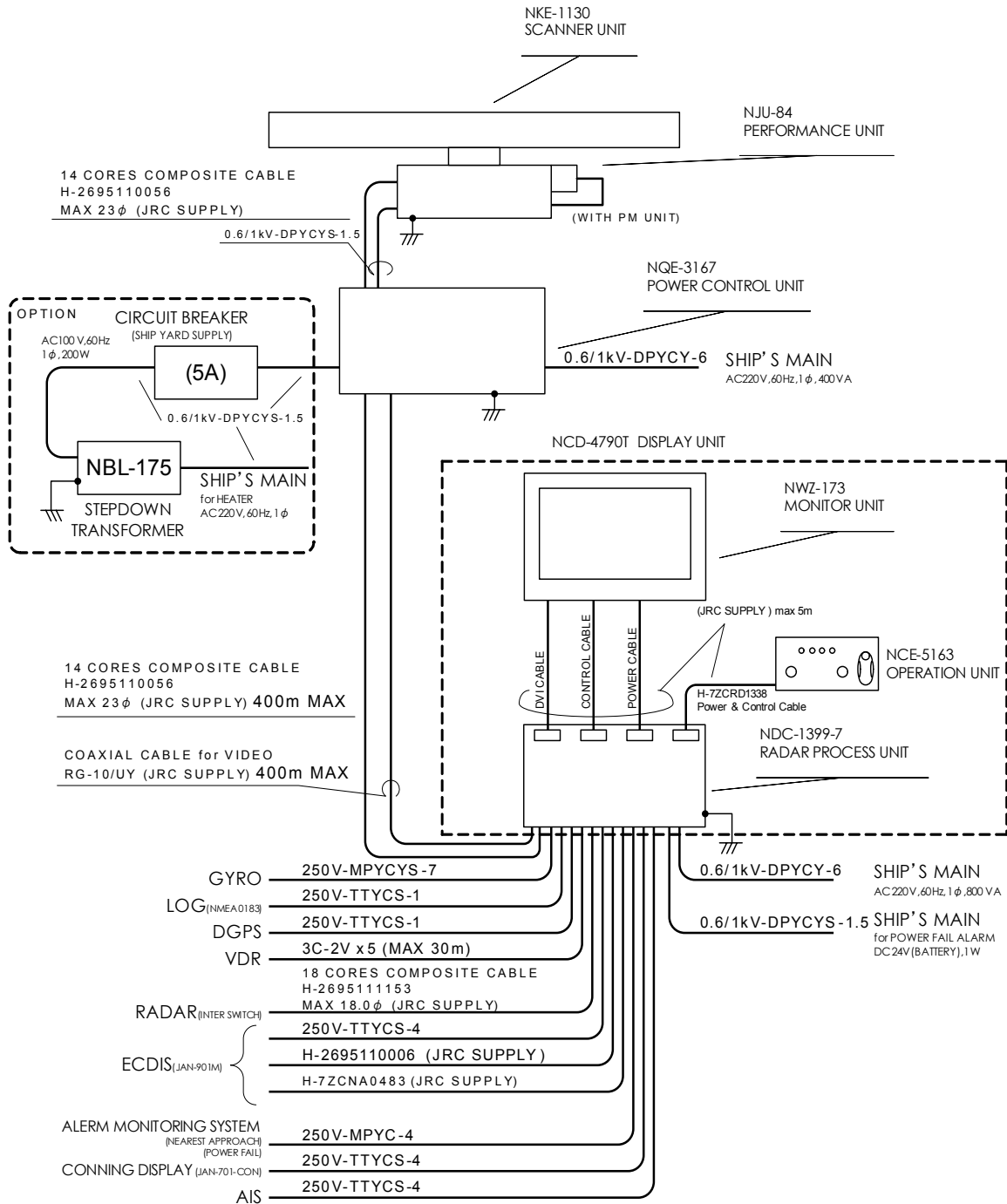


注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

NOTE: ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
 ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
 ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(X-BAND 10kW RADAR)  
 JMA-7110-6XAH形レーダー総合系統図  
 GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7110-6XAH

Fig 5-25: JMA-7110-6XAH (w/ NQE-3167)

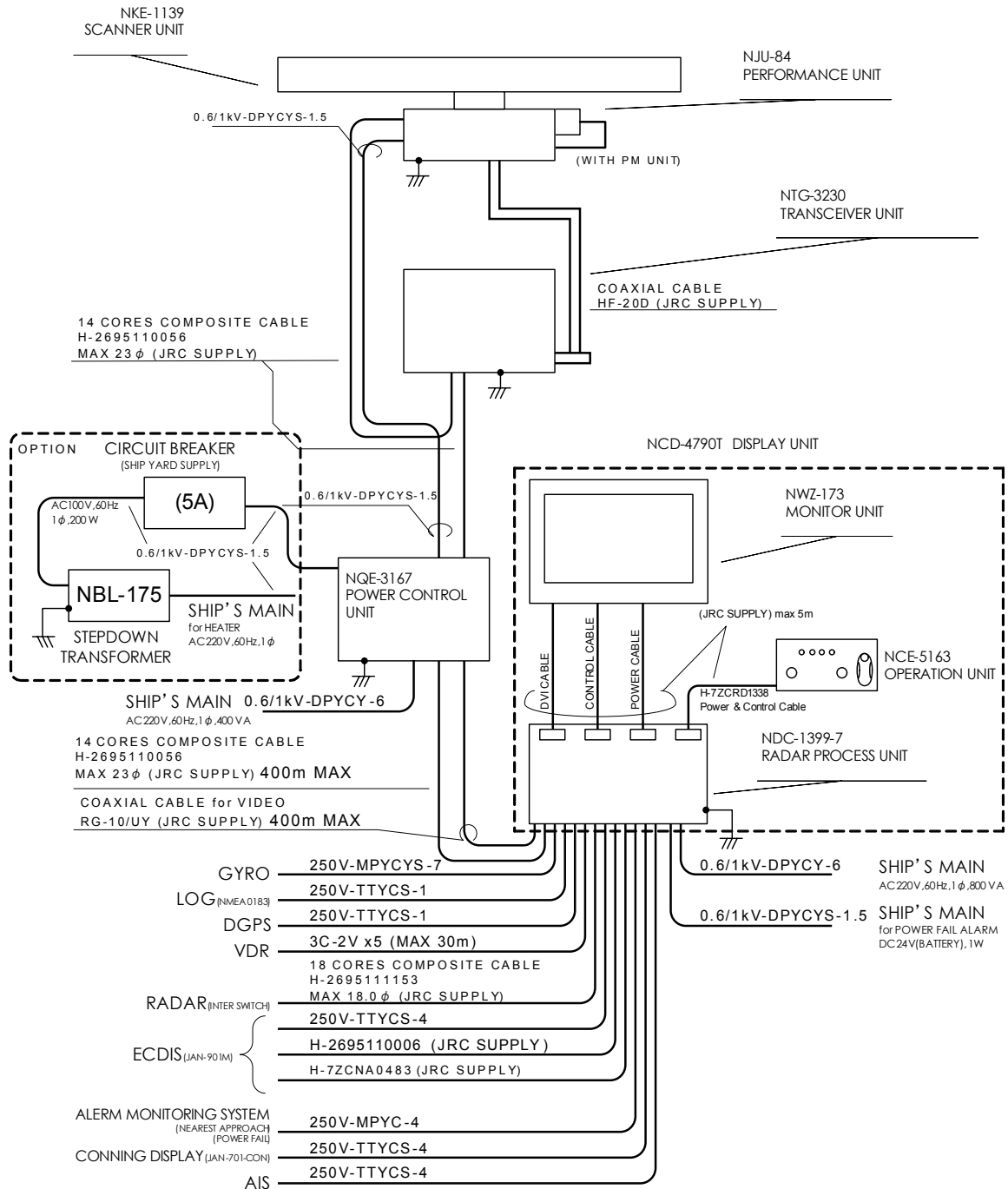


注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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(S-BAND 30kW RADAR)  
JMA-7132-SA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7132-SA

Fig 5-26: JMA-7132-SA (w/ NQE-3167) desktop



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

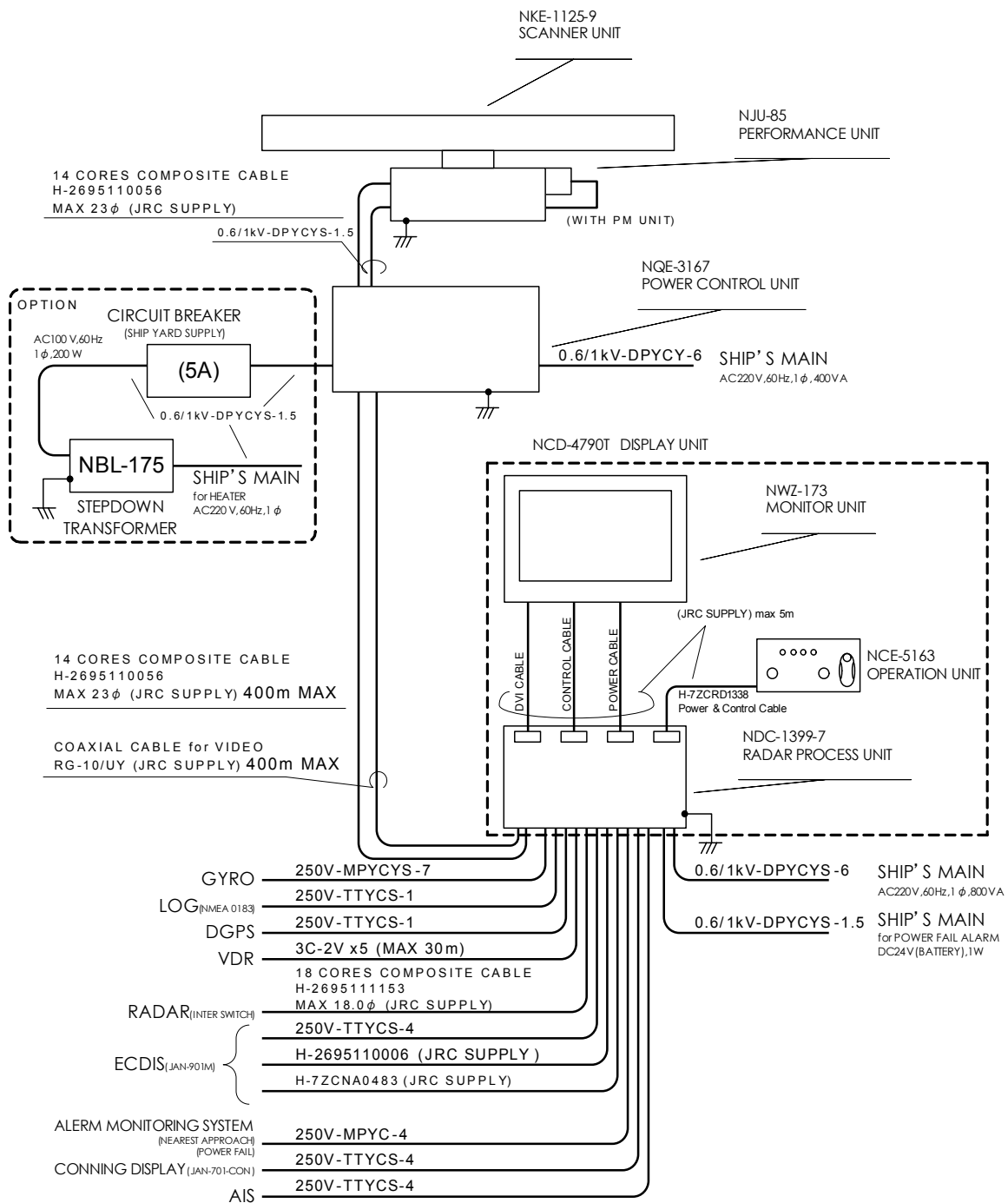
NOTE) ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.) ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(S-BAND 30kW RADAR)  
JMA-7133-SA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7133-SA

Fig 5-27: JMA-7133-SA (w/ NQE-3167) desktop





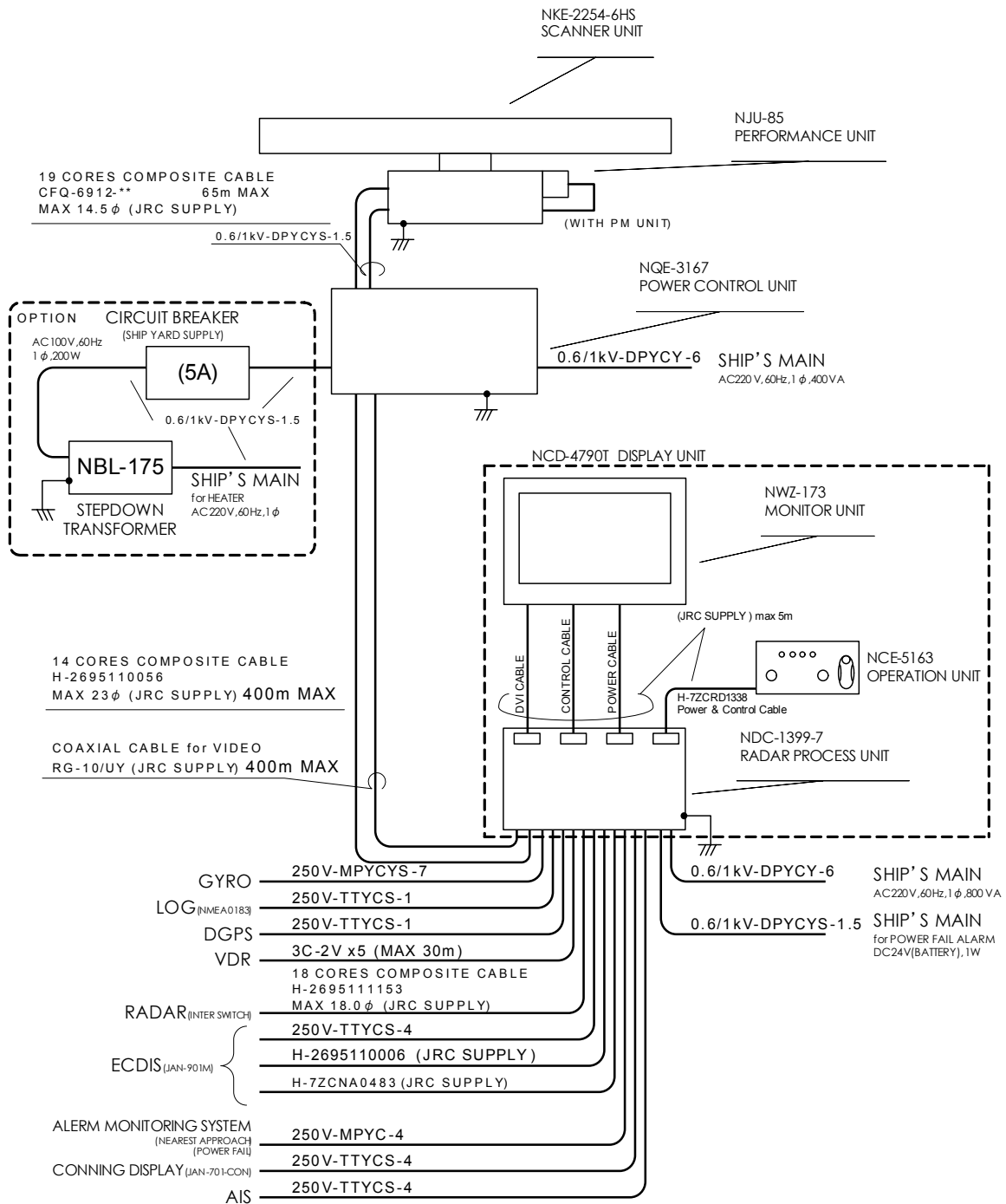


注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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(X-BAND 25kW RADAR)  
JMA-7122-9XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7122-9XA

Fig 5-29: JMA-7122-9XA (w/ NQE-3167) desktop

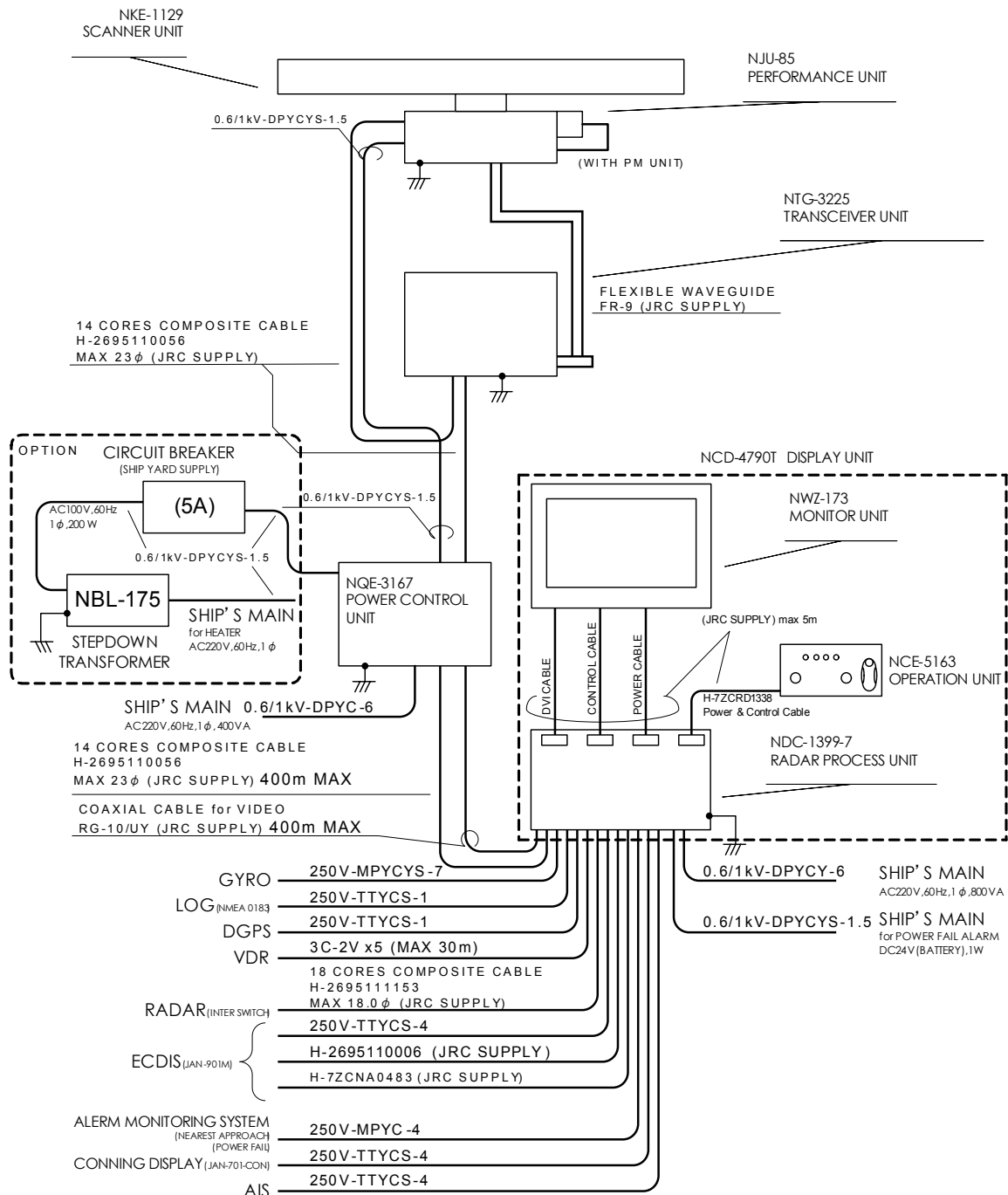


注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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(X-BAND 25kW RADAR)  
JMA-7122-6XAH形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7122-6XAH

Fig 5-30: JMA-7122-6XAH (w/ NQE-3167) desktop

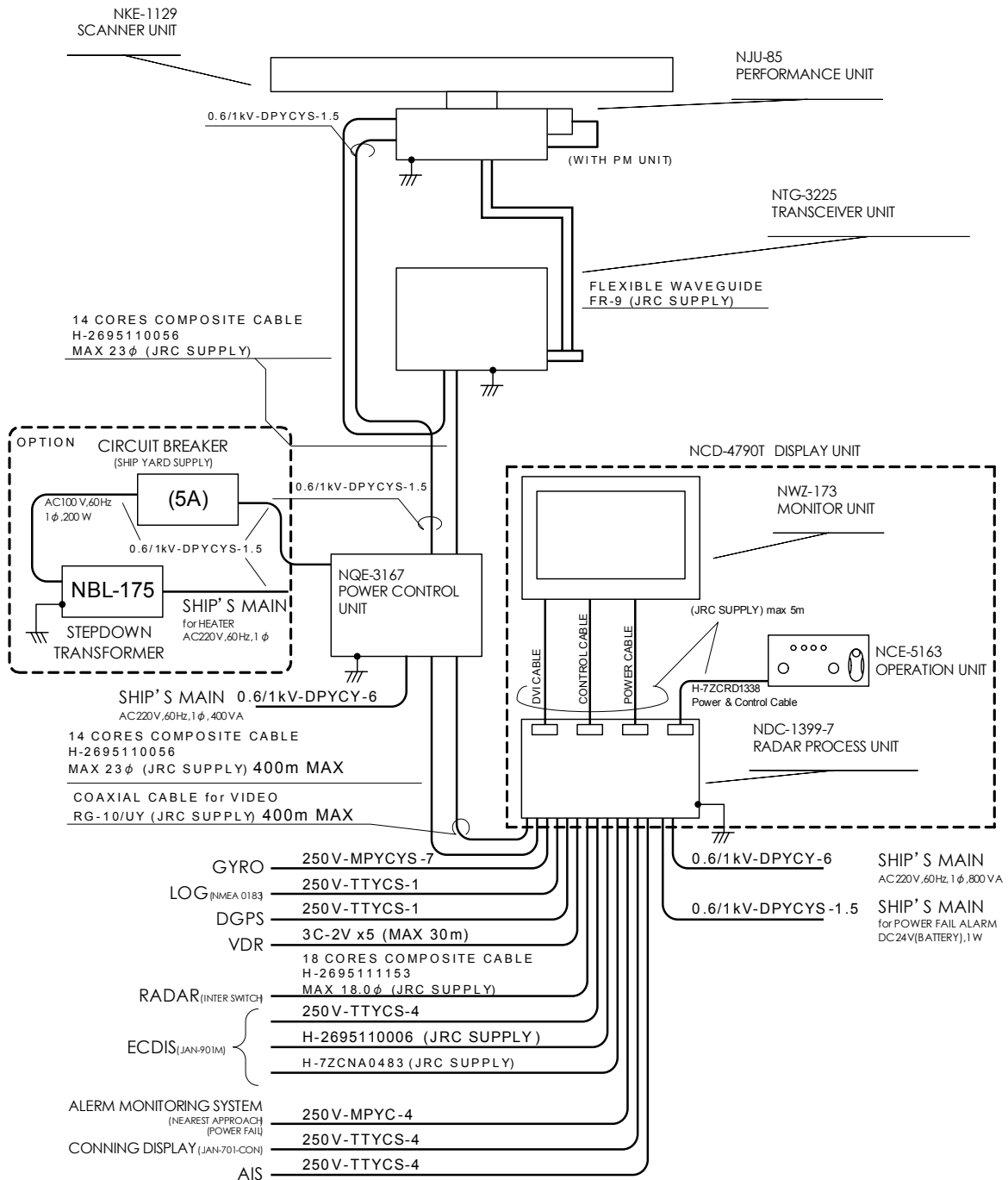


注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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(X-BAND 25kW RADAR)  
JMA-7123-7XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7123-7XA

Fig 5-31: JMA-7123-7XA (w/ NQE-3167) desktop



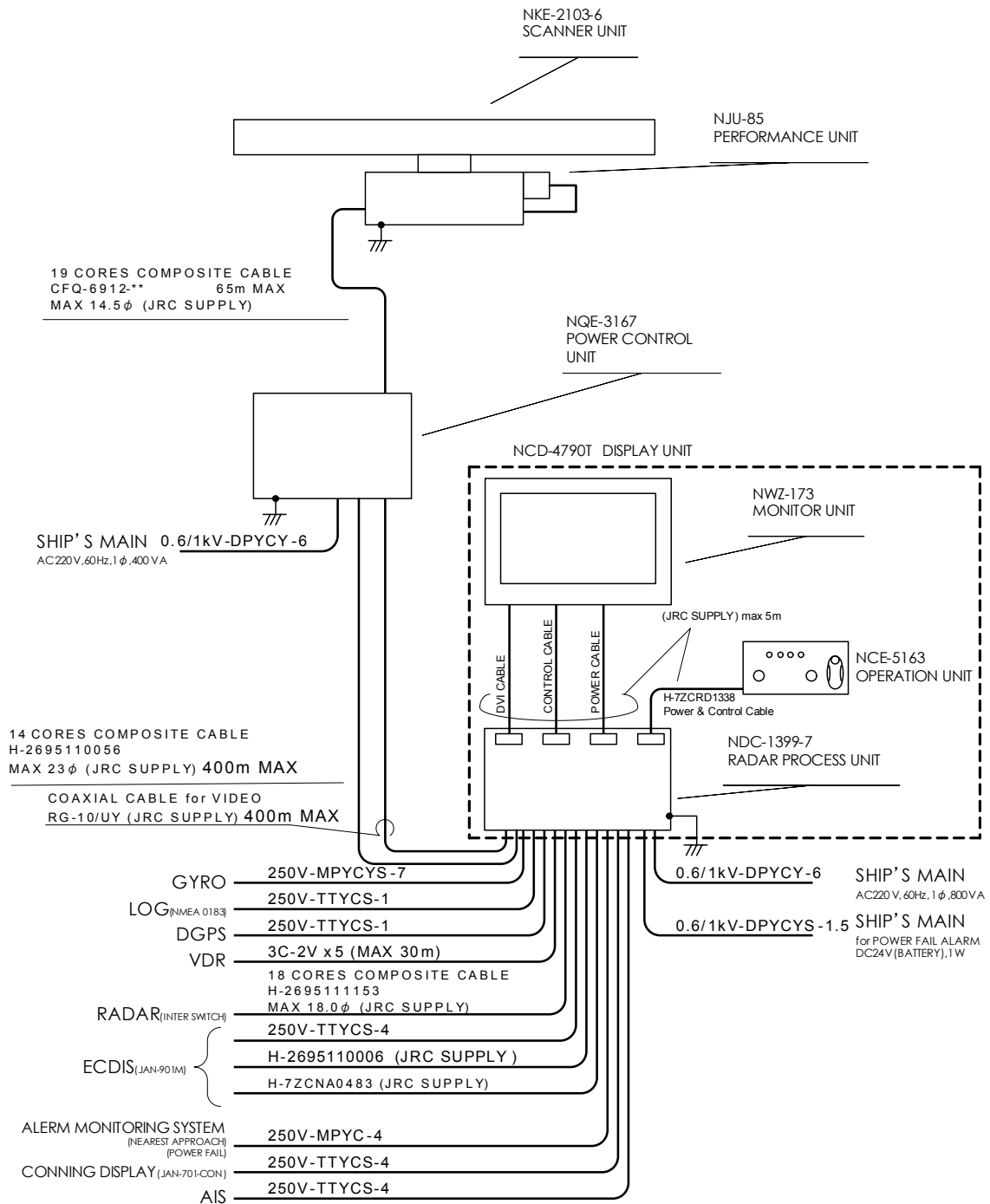
注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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(X-BAND 25kW RADAR)

JMA-7123-9XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7123-9XA

Fig 5-32: JMA-7123-9XA (w/ NQE-3167) desktop



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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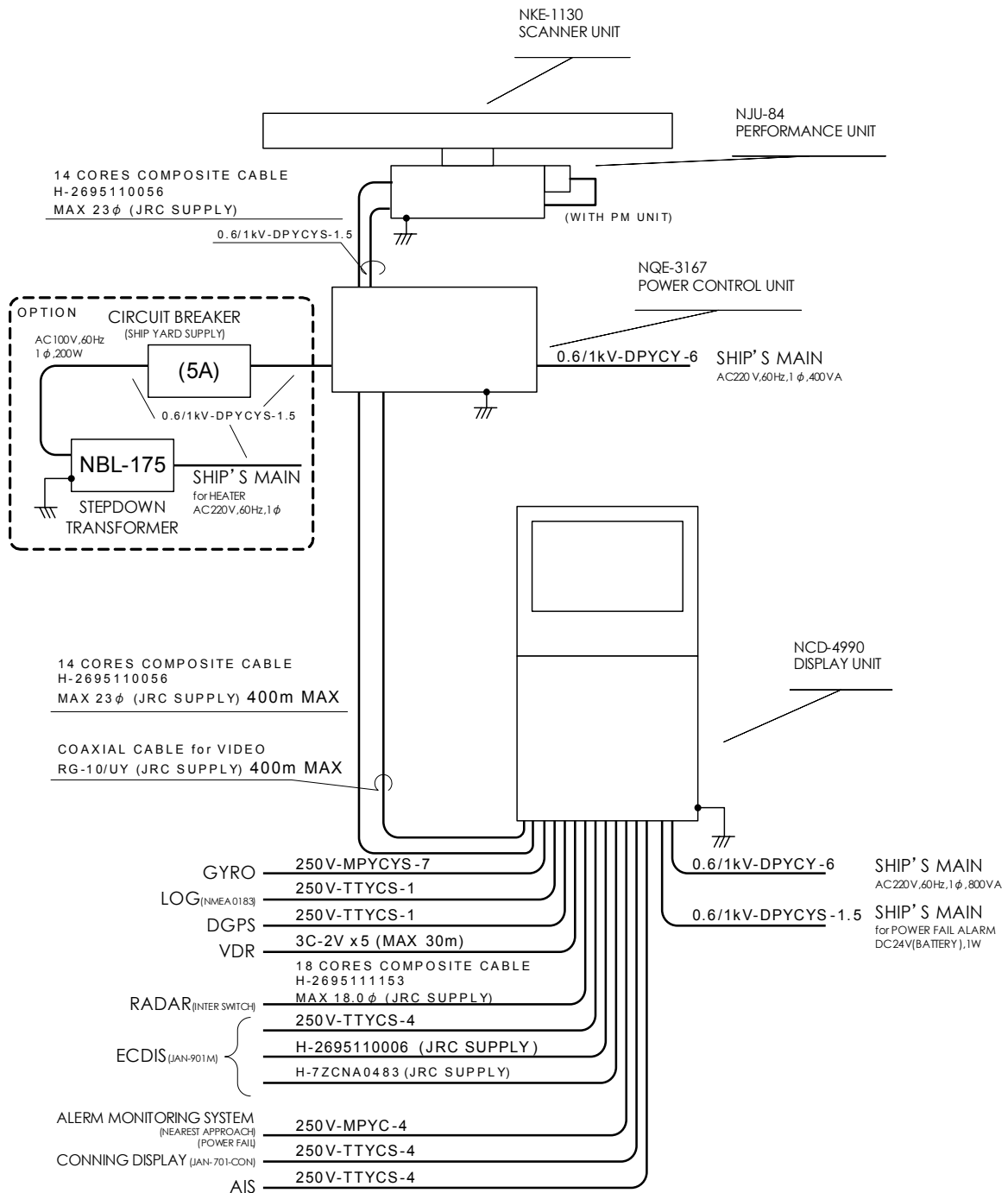
(X-BAND 10kW RADAR)

JMA-7110-6XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7110-6XA

Fig 5-33: JMA-7110-6XA (w/ NQE-3167) desktop



## 5.2.7 General system diagram of power control unit (JMA-9100)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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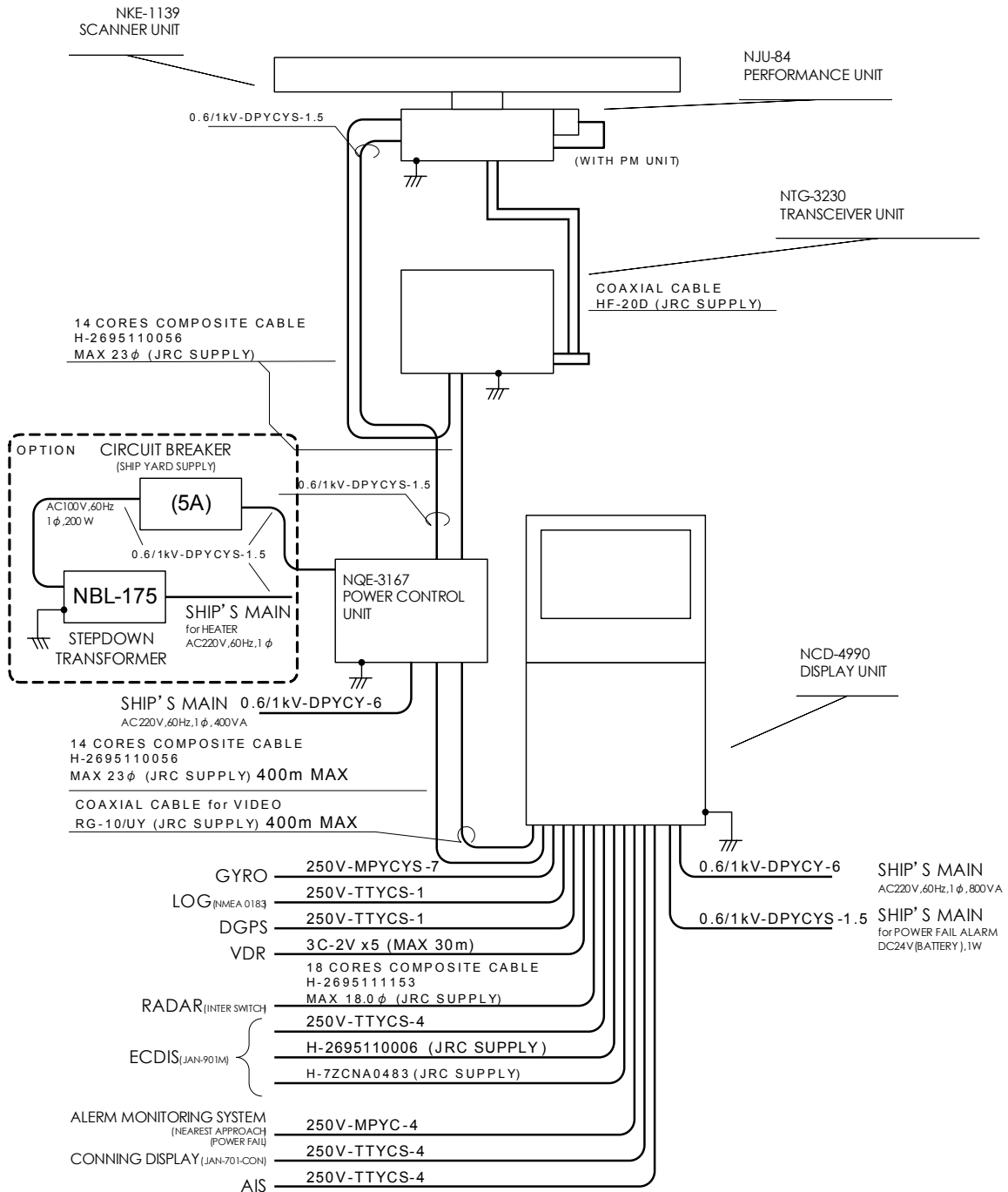
(S-BAND 30kW RADAR)

JMA-9132-SA形レーダー総合系統図

GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9132-SA

Fig 5-35: JMA-9132-SA (w/ NQE-3167)





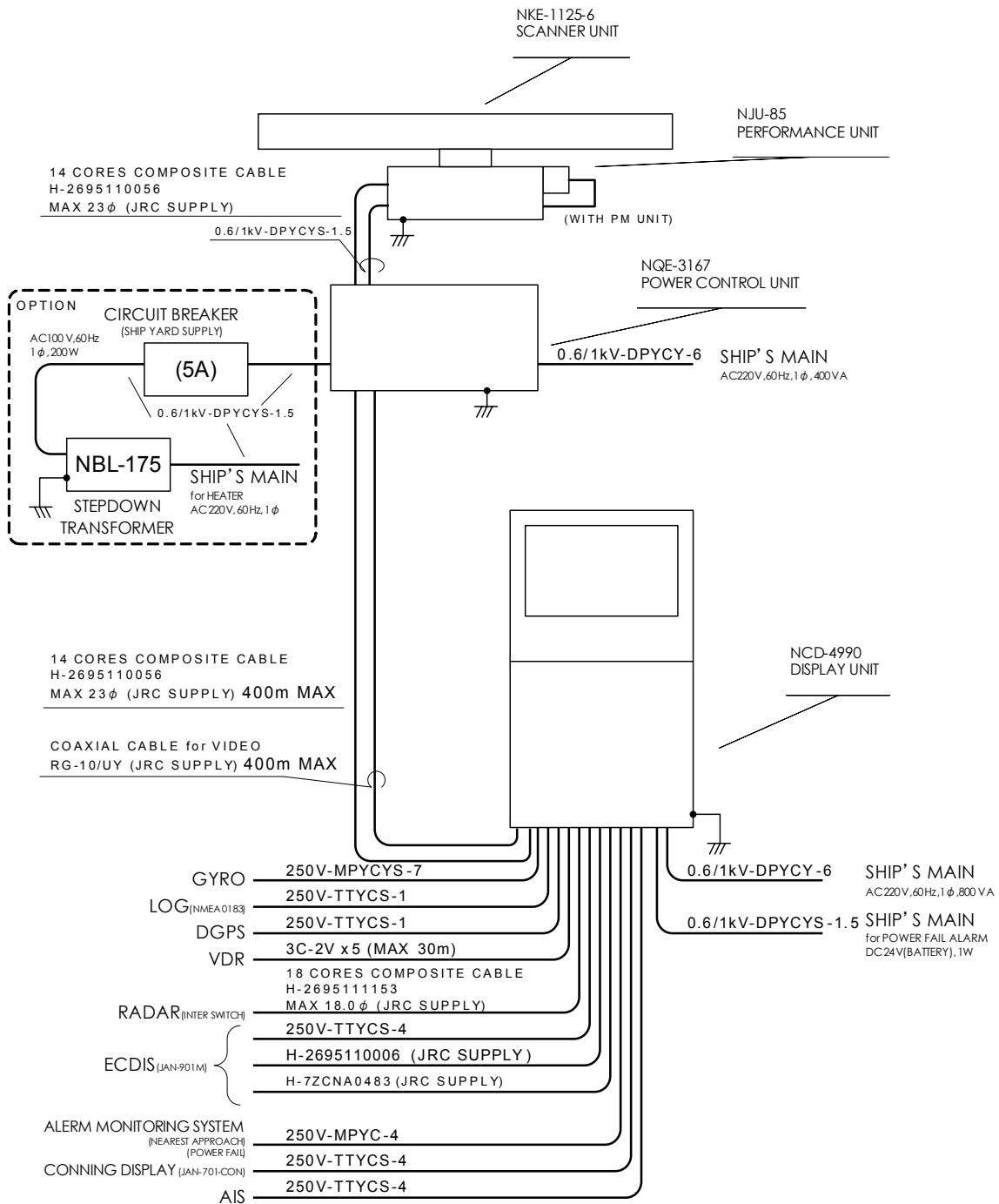
5

注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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(S-BAND 30kW RADAR)  
 JMA-9133-SA形レーダー総合系統図  
 GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9133-SA

Fig 5-36: JMA-9133-SA (w/ NQE-3167)

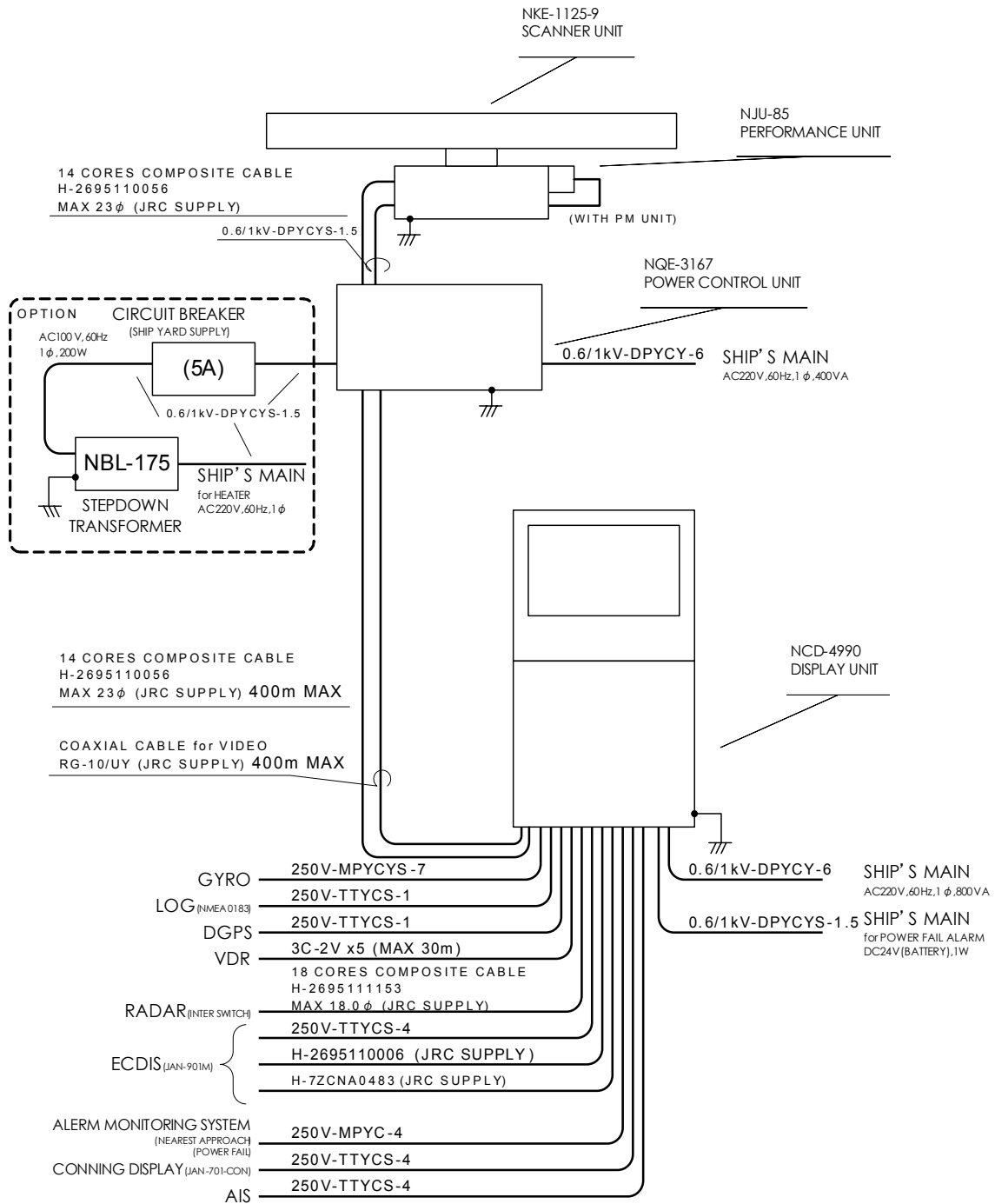


注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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(X-BAND 25kW RADAR)  
JMA-9122-6XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9122-6XA

Fig 5-37: JMA-9122-6XA (w/ NQE-3167)



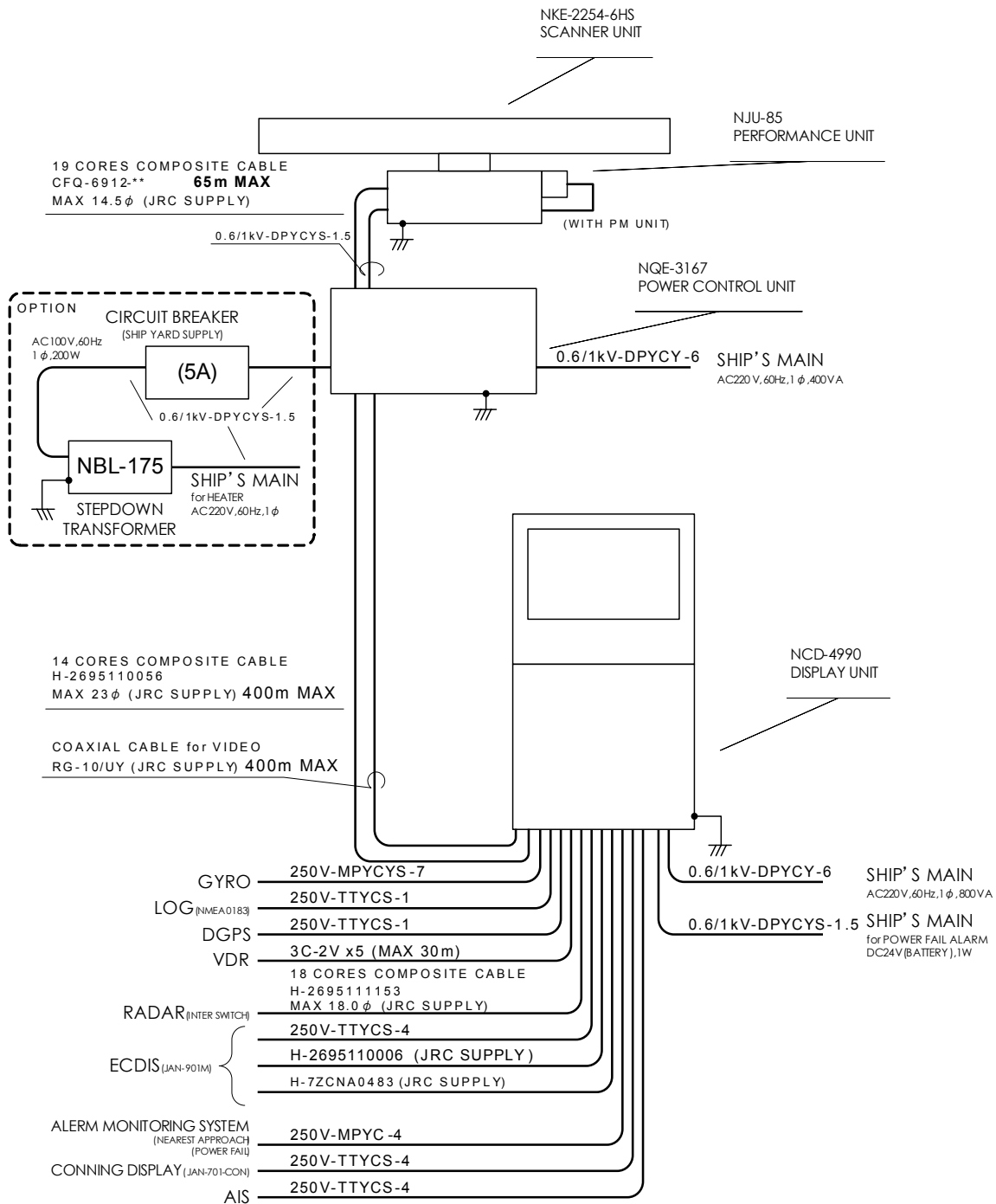
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注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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(X-BAND 25kW RADAR)  
JMA-9122-9XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9122-9XA

Fig 5-38: JMA-9122-9XA (w/ NQE-3167)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

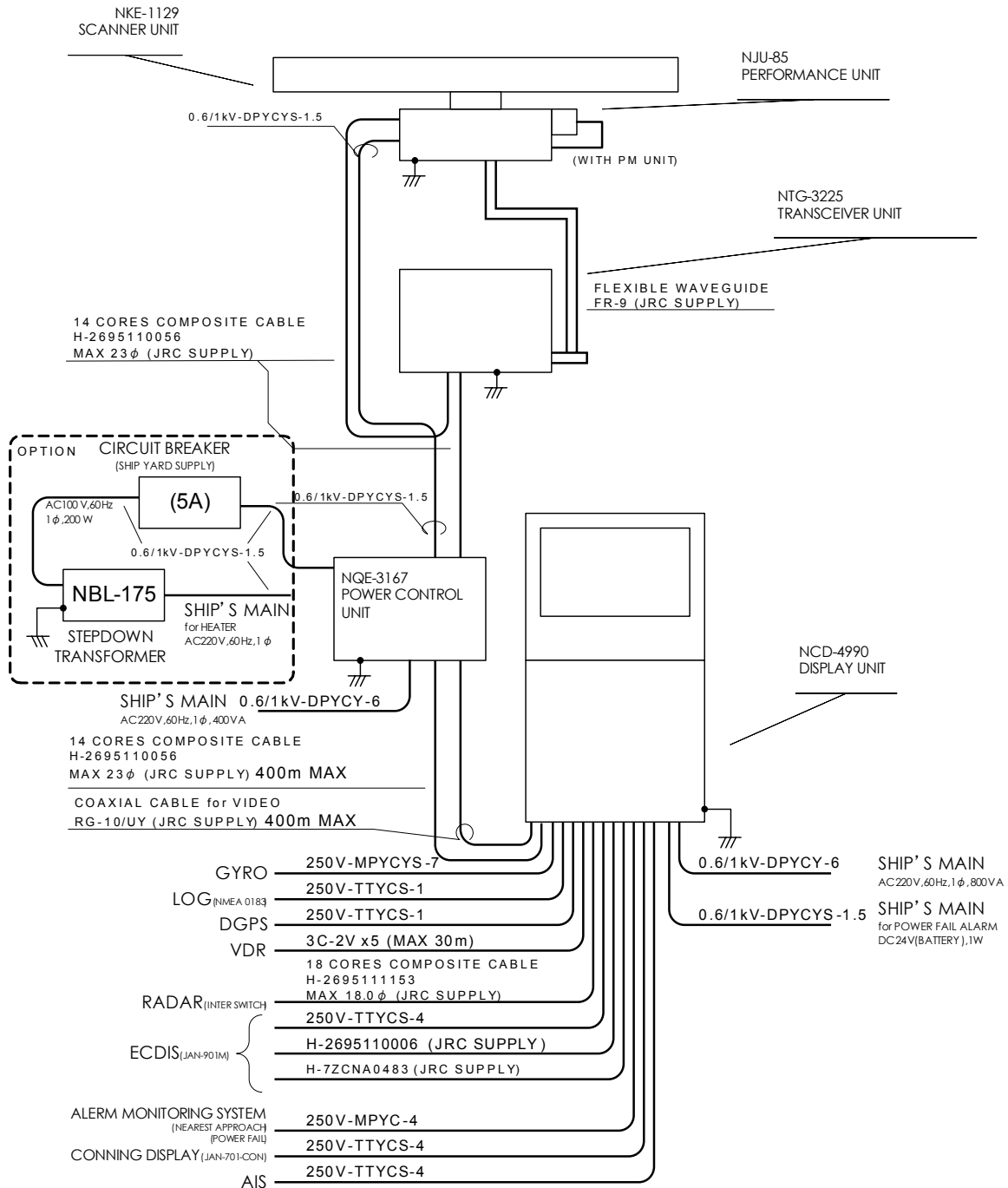
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(X-BAND 25kW RADAR)

JMA-9122-6XAH形レーダー総合系統図

GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9122-6XAH

Fig 5-39: JMA-9122-6XAH (w/ NQE-3167)



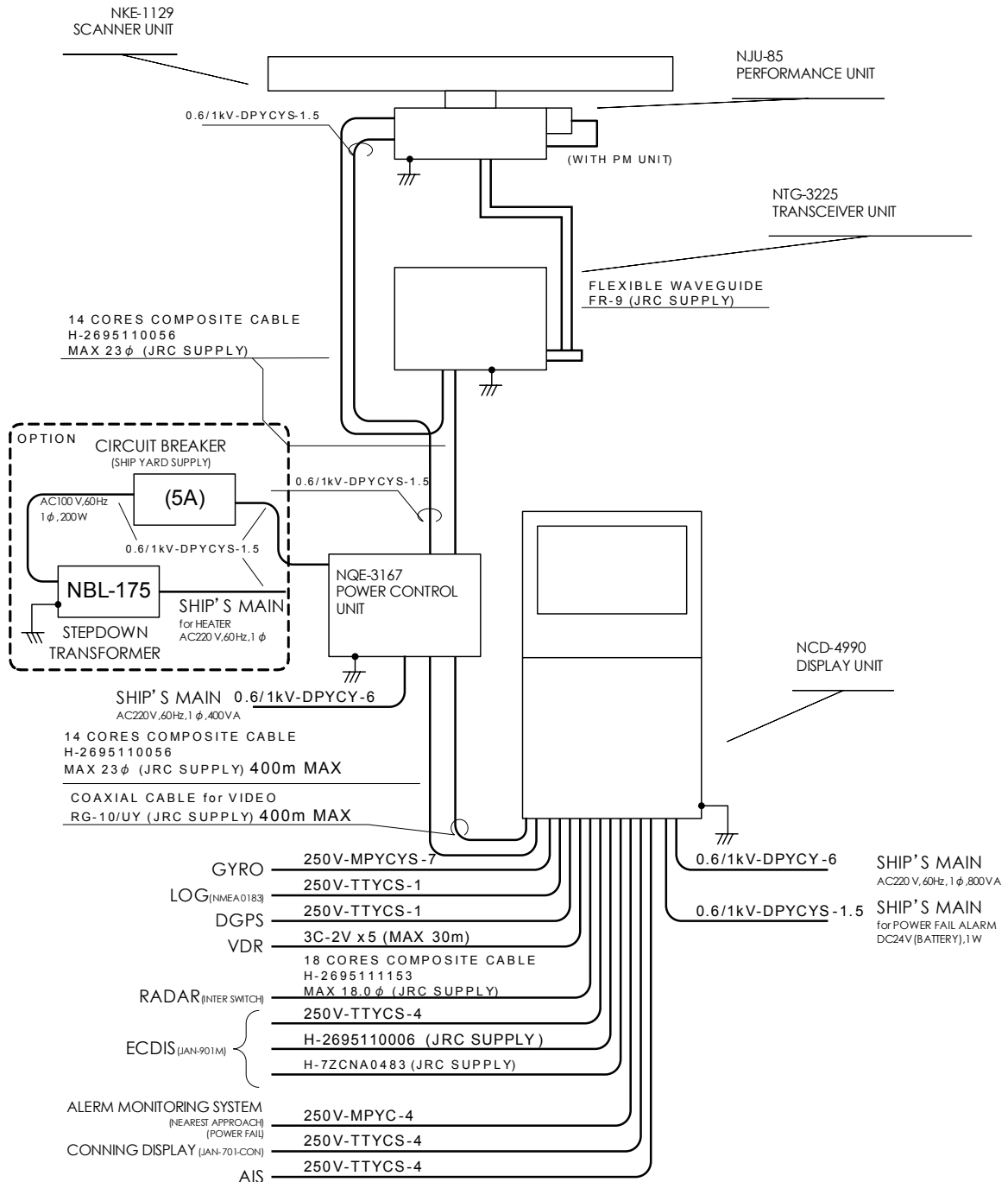
5

注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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(X-BAND 25kW RADAR)  
JMA-9123-7XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9123-7XA

Fig 5-40: JMA-9123-7XA (w/ NQE-3167)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

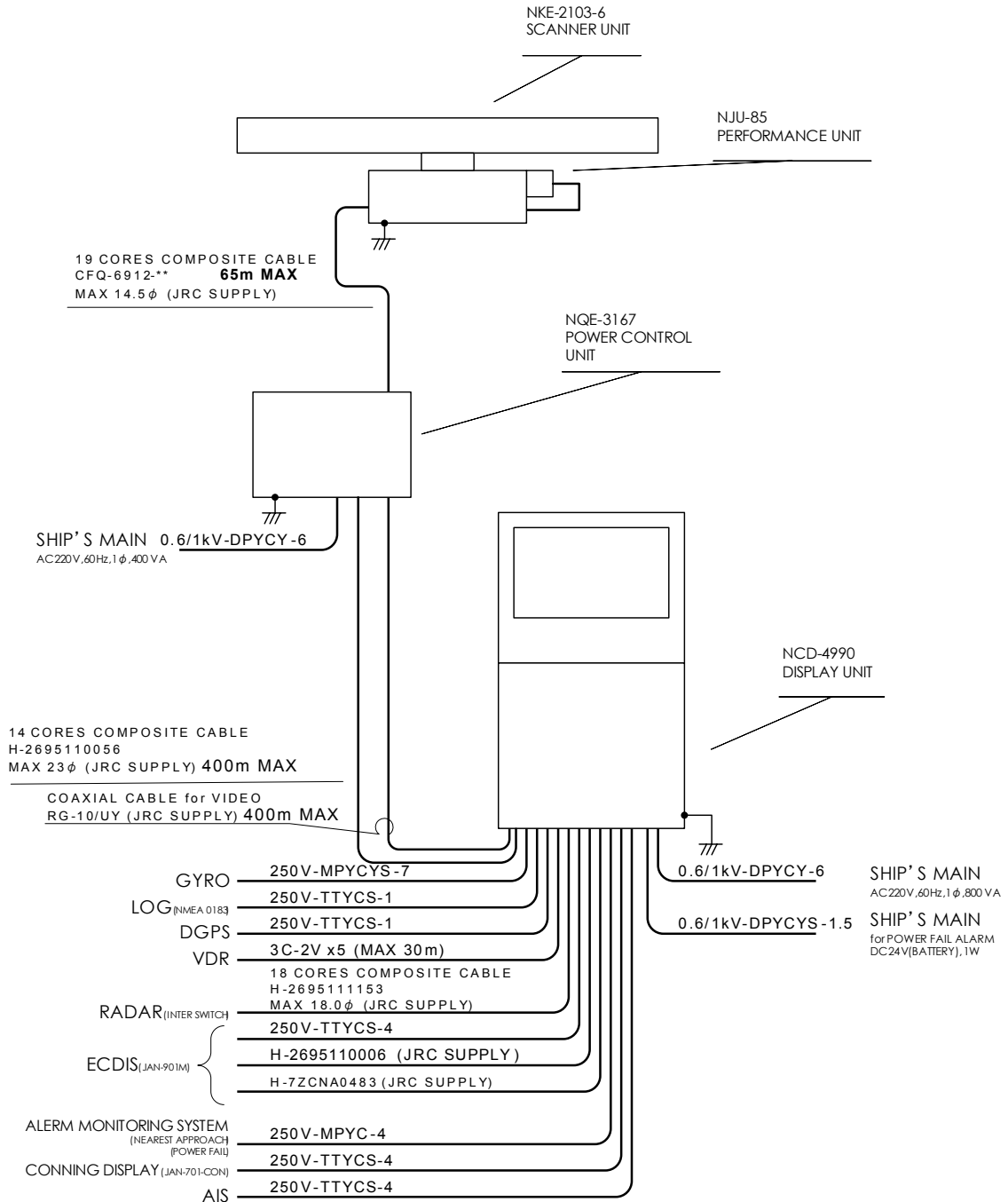
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(X-BAND 25kW RADAR)

JMA-9123-9XA形レーダー総合系統図

GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9123-9XA

Fig 5-41: JMA-9123-9XA (w/ NQE-3167)



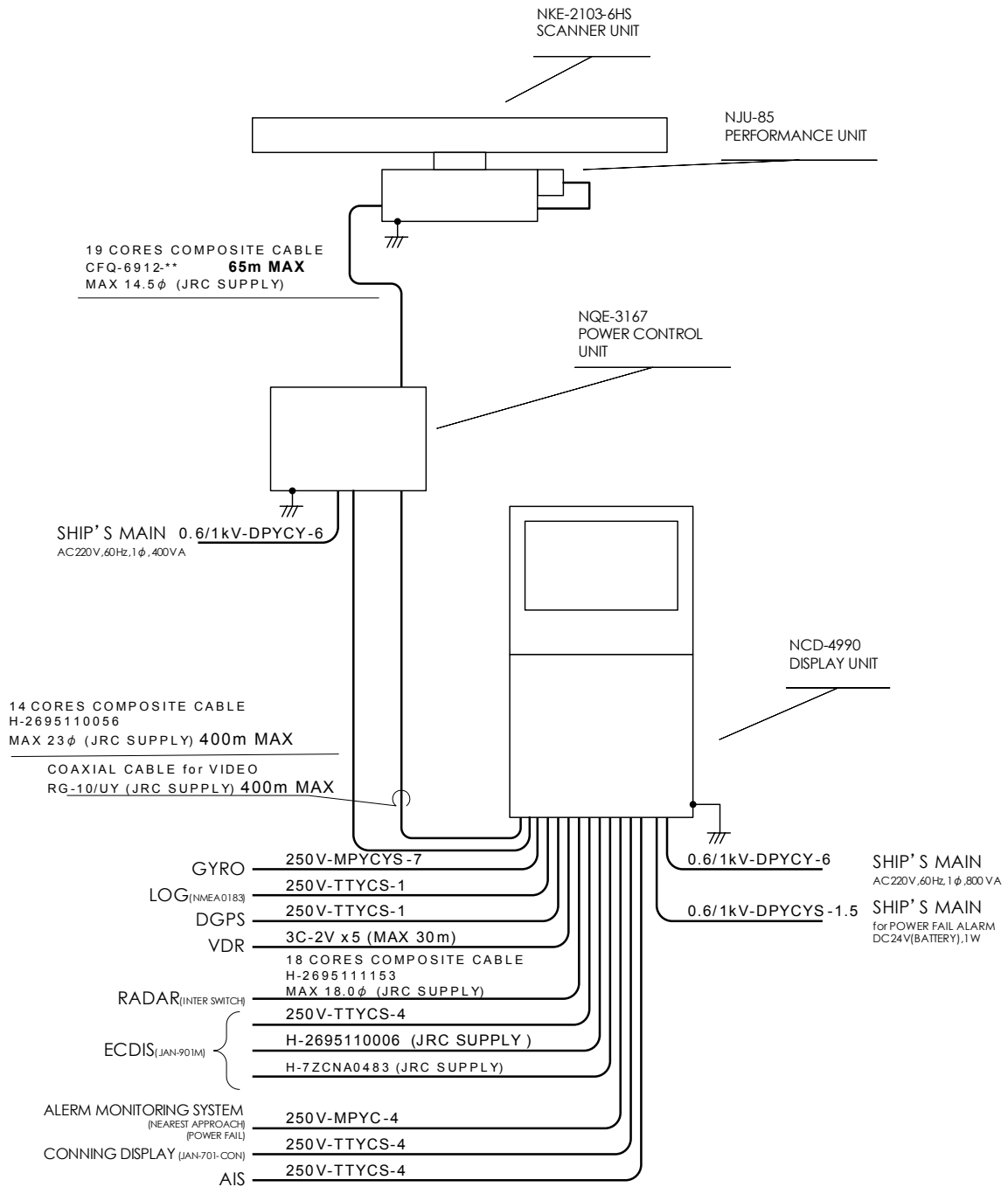
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注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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(X-BAND 10kW RADAR)  
JMA-9110-6XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9110-6XA

Fig 5-42: JMA-9110-6XA (w/ NQE-3167)

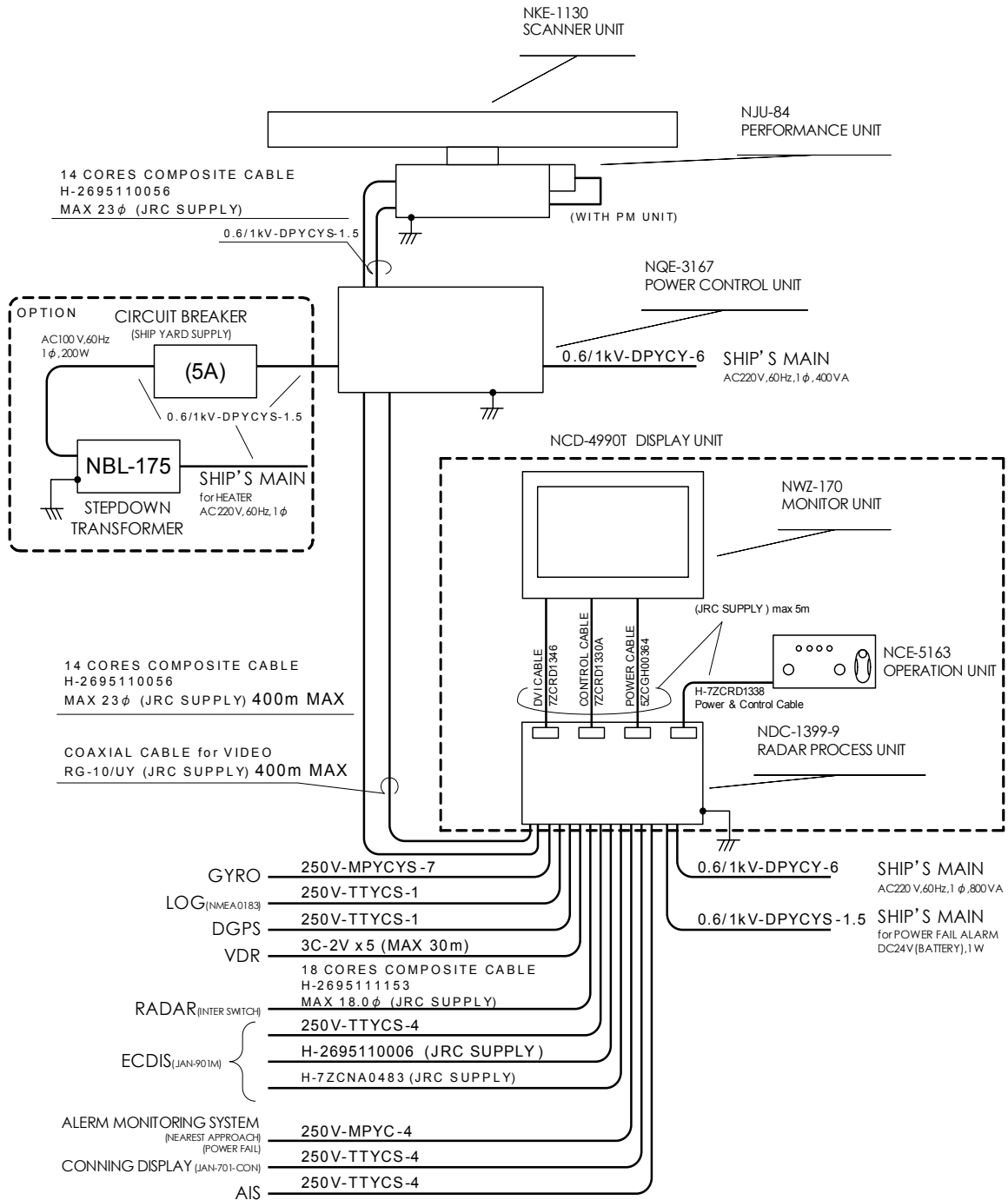


- 注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。
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(X-BAND 10kW RADAR)  
JMA-9110-6XAH形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9110-6XAH

Fig 5-43: JMA-9110-6XAH (w/ NQE-3167)





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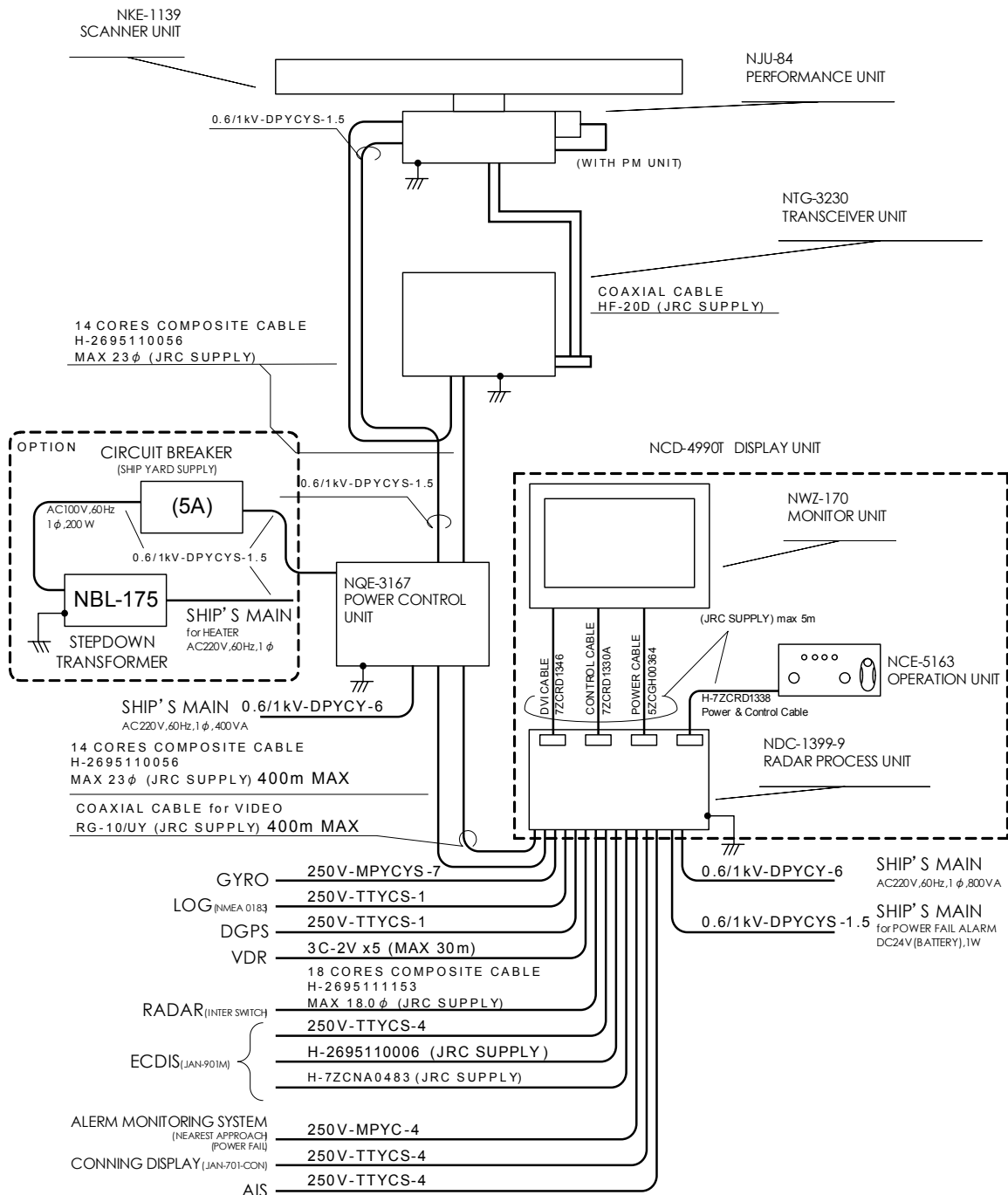
注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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(S-BAND 30kW RADAR)

JMA-9132-SA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9132-SA

Fig 5-44: JMA-9132-SA (w/ NQE-3167) desktop

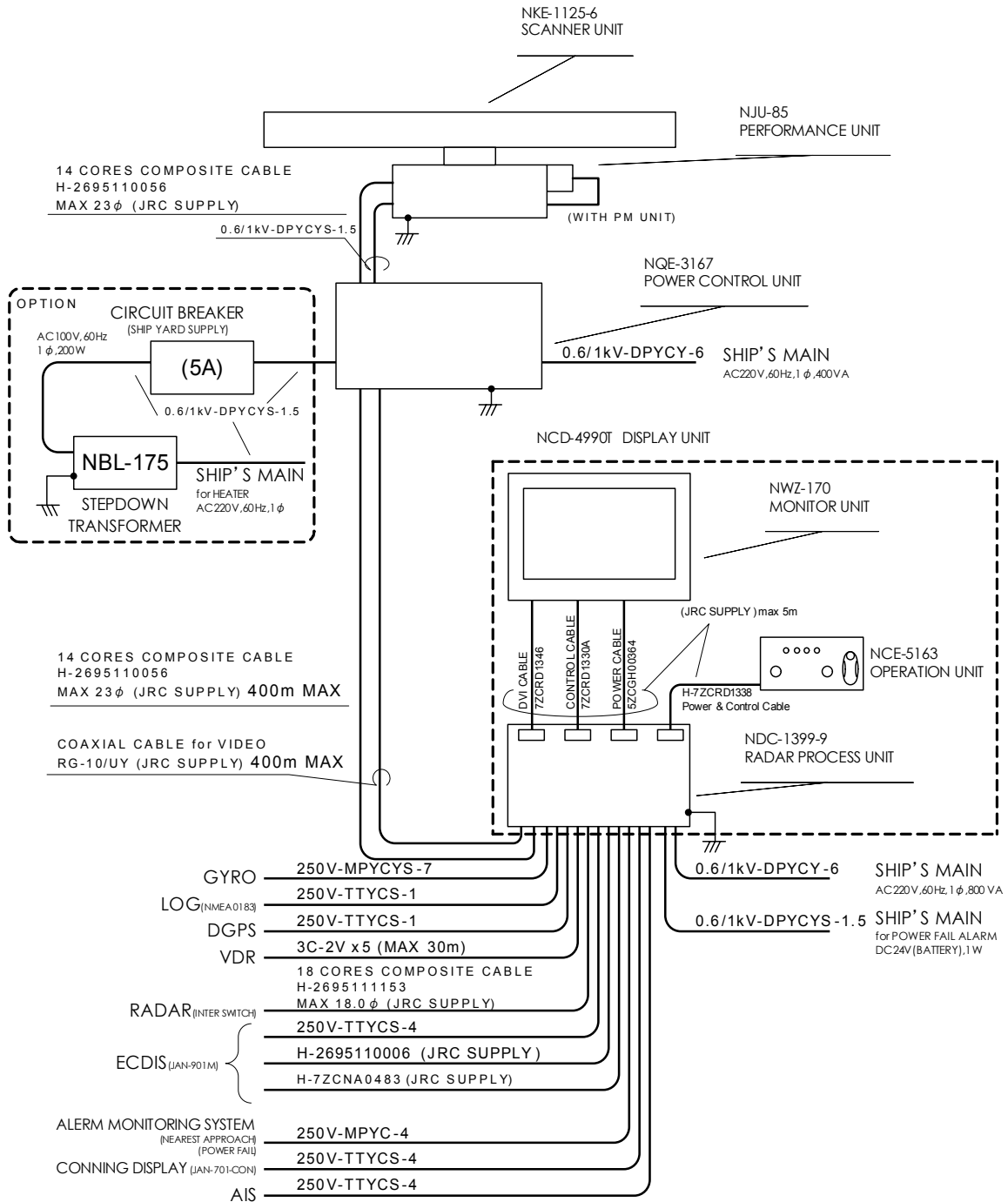


注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(S-BAND 30kW RADAR)  
JMA-9133-SA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9133-SA

Fig 5-45: JMA-9133-SA (w/ NQE-3167) desktop

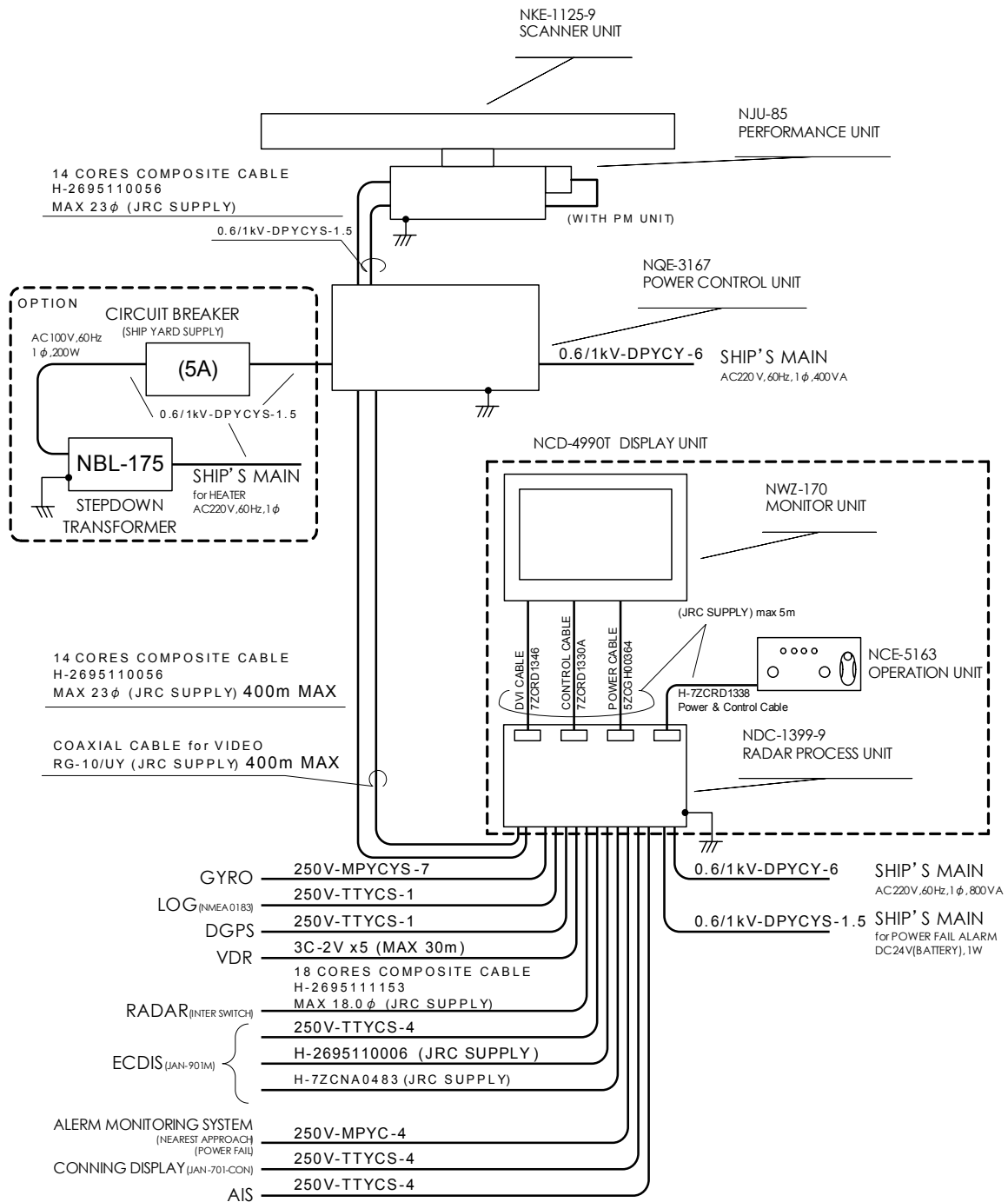


注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

NOTE: ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(X-BAND 25kW RADAR)  
JMA-9122-6XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9122-6XA

Fig 5-46: JMA-9122-6XA (w/ NQE-3167) desktop

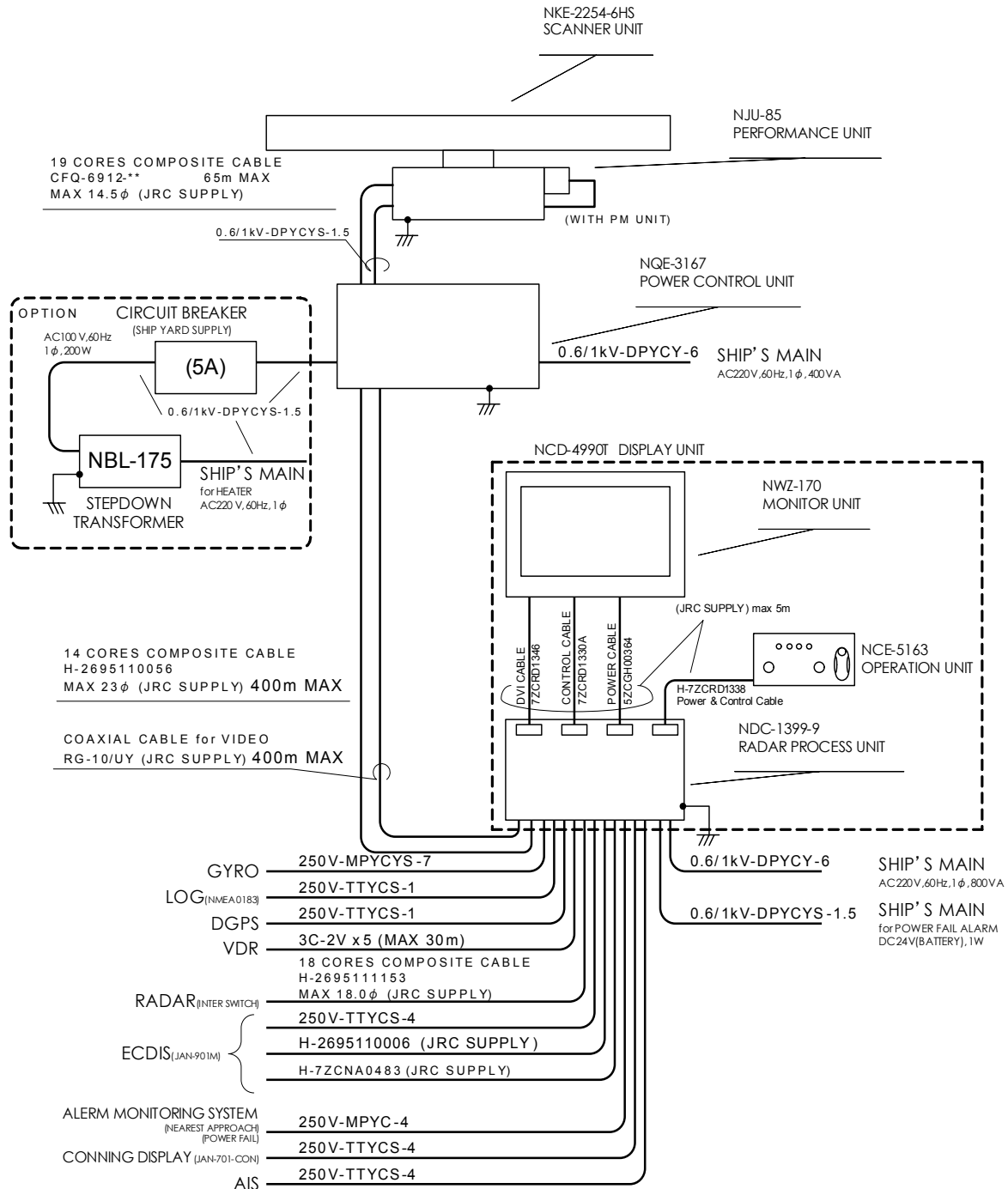


注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(X-BAND 25kW RADAR)  
JMA-9122-9XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9122-9XA

Fig 5-47: JMA-9122-9XA (w/ NQE-3167) desktop



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

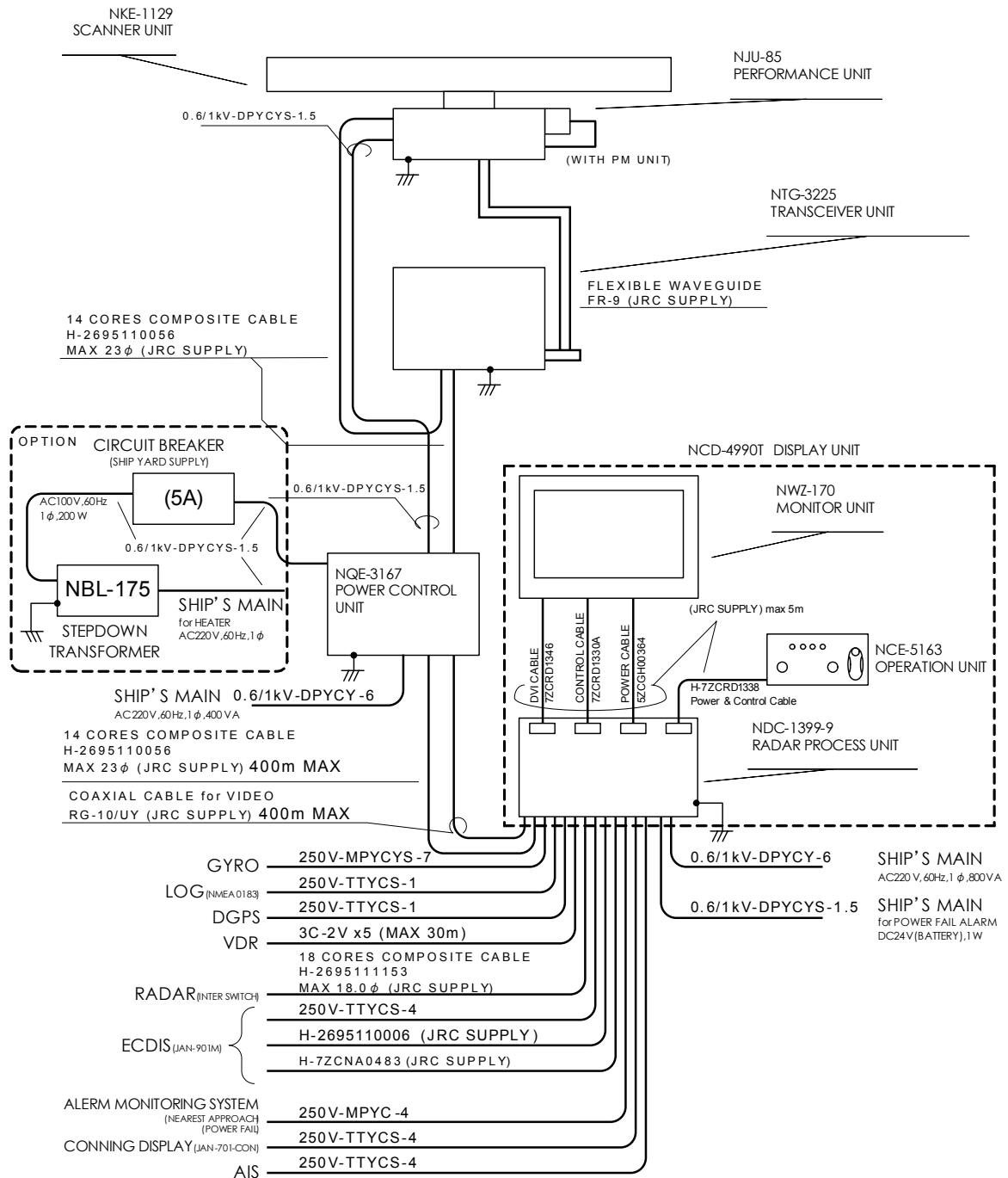
NOTE: ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(X-BAND 25kW RADAR)

JMA-9122-6XAH形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9122-6XAH

Fig 5-48: JMA-9122-6XAH (w/ NQE-3167) desktop





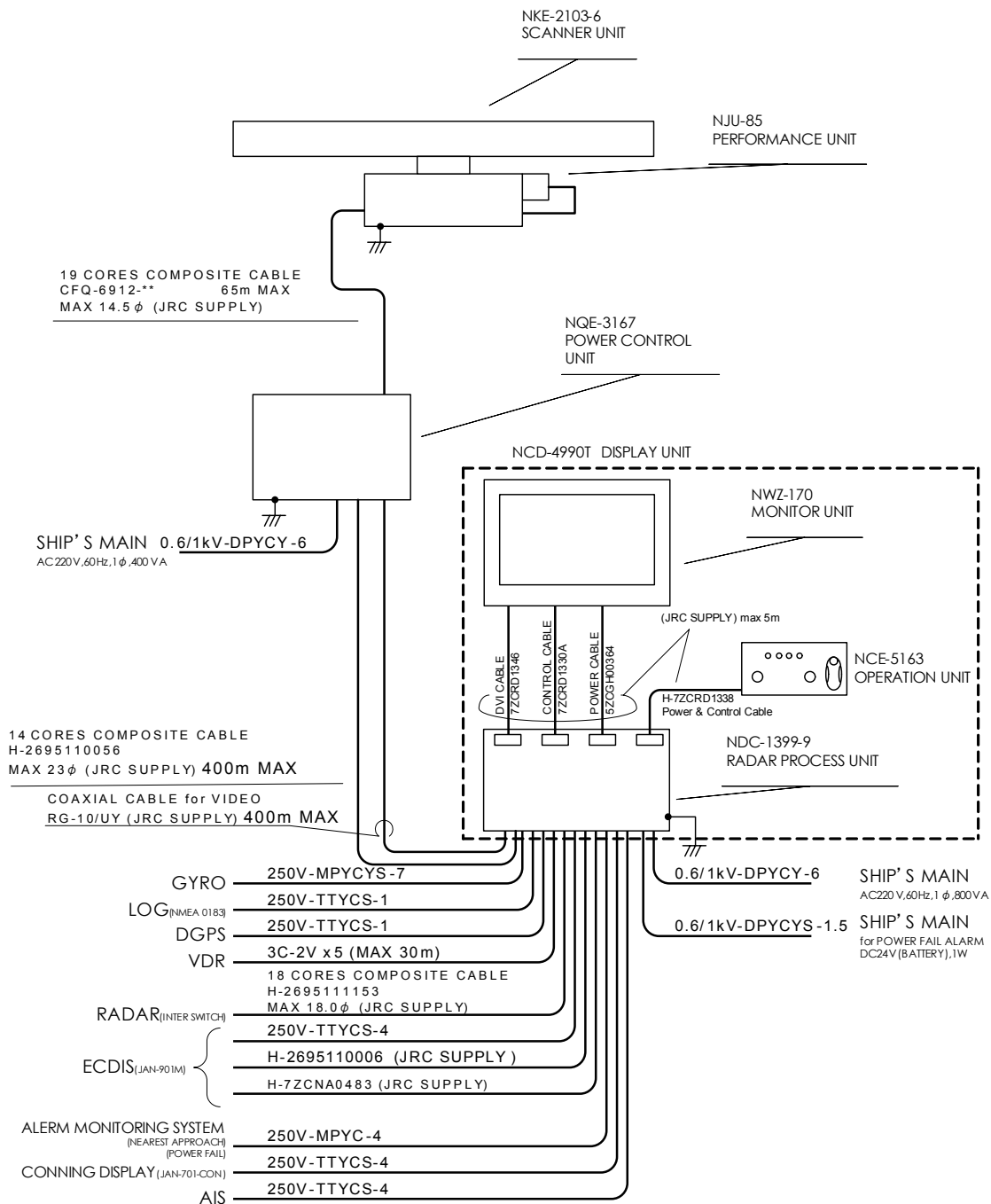
注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

NOTE: ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(X-BAND 25kW RADAR)  
JMA-9123-9XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9123-9XA

Fig 5-50: JMA-9123-9XA (w/ NQE-3167) desktop





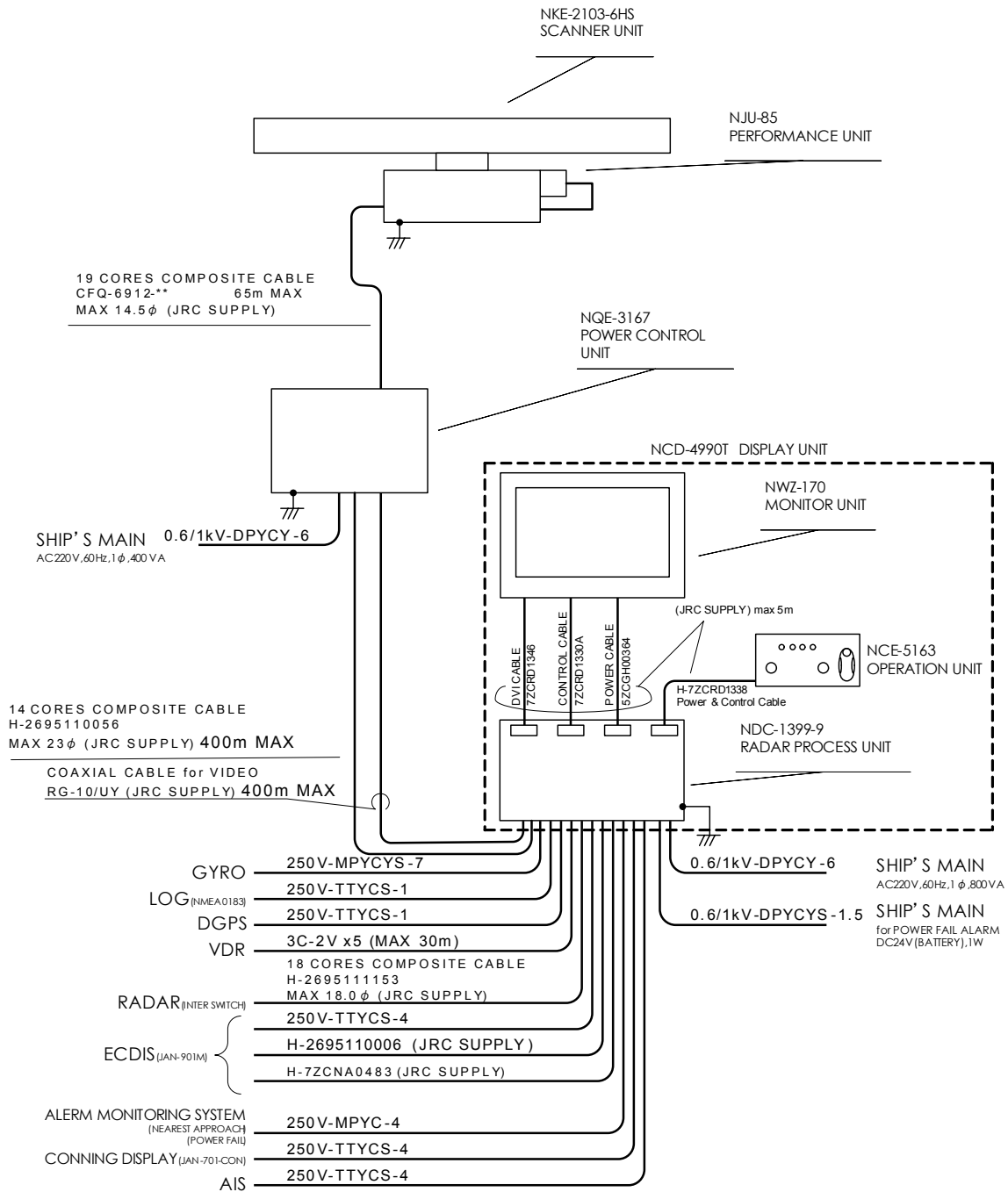
注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

NOTE: ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(X-BAND 10kW RADAR)  
JMA-9110-6XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9110-6XA

Fig 5-51: JMA-9110-6XA (w/ NQE-3167) desktop





- 注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。
- NOTE: ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(X-BAND 10kW RADAR)  
JMA-9110-6XAH形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9110-6XAH

Fig 5-52: JMA-9110-6XAH (w/ NQE-3167) desktop

### 5.2.8 Inter-board connection diagram of power control unit

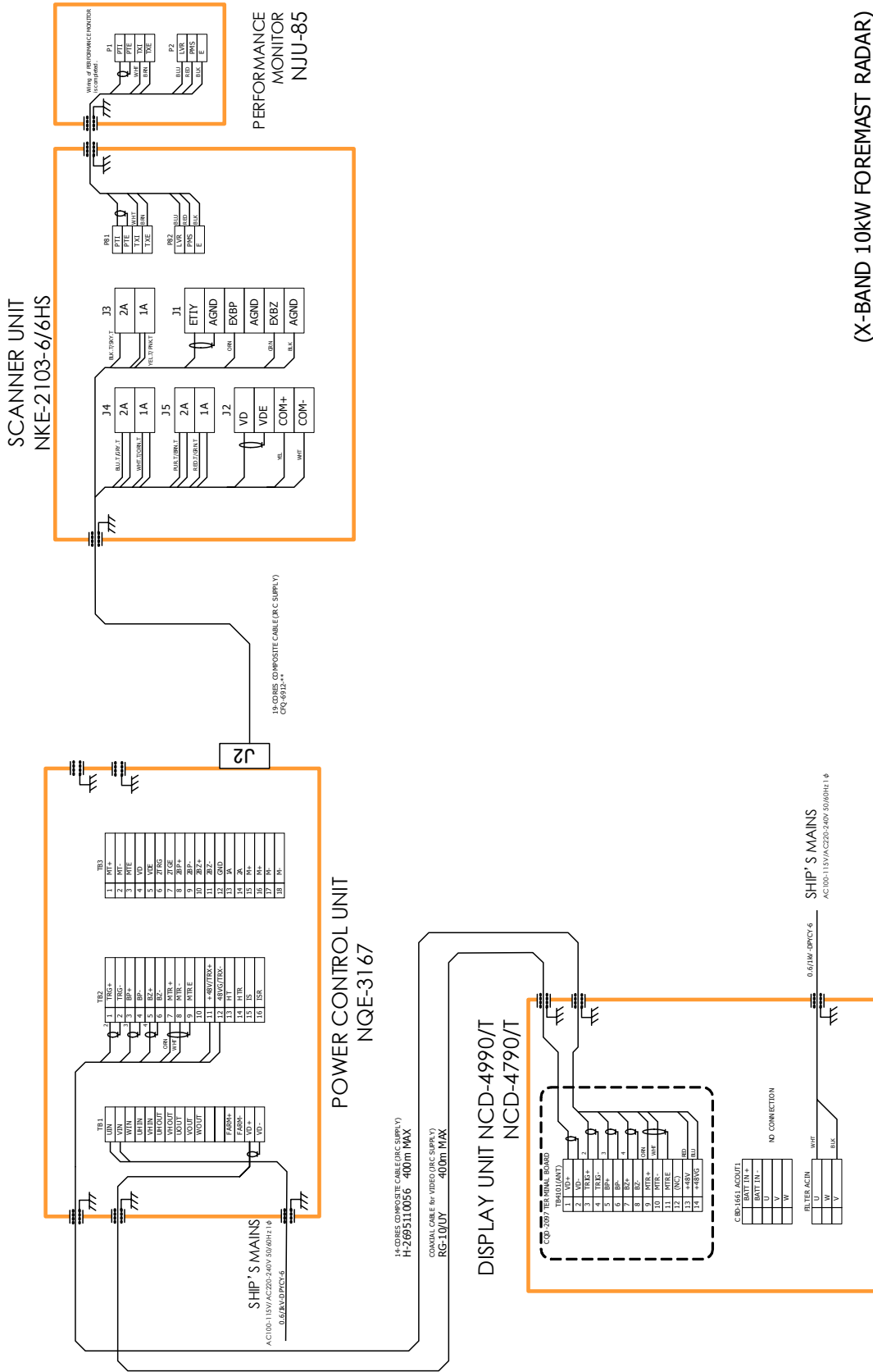


Fig 5-53: Inter-board connection diagram of NQE-3167 JMA-9110/7110

(X-BAND 10kW FOREMAST RADAR)  
JMA-9110, JMA-7110レーダー、パワーコントロールユニット間 盤間接続図  
INTERCONNECTION DIAGRAM OF BETWEEN RADAR TYPE JMA-9110/JMA-7110 and NQE-3167 POWER CONTROL UNIT

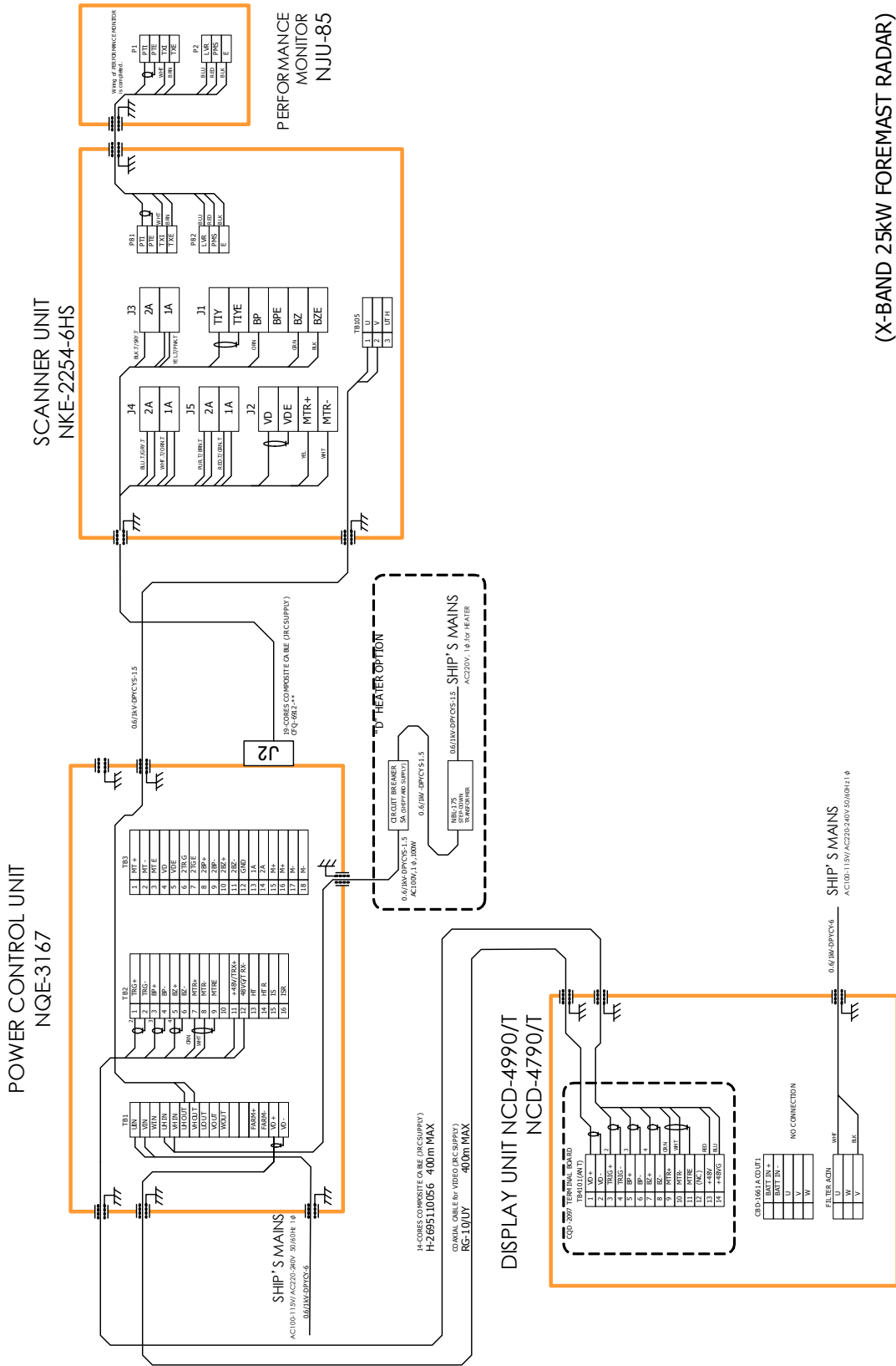
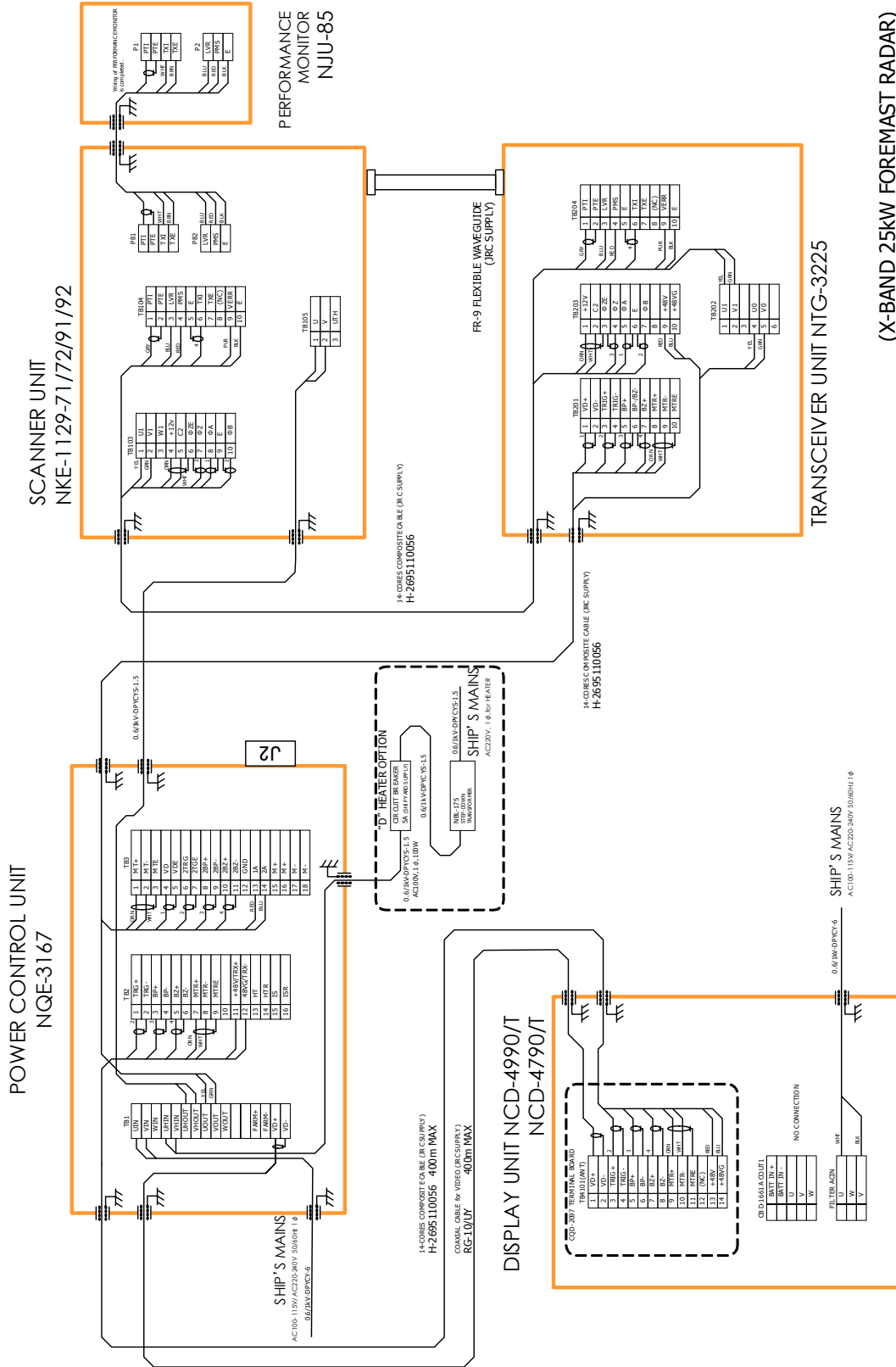


Fig 5-54: Inter-board connection diagram of NQE-3167 JMA-9122-6XAH/JMA-7122-6XAH

(X-BAND 25kW FORECAST RADAR)  
JMA-9122-6XAH, JMA-7122-6XAHレーダー パワーコントロールユニット間 盤間接続図  
INTERCONNECTION DIAGRAM OF BETWEEN RADAR TYPE JMA-9122-6XAH/JMA-7122-6XAH  
and NQE-3167 POWER CONTROL UNIT

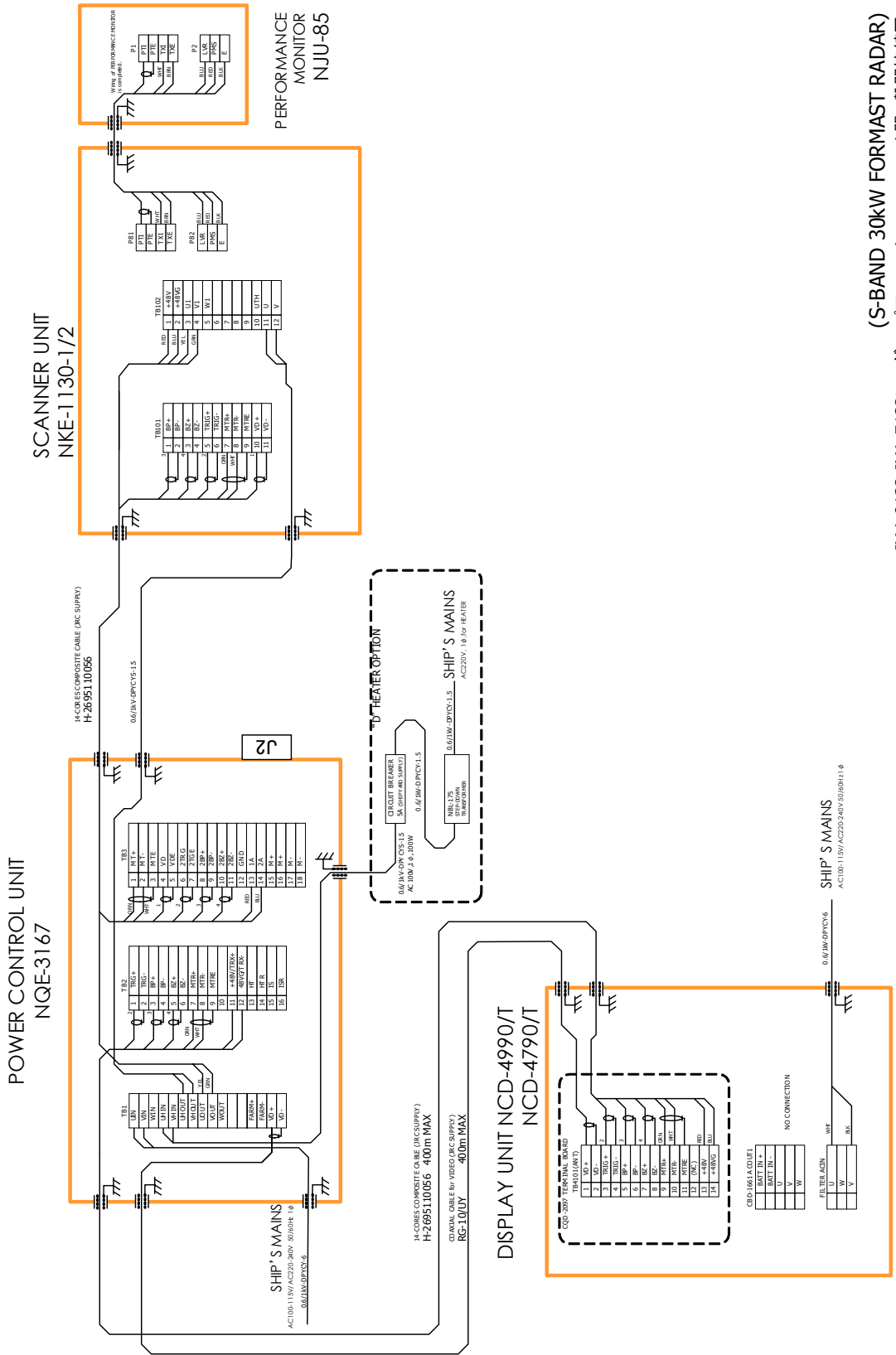




(X-BAND 25KW FOREMAST RADAR)  
JMA-9123, JMA-7123レーダー パワーコントロールユニット間 盤間接続図  
INTERCONNECTION DIAGRAM OF BETWEEN RADAR TYPE JMA-9123/JMA-7123  
and NQE-3167 POWER CONTROL UNIT

Fig 5-56: Inter-board connection diagram of NQE-3167 MA-9123/JMA-7123



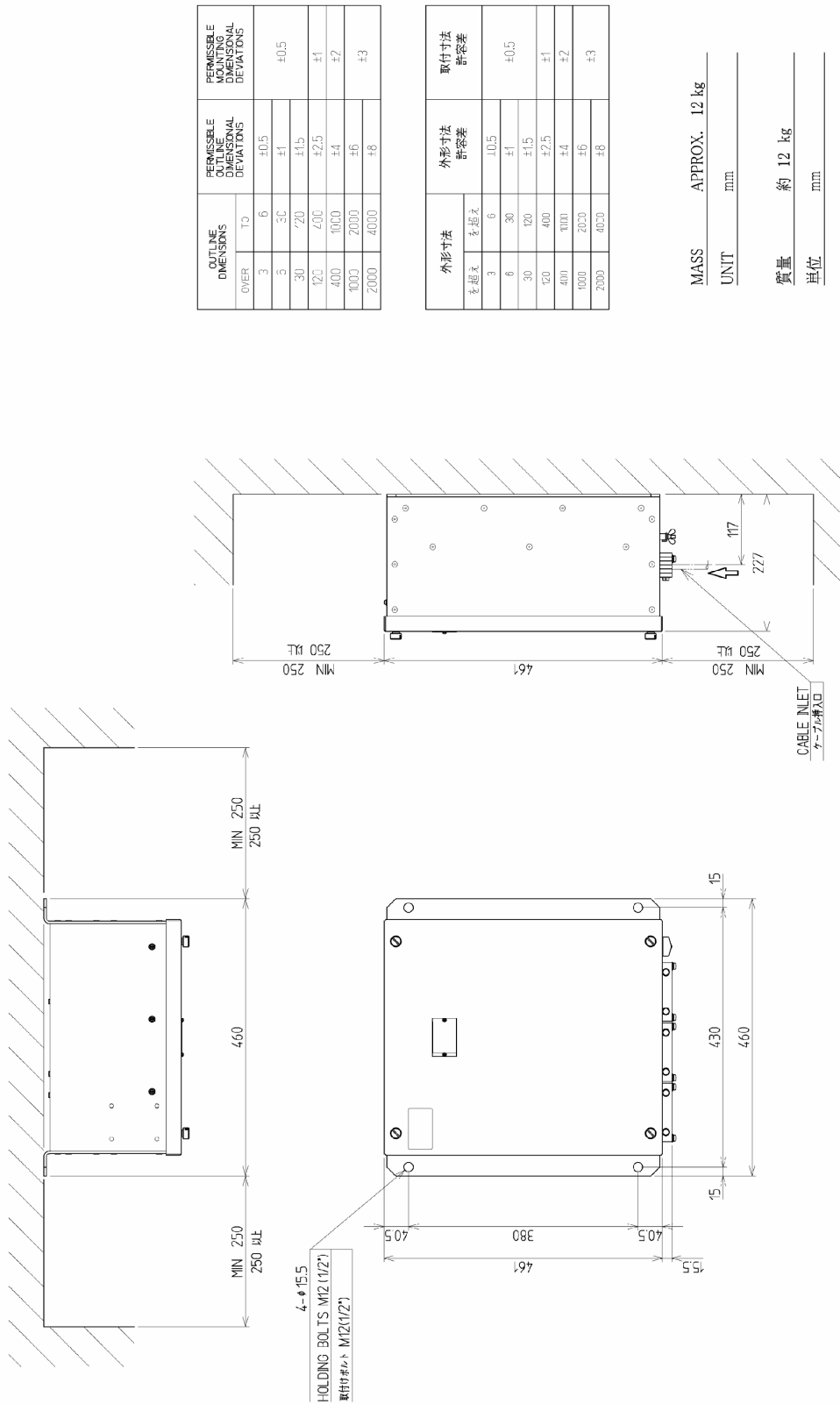


(S-BAND 30kW FORMAST RADAR)  
JMA-9132/JMA-7132レーダー パワーコントロールユニット間 盤間接続図  
INTERCONNECTION DIAGRAM OF BETWEEN RADAR TYPE JMA-9132/JMA-7132  
and NQE-3167 POWER CONTROL UNIT

Fig 5-57: Inter-board connection diagram of NQE-3167 JMA-9132/JMA-7132



## 5.2.9 Exterior drawing of Power Control Unit



12

Fig 5-59: Exterior drawing of NQE-3167

NQE-3167

POWER CONTROL UNIT OUTLINE DRAWING

SONQE5080



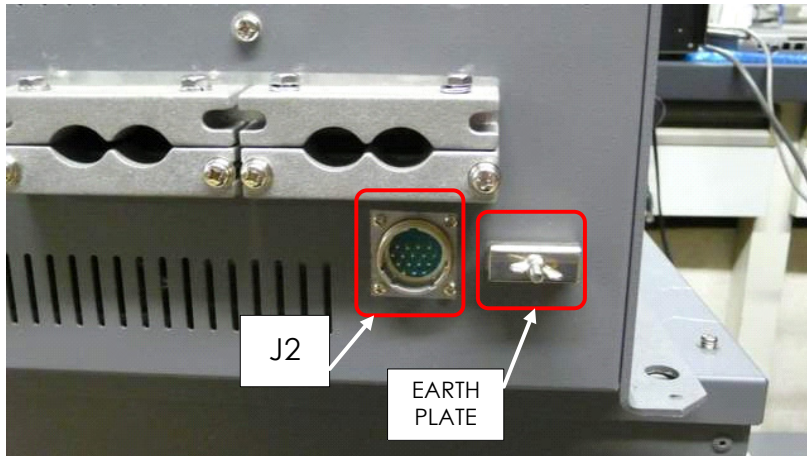


Fig 5-60: NQE-3167 cable entrance

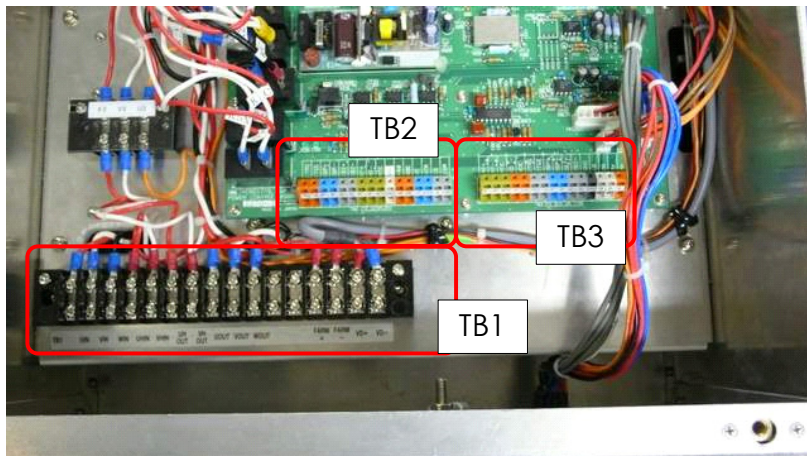


Fig 5-61: NQE-3167 terminal block

Securely ground the included earth plate to the hull's earth.

## 5.3 INSTALLATION OF VDR

### 5.3.1 Connections

The VDR video signal (analog RGB) output connector is J4409 of radar processing circuit CDC-1324 located in the display unit (processing unit). See the drawing below.

When JRC's VDR is used, by connecting it to TB4601(21,22)MNTTX ± of terminal board circuit CQD-2097 located in the display unit (processing unit), it is possible to use the online maintenance function.

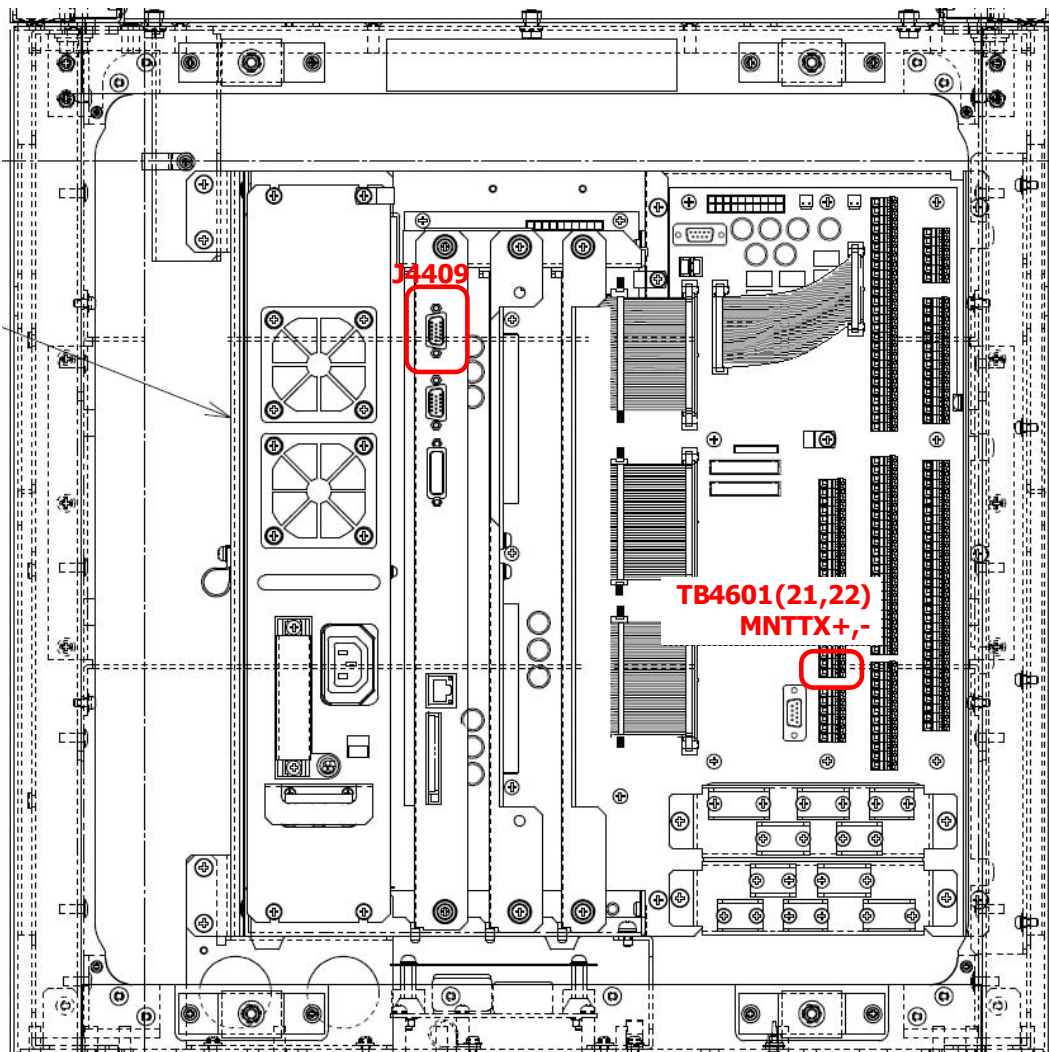


Fig 5-62: VDR connection connector / terminal block

### 5.3.2 VDR I/F kit

The VDR I/F kit is used to connect the JMA-7100 and JMA-9100 series radar to VDR.

VDR I/F connection kit CQD-1891 includes:

- DSUB15P - BNC cable (KB5BNC2K, 2 meters) 1 piece
- BNC to BNC adapter (BNC-A-JJ) 5 piece
- BNC connector (3CV-P2) 5 piece

Use 3C-2V coaxial cable for connection.

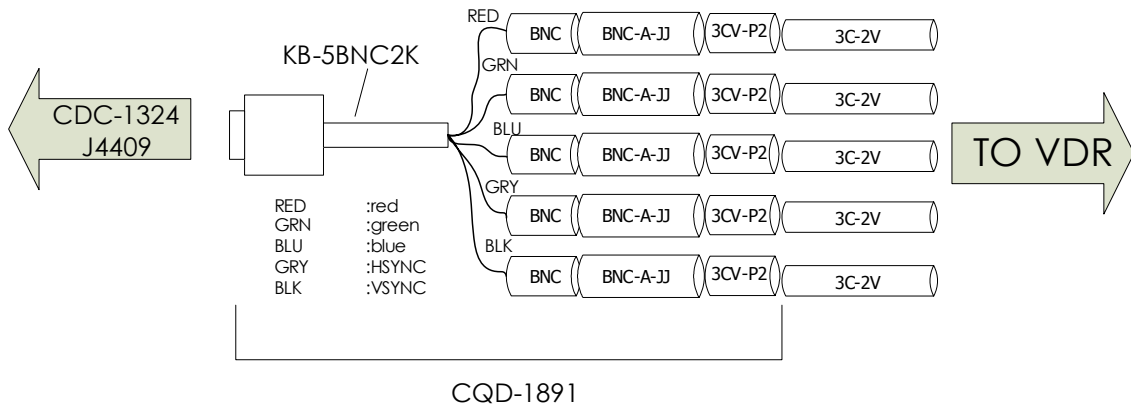


Fig 5-63: CQD-1891 VDR I/F Kit

# 5.4 INSTALLATION OF SUB-OPERATION UNIT AND EXPANSION OF TRACKBALL

## 5.4.1 Sub Operation Unit

With regard to JMA-7100 and JMA-9100 series radars, an operation unit can be expanded as an option.

MODEL: NCE-5163 (5-meter long cable)

Connect the cable to J4312 of terminal board circuit CQD-2097 located in the display unit (processing unit).

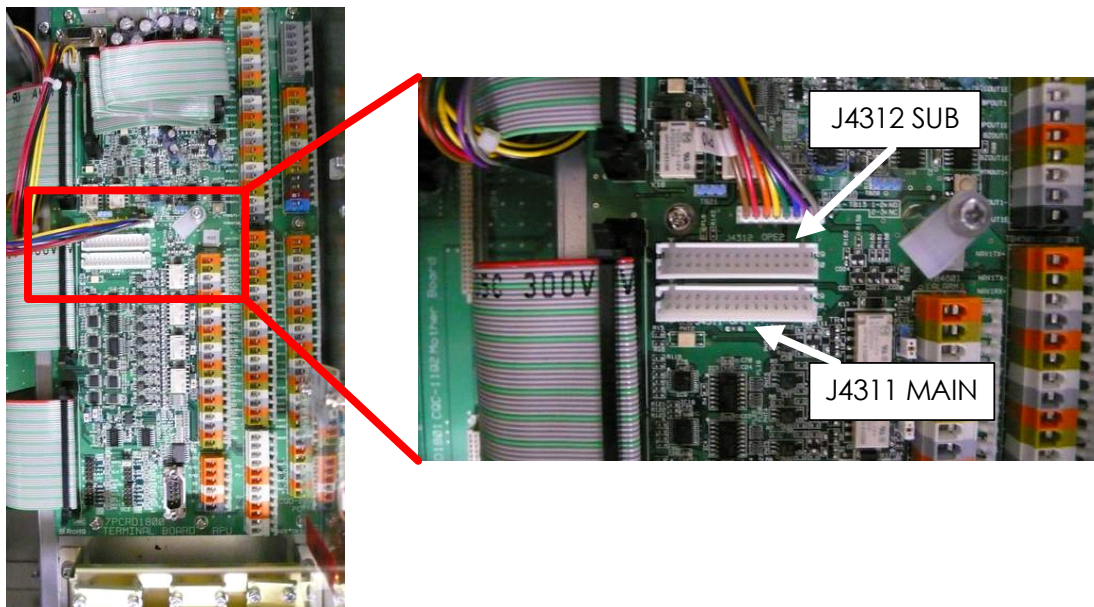


Fig 5-64: Sub-operation unit connection connector



## 5.4.2 Expansion of trackball

With regard to JMA-7100 and JMA-9100 series radars, the operating unit allows for optional pointing devices (mouse or trackball) for the standard PS/2 interface.

Recommended device: ST-45UPI (Logitech) JRC Code: 5EZLY00006

Connect the trackball to J6411 of operating circuit D located in the operating unit.



### CAUTION



- The maximum length of the PS/2 cable for the expanded trackball and mouse shall be 5 meters.
- Three-button type, wheel-type, and four- or five-button type pointing devices will not function. If those trackball and mouse devices are connected, only the left button and the right button will operate.
- A keyboard cannot be connected.
- An USB to PS/2 conversion connector can be used.

5

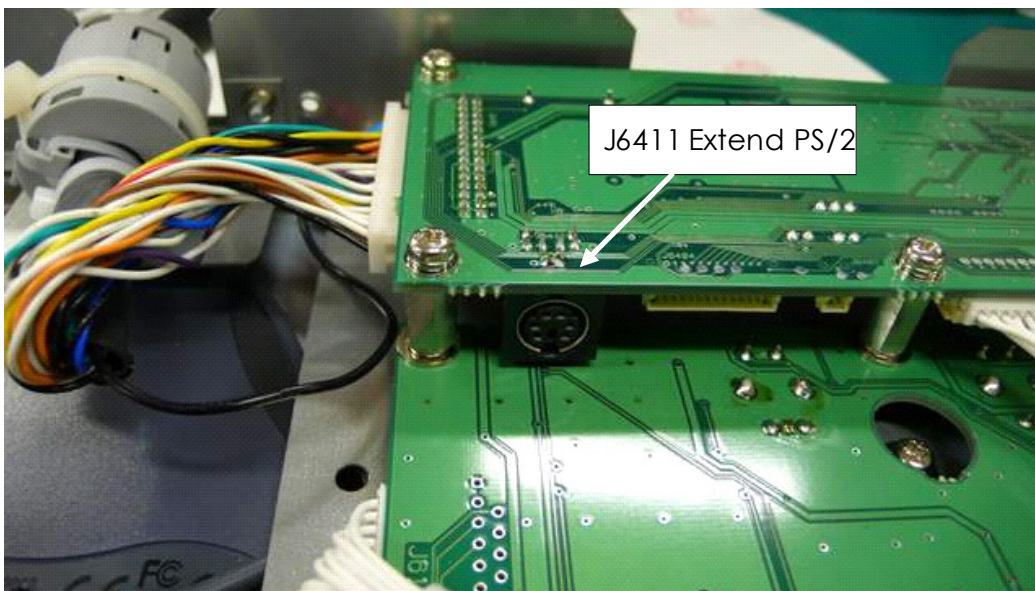


Fig 5-65: J6411 position

Remove eight screws from the side surface of the operating unit, remove the lid and turn the unit upside down. The board is fixed onto the top panel side.

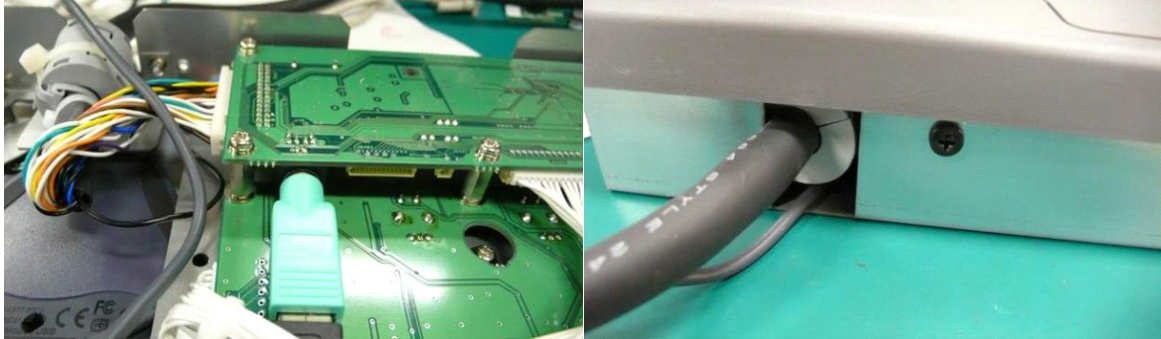


Fig 5-66: *Connection of expanded trackball*

An USB to PS/2 conversion connector can be used.



Fig 5-67: *Expanded trackball*

# SECTION 6

## Appendix

### Appendix

<b>6.1</b>	<b>EXTERIOR DRAWING</b>	<b>6-1</b>
6.1.1	NKE-1139	6-1
6.1.2	NTG-3230	6-3
6.1.3	NKE-1130	6-4
6.1.4	NKE-1129-7	6-5
6.1.5	NKE-1129-9	6-6
6.1.6	NTG-3225	6-7
6.1.7	NKE-1125-6	6-8
6.1.8	NKE-1125-9	6-9
6.1.9	NKE-2254-6HS	6-10
6.1.10	NKE-2103-6/NKE-2103-6HS	6-11
6.1.11	NCD-4990	6-12
6.1.12	NDC-1399-9	6-13
6.1.13	NCE-5163	6-14
6.1.14	NWZ-170	6-15
6.1.15	NCD-4790	6-16
6.1.16	NDC-1399-7	6-17
6.1.17	NCE-5163	6-18
6.1.18	NWZ-173	6-19

<b>6.2</b>	<b>GENERAL SYSTEM DIAGRAM .....</b>	<b>6-20</b>
<b>6.2.1</b>	<b>General system diagram of JMA-7100 (Self-standing type) .....</b>	<b>6-20</b>
6.2.1.1	General system diagram of JMA-7132-SA (Self-standing).....	6-21
6.2.1.2	General system diagram of JMA-7133-SA (Self-standing).....	6-22
6.2.1.3	General system diagram of JMA-7122-6XA (Self-standing).....	6-23
6.2.1.4	General system diagram of JMA-7122-9XA (Self-standing).....	6-24
6.2.1.5	General system diagram of JMA-7122-6XAH (Self-standing).....	6-25
6.2.1.6	General system diagram of JMA-7123-7XA (Self-standing).....	6-26
6.2.1.7	General system diagram of JMA-7123-9XA (Self-standing).....	6-27
6.2.1.8	General system diagram of JMA-7110-6XA (Self-standing).....	6-28
6.2.1.9	General system diagram of JMA-7110-6XAH (Self-standing).....	6-29
<b>6.2.2</b>	<b>General system diagram of JMA-7100 (Desktop type) .....</b>	<b>6-30</b>
6.2.2.1	General system diagram of JMA-7132-SA (Desktop) .....	6-31
6.2.2.2	General system diagram of JMA-7133-SA (Desktop) .....	6-32
6.2.2.3	General system diagram of JMA-7122-6XA (Desktop) .....	6-33
6.2.2.4	General system diagram of JMA-7122-9XA (Desktop) .....	6-34
6.2.2.5	General system diagram of JMA-7122-6XAH (Desktop).....	6-35
6.2.2.6	General system diagram of JMA-7123-7XA (Desktop) .....	6-36
6.2.2.7	General system diagram of JMA-7123-9XA (Desktop) .....	6-37
6.2.2.8	General system diagram of JMA-7110-6XA (Desktop) .....	6-38
6.2.2.9	General system diagram of JMA-7110-6XAH (Desktop).....	6-39
<b>6.2.3</b>	<b>General system diagram of JMA-9100 (Self-standing type) .....</b>	<b>6-40</b>
6.2.3.1	General system diagram of JMA-9132-SA (Self-standing) .....	6-41
6.2.3.2	General system diagram of JMA-9133-SA (Self-standing).....	6-42
6.2.3.3	General system diagram of JMA-9122-6XA (Self-standing).....	6-43
6.2.3.4	General system diagram of JMA-9122-9XA (Self-standing).....	6-44
6.2.3.5	General system diagram of JMA-9122-6XAH (Self-standing).....	6-45
6.2.3.6	General system diagram of JMA-9123-7XA (Self-standing).....	6-46
6.2.3.7	General system diagram of JMA-9123-9XA (Self-standing).....	6-47
6.2.3.8	General system diagram of JMA-9110-6XA (Self-standing).....	6-48
6.2.3.9	General system diagram of JMA-9110-6XAH (Self-standing).....	6-49
<b>6.2.4</b>	<b>General system diagram of JMA-9100 (Desktop type) .....</b>	<b>6-50</b>
6.2.4.1	General system diagram of JMA-9132-SA (Desktop) .....	6-51
6.2.4.2	General system diagram of JMA-9133-SA (Desktop) .....	6-52
6.2.4.3	General system diagram of JMA-9122-6XA (Desktop) .....	6-53
6.2.4.4	General system diagram of JMA-9122-9XA (Desktop) .....	6-54
6.2.4.5	General system diagram of JMA-9122-6XAH (Desktop).....	6-55
6.2.4.6	General system diagram of JMA-9123-7XA (Desktop) .....	6-56
6.2.4.7	General system diagram of JMA-9123-9XA (Desktop) .....	6-57
6.2.4.8	General system diagram of JMA-9110-6XA (Desktop) .....	6-58
6.2.4.9	General system diagram of JMA-9110-6XAH (Desktop).....	6-59
<b>6.3</b>	<b>INTER-BOARD CONNECTION DIAGRAM .....</b>	<b>6-60</b>
<b>6.3.1</b>	<b>Inter-board connection diagram of JMA-7100 .....</b>	<b>6-60</b>
6.3.1.1	Inter-board connection diagram of JMA-7132-SA .....	6-61
6.3.1.2	Inter-board connection diagram of JMA-7133-SA .....	6-62
6.3.1.3	Inter-board connection diagram of JMA-7122-6XA/9XA .....	6-63
6.3.1.4	Inter-board connection diagram of JMA-7122-6XAH.....	6-64

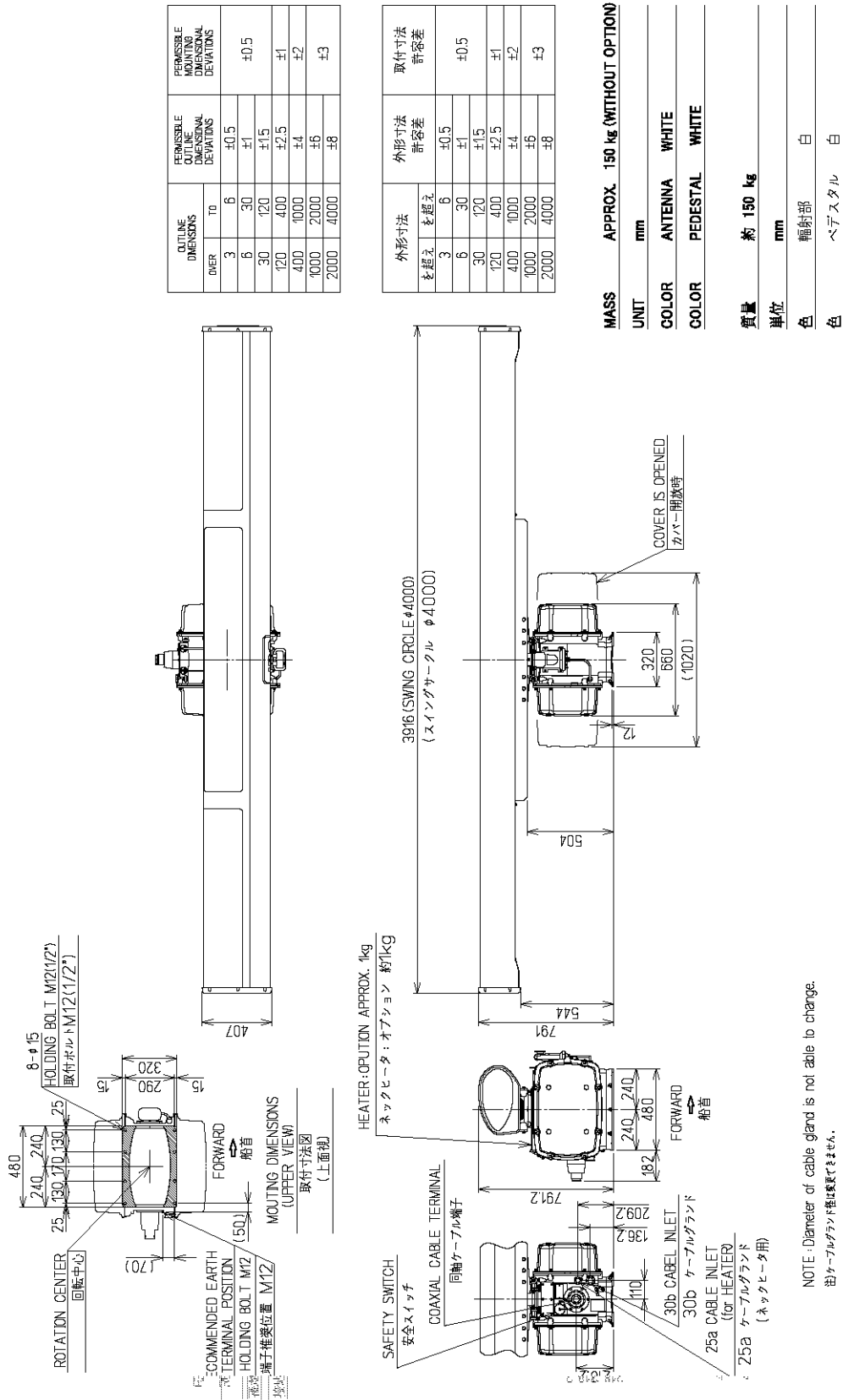


6.3.1.5	Inter-board connection diagram of JMA-7122-6XAH(Desktop) .....	6-65
6.3.1.6	Inter-board connection diagram of JMA-7123-7XA/9XA .....	6-66
6.3.1.7	Inter-board connection diagram of JMA-7110-6XA/6XAH .....	6-67
6.3.1.8	Inter-board connection diagram of JMA-7110-6XA/6XAH(Desktop) ....	6-68
6.3.1.9	Inter-unit connection diagram of NCD-4790T .....	6-69
<b>6.3.2</b>	<b>Inter-board connection diagram of JMA-9100 .....</b>	<b>6-70</b>
6.3.2.1	Inter-board connection diagram of JMA-9132-SA .....	6-71
6.3.2.2	Inter-board connection diagram of JMA-9133-SA .....	6-72
6.3.2.3	Inter-board connection diagram of JMA-9122-6XA/9XA .....	6-73
6.3.2.4	Inter-board connection diagram of JMA-9122-6XAH.....	6-74
6.3.2.5	Inter-board connection diagram of JMA-9122-6XAH (Desktop) .....	6-75
6.3.2.6	Inter-board connection diagram of JMA-9123-7XA/9XA .....	6-76
6.3.2.7	Inter-board connection diagram of JMA-9110-6XA/6XAH.....	6-77
6.3.2.8	Inter-board connection diagram of JMA-9110-6XA/6XAH (Desktop) ...	6-78
6.3.2.9	Inter-unit connection diagram of NCD-4990T .....	6-79
<b>6.4</b>	<b>SCANNER UNIT INTERCONNECTION .....</b>	<b>6-80</b>
6.4.1	<b>NKE-2103 .....</b>	<b>6-81</b>
6.4.2	<b>NKE-2254 .....</b>	<b>6-82</b>
6.4.3	<b>NKE-1125 (AC110V) .....</b>	<b>6-83</b>
6.4.4	<b>NKE-1125 (AC220V) .....</b>	<b>6-84</b>
6.4.5	<b>NKE-1129 (AC110V) .....</b>	<b>6-85</b>
6.4.6	<b>NKE-1129 (AC220V) .....</b>	<b>6-86</b>
6.4.7	<b>NTG-3225 .....</b>	<b>6-87</b>
6.4.8	<b>NKE-1130 (AC110V) .....</b>	<b>6-88</b>
6.4.9	<b>NKE-1130 (AC220V) .....</b>	<b>6-89</b>
6.4.10	<b>NKE-1139 (AC110V) .....</b>	<b>6-90</b>
6.4.11	<b>NKE-1139 (AC220V) .....</b>	<b>6-91</b>
6.4.12	<b>NTG-3230 .....</b>	<b>6-92</b>



# 6.1 EXTERIOR DRAWING

## 6.1.1 NKE-1139



OUTLINE DIMENSIONS		PERMISSIBLE MOUNTING POSITIONAL DEVIATIONS
OVER	T0	
3	6	±0.5
6	30	±1
30	120	±1.5
120	400	±2.5
400	1000	±4
1000	2000	±6
2000	4000	±8

外形寸法		外形寸法許容差
寸法	公差	
3	6	±0.5
6	30	±1
30	120	±1.5
120	400	±2.5
400	1000	±4
1000	2000	±6
2000	4000	±8

MASS APPROX. 150 kg (WITHOUT OPTION)

UNIT	mm
COLOR	ANTENNA WHITE
COLOR	PEDESTAL WHITE
質量	約 150 kg
単位	mm
色	輻射部 白
色	ベースタル 白

SCANNER UNIT OUTLINE DRAWING

NIKE-1139

NOTE: Diameter of cable gland is not able to change.  
ケーブルグラント径は変更できません。

Fig 6-1: NKE-1139

### 6.1.2 NTG-3230

OUTLINE DIMENSIONS		PERMISSIBLE OUTLINE DIMENSIONAL DEVIATIONS	PERMISSIBLE MOUNTING DIMENSIONAL DEVIATIONS
OVER	TO		
3	6	±0.5	±0.5
6	30	±1	
30	120	±1.5	±1
120	400	±2.5	
400	1000	±4	±2
1000	2000	±6	
2000	4000	±8	±3

外形寸法		外形寸法 許容差	取付寸法 許容差
を越え	以下		
3	6	±0.5	±0.5
6	30	±1	
30	120	±1.5	±1
120	400	±2.5	
400	1000	±4	±2
1000	2000	±6	
2000	4000	±8	±3

MASS APPROX. 33 kg

UNIT mm

質量 約 33 kg

単位 mm

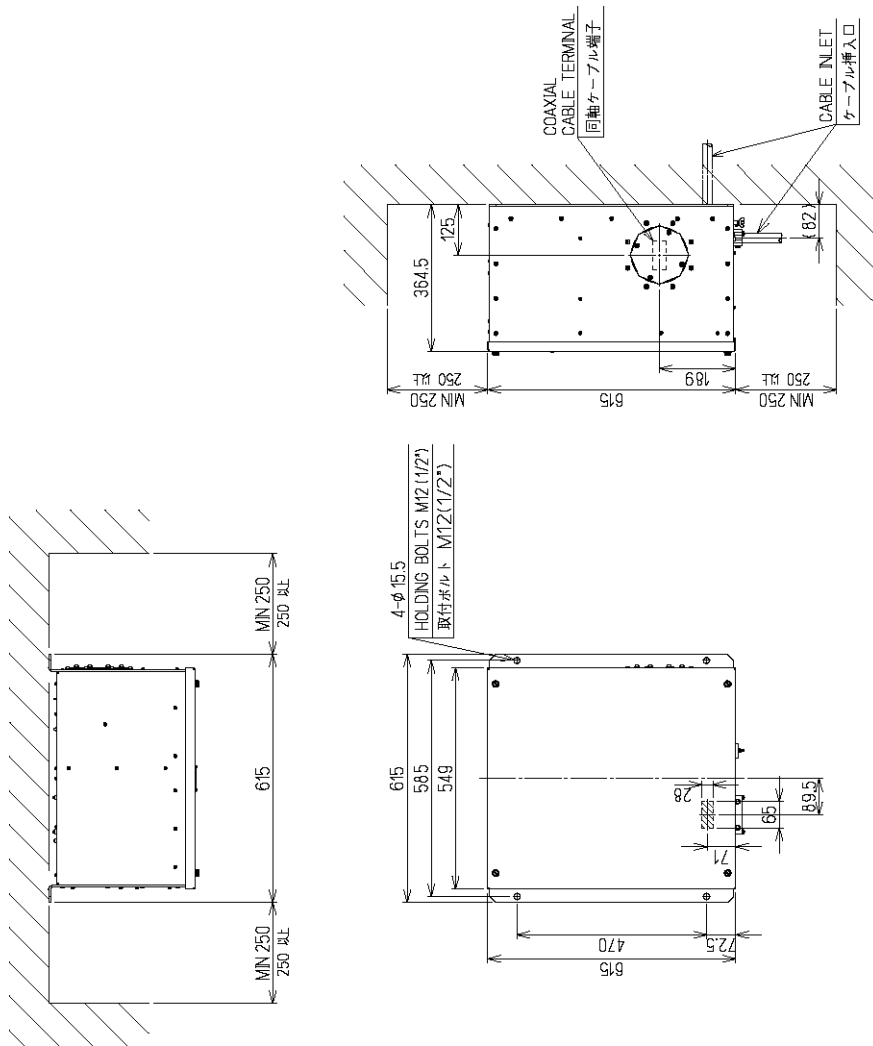


Fig 6-2: NTG-3230

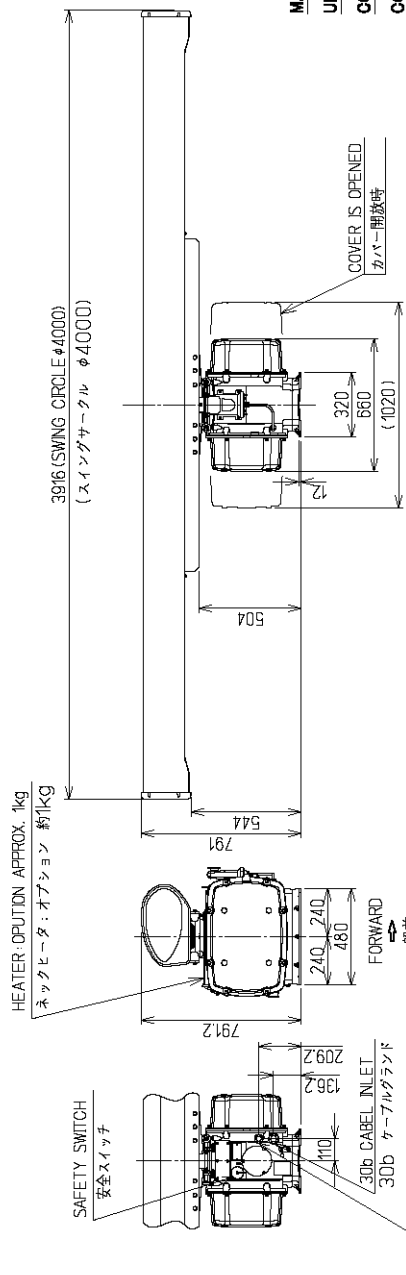
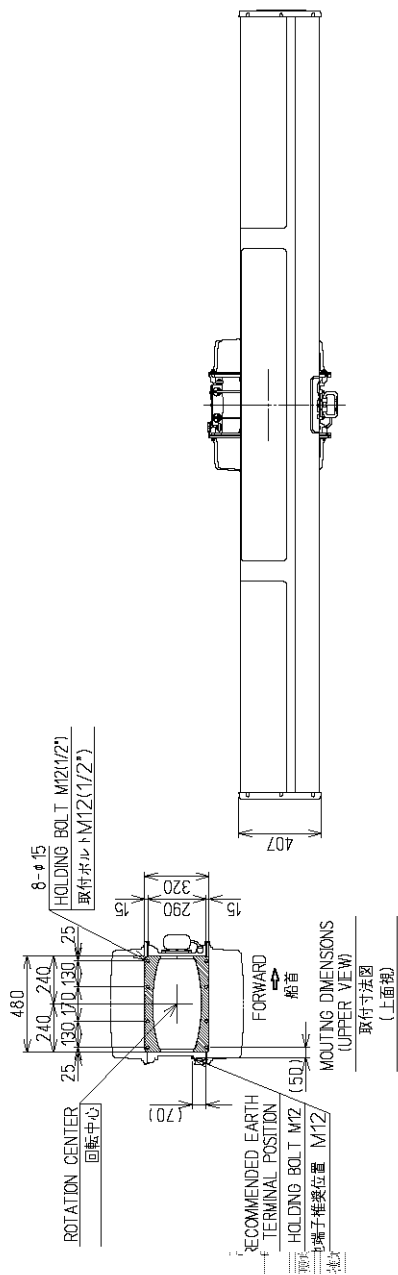
NTG-3230

TRANSMITTER RECEIVER UNIT OUTLINE DRAWING

30NT05176



### 6.1.3 NKE-1130



OUTLINE DIMENSIONS		PERMISSIBLE MOUNTING POSITIONAL DEVIATIONS
DRYER	TD	
3	6	±0.5
6	30	±1
30	120	±1.5
120	400	±2.5
400	1000	±4
1000	2000	±6
2000	4000	±8

外形寸法		外形寸法許容差	取付寸法許容差
乾式	湿式		
3	6	±0.5	
6	30	±1	
30	120	±1.5	
120	400	±2.5	
400	1000	±4	
1000	2000	±6	
2000	4000	±8	

MASS APPROX. 180 kg (WITHOUT OPTION)

UNIT mm

COLOR ANTENNA WHITE  
COLOR PEDESTAL WHITE

質量 約 180 kg

単位 mm

色 輻射部 白

色 ベアスタル 白

### SCANNER UNIT OUTLINE DRAWING

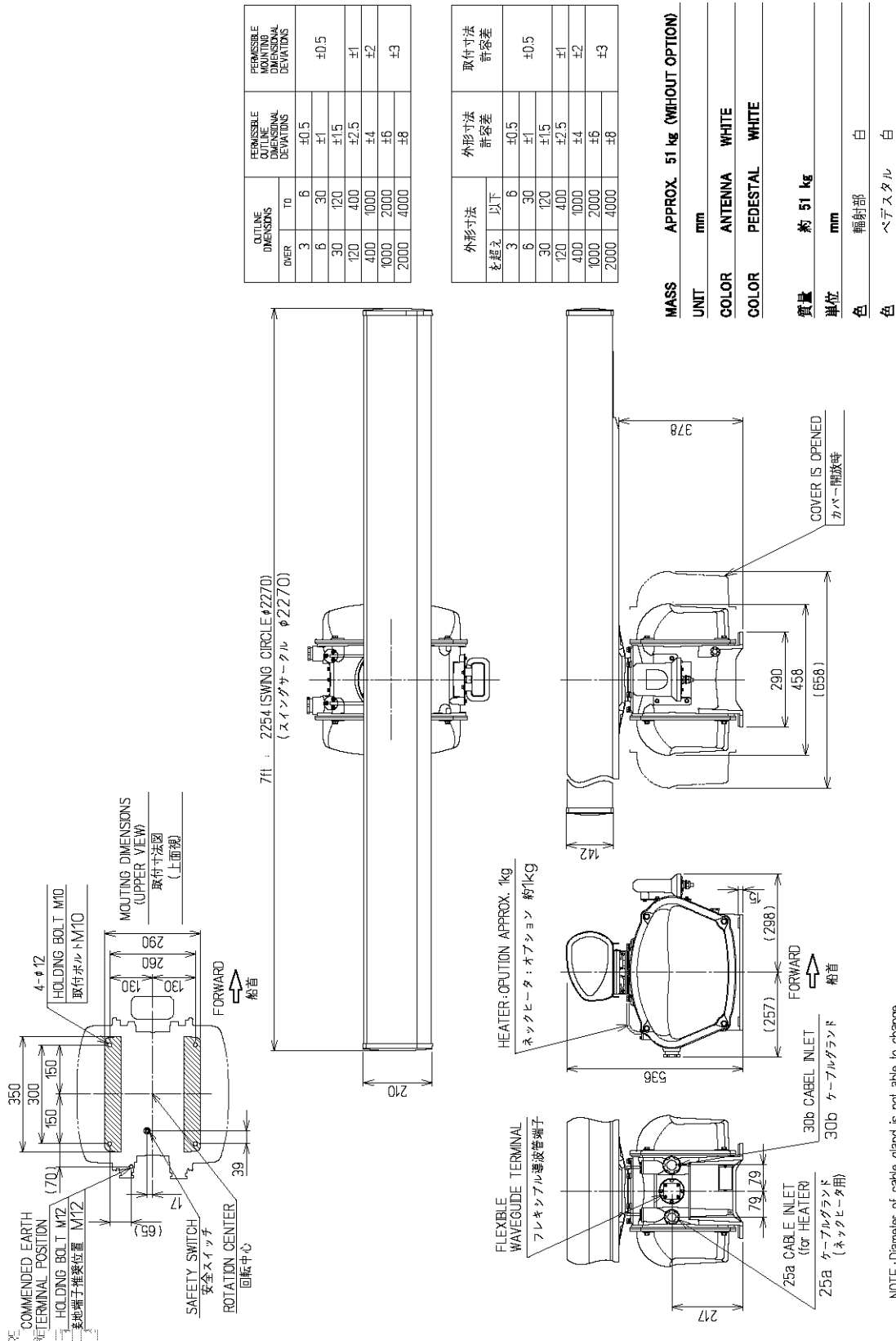
NKE-1130

NOTE: Diameter of cable gland is not able to change.  
※ケーブルグランド径は変更できません。

SCNKE5294

Fig 6-3: NKE-1130

### 6.1.4 NKE-1129-7



OUTLINE DIMENSIONS		PERMISSIBLE OUTLINE MOUNTING TOLERANCES
DEPT	TD	
3	6	±0.5
6	30	±1
30	120	±1.5
120	400	±2.5
400	1000	±4
1000	2000	±6
2000	4000	±8

取付寸法 と 寸法	外形寸法 許容差		取付寸法 許容差
	以下	以上	
3	6	±0.5	±0.5
6	30	±1	
30	120	±1.5	±1
120	400	±2.5	
400	1000	±4	±2
1000	2000	±6	
2000	4000	±8	±3

MASS APPROX. 51 kg (WITHOUT OPTION)

UNIT	mm
COLOR	ANTENNA WHITE
COLOR	PEDESTAL WHITE

質量 約 51 kg  
 単位 mm  
 色 輻射部 白  
 色 ベアスタル 白

SCANNER UNIT OUTLINE DRAWING

NOTE: Diameter of cable gland is not able to change.  
 (注) ケーブルグラント径は変更できません。  
 CONKE5299

Fig 6-4: NKE-1129-7



### 6.1.5 NKE-1129-9

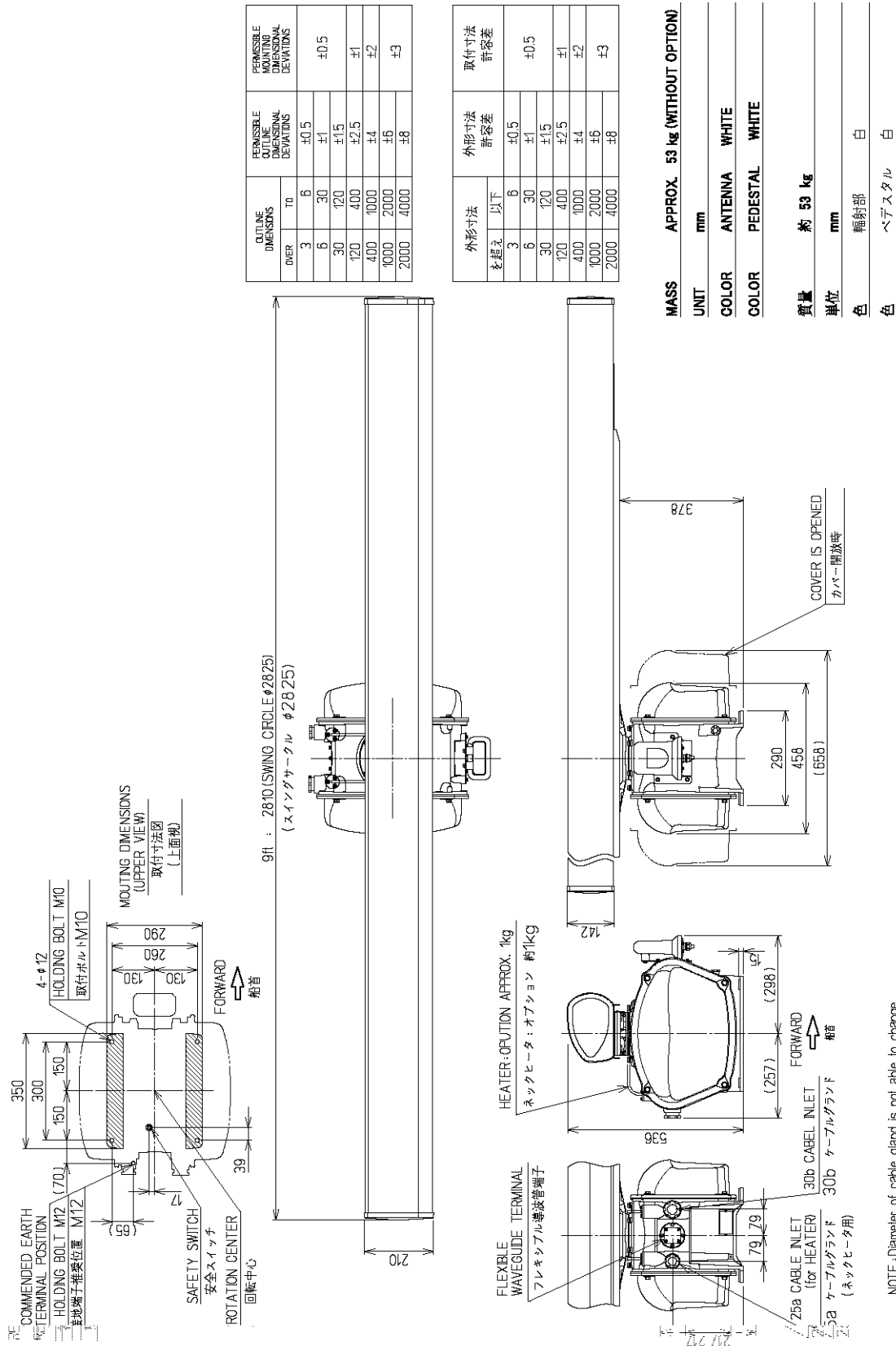


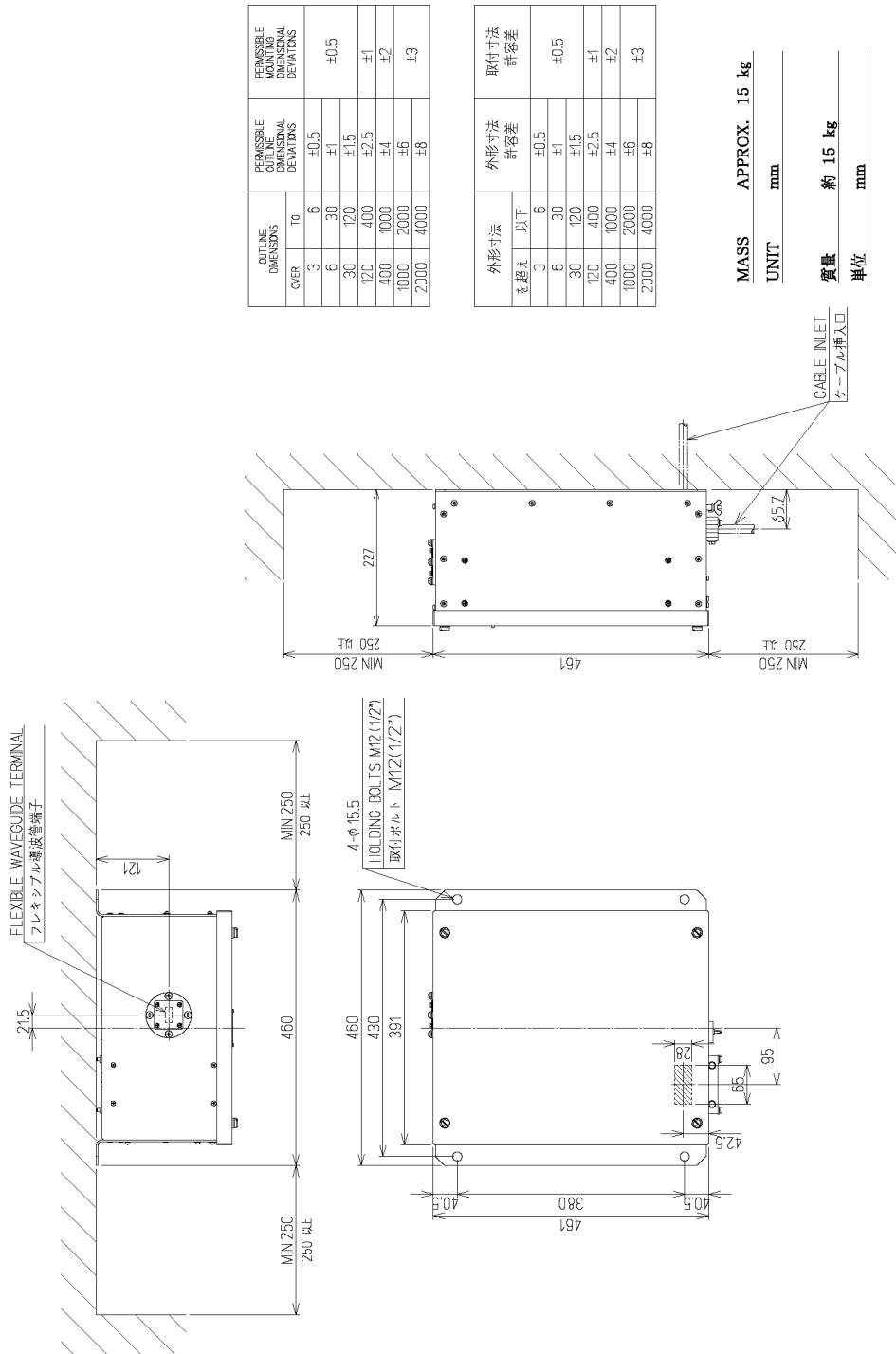
Fig 6-5: NKE-1129-9

SCANNER UNIT OUTLINE DRAWING

SCNKE5298



### 6.1.6 NTG-3225



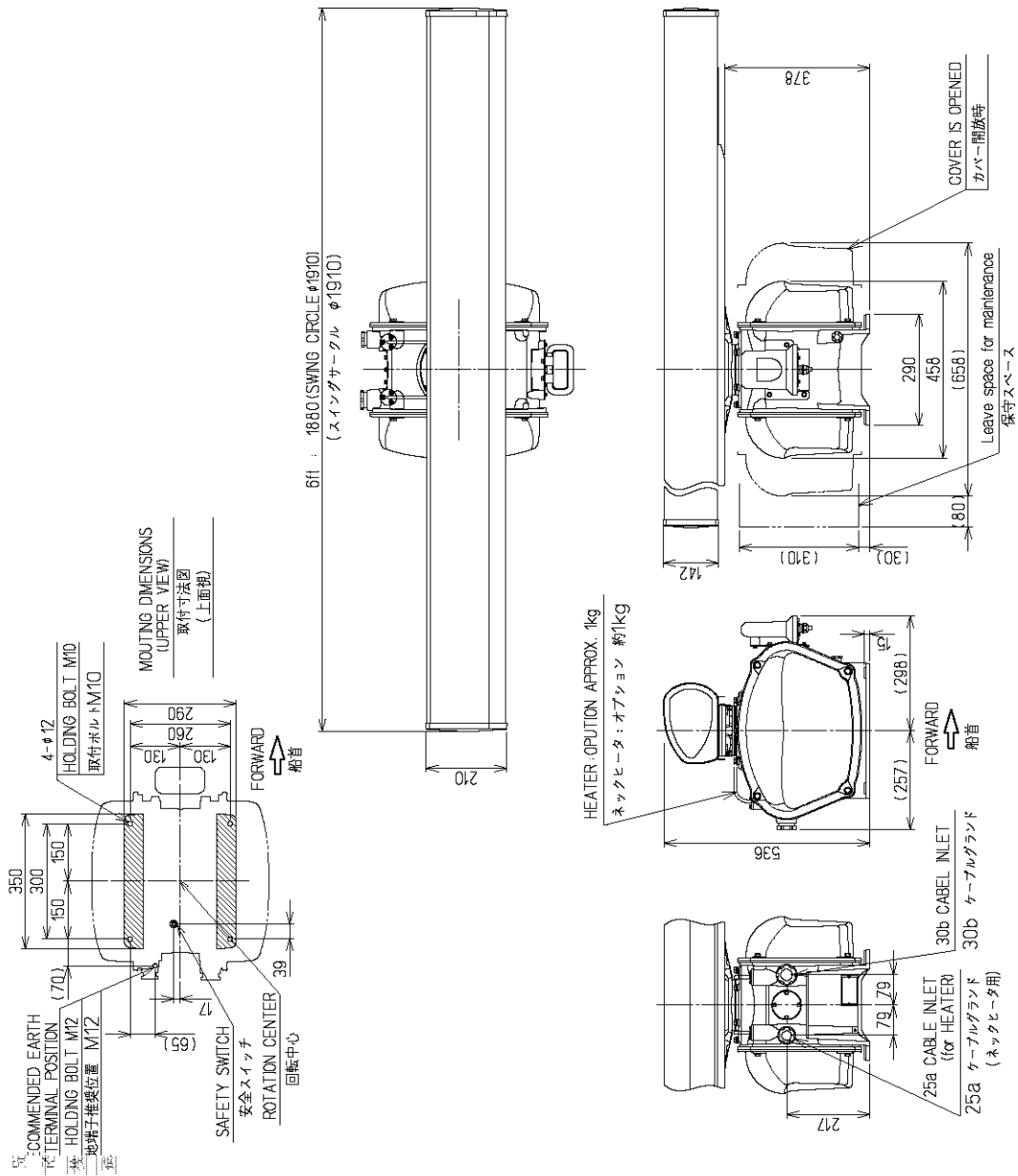
NTG-3225

TRANSMITTER RECEIVER UNIT OUTLINE DRAWING

SCNTG5177

Fig 6-6: NTG-3225

### 6.1.7 NKE-1125-6



SCANNER UNIT OUTLINE DRAWING

NOTE: Diameter of cable gland is not able to change.

注) ケーブルグランド径は変更できません。

SCNKE5297

OUTLINE DIMENSIONS		PERMISSIBLE OUTLINE DIMENSIONAL DEVIATIONS	PERMISSIBLE MOUNTING DIMENSIONAL DEVIATIONS
DIET	TD		
3	6	±0.5	
6	30	±1	±0.5
30	120	±1.5	
120	400	±2.5	±1
400	1000	±4	±2
1000	2000	±6	±3
2000	4000	±8	

外形寸法 と寸法	外形寸法 許容差		取付寸法 許容差
	以下		
3	6	±0.5	
6	30	±1	±0.5
30	120	±1.5	
120	400	±2.5	±1
400	1000	±4	±2
1000	2000	±6	±3
2000	4000	±8	

MASS APPROX. 55 kg (WITHOUT OPTION)

UNIT	mm
COLOR	ANTENNA WHITE
COLOR	PEDESTAL WHITE
質量	約 55 kg
単位	mm
色	輻射部 白
色	ベース部 白

NKE-1125-6

Fig 6-7: NKE-1125-6

### 6.1.8 NKE-1125-9

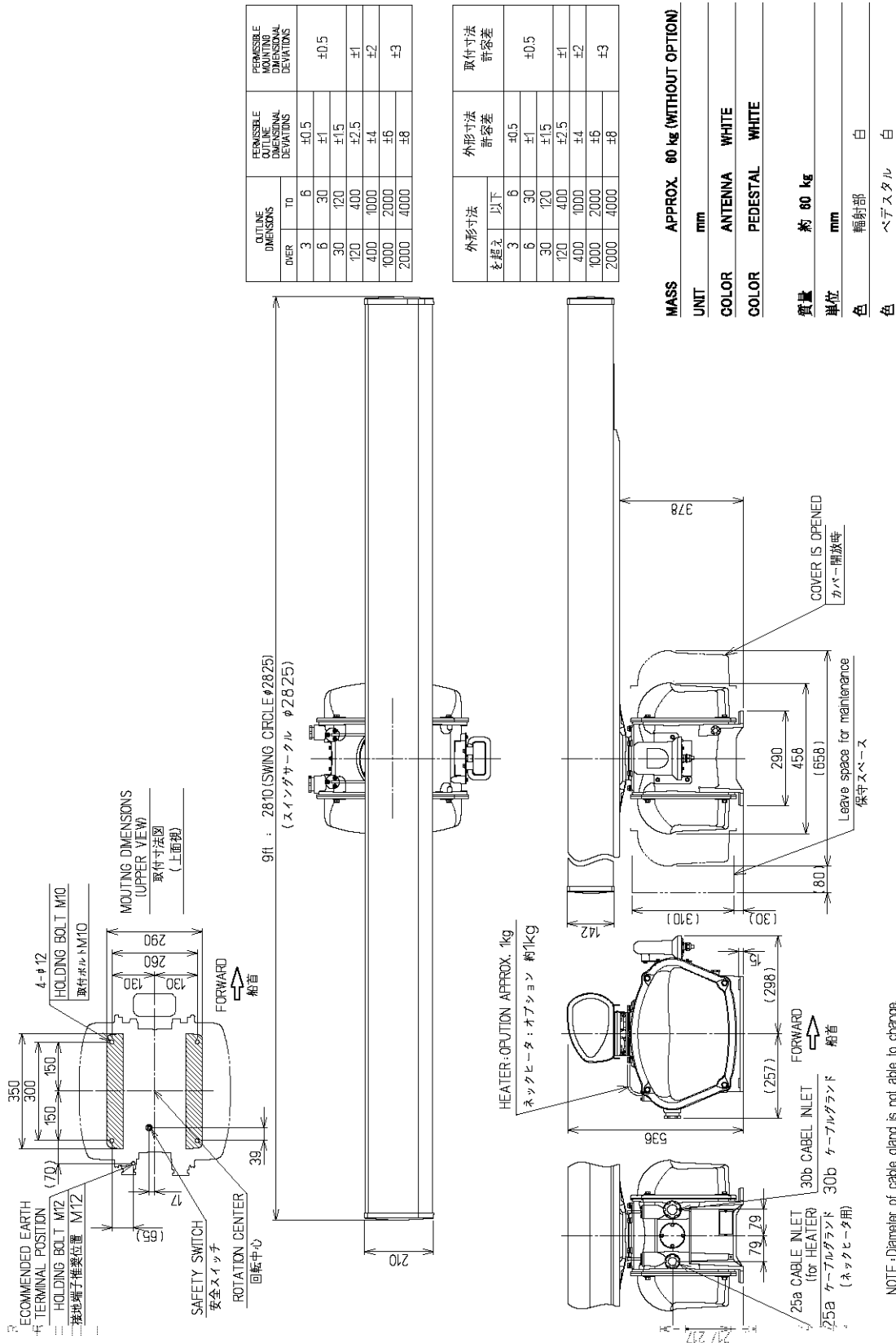


Fig 6-8: NKE-1125-9

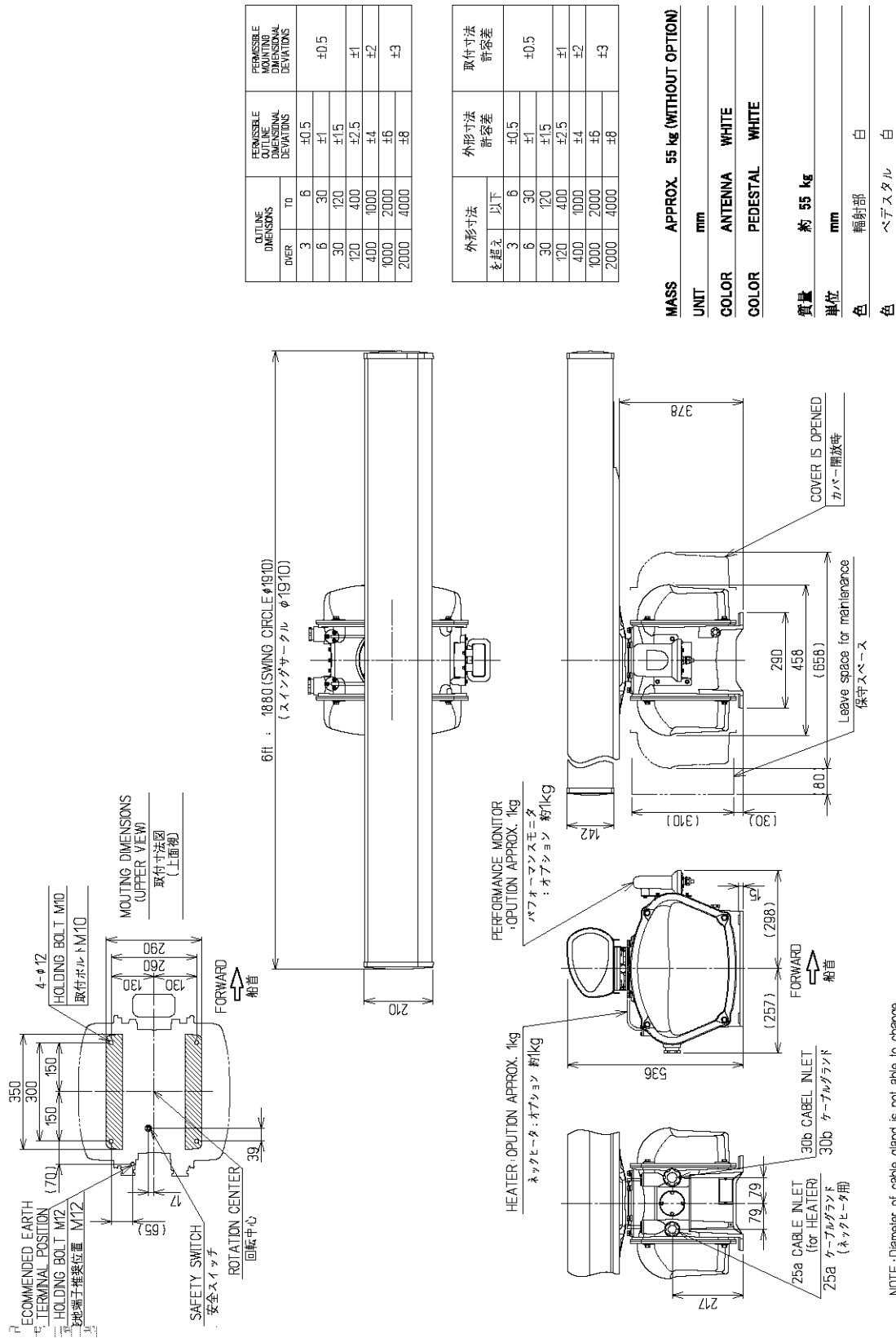
SCANNER UNIT OUTLINE DRAWING

NOTE: Diameter of cable gland is not able to change.  
注) ケーブルグラント径は変更できません。

SCNKE5296

NKE-1125-9

### 6.1.9 NKE-2254-6HS



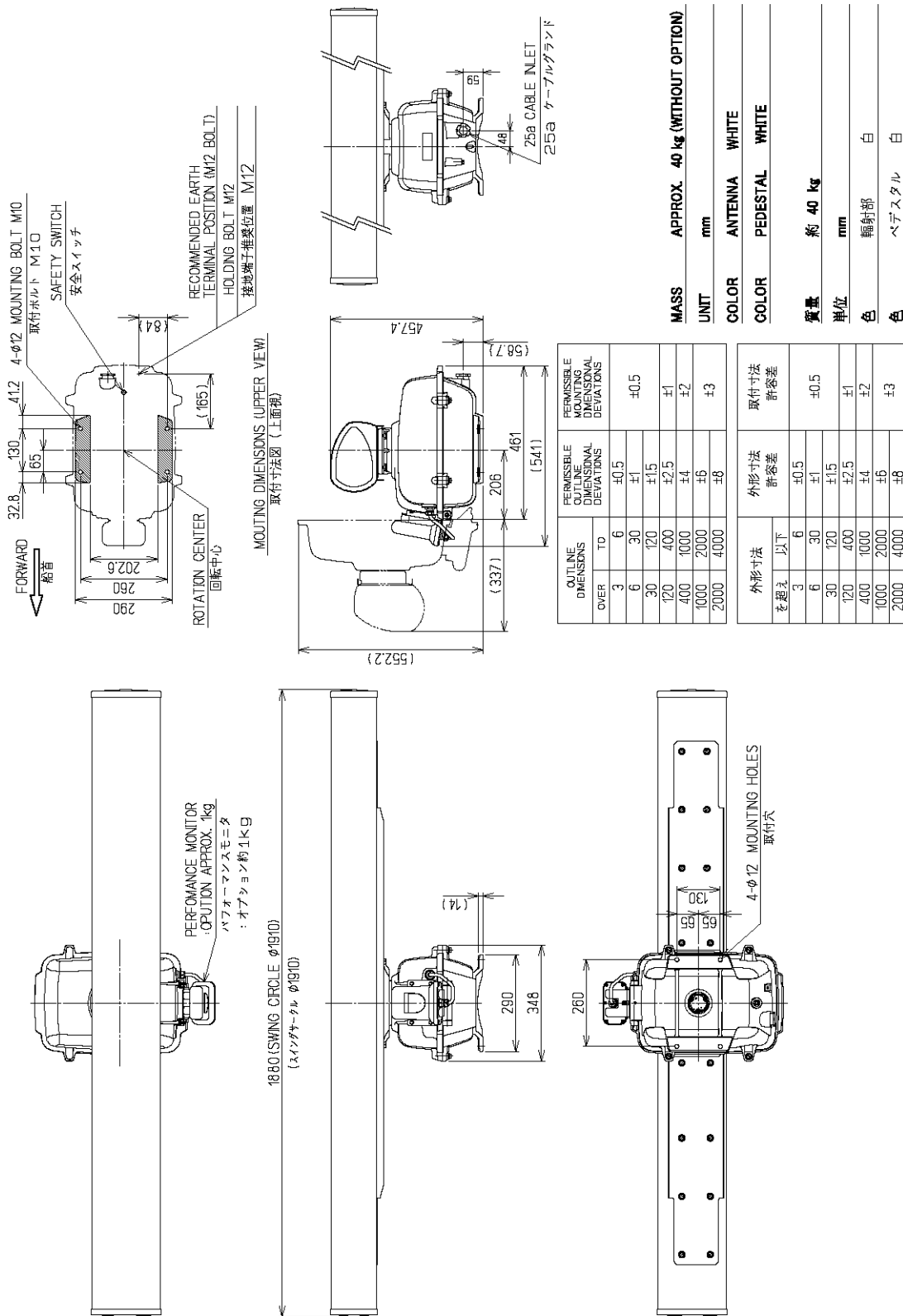
SCANNER UNIT OUTLINE DRAWING

NOTE: Diameter of cable gland is not able to change.  
注) ケーブルグラント径は変更できません。

SCNKE5302

Fig 6-9: NKE-2254-6HS

### 6.1.10 NKE-2103-6/NKE-2103-6HS



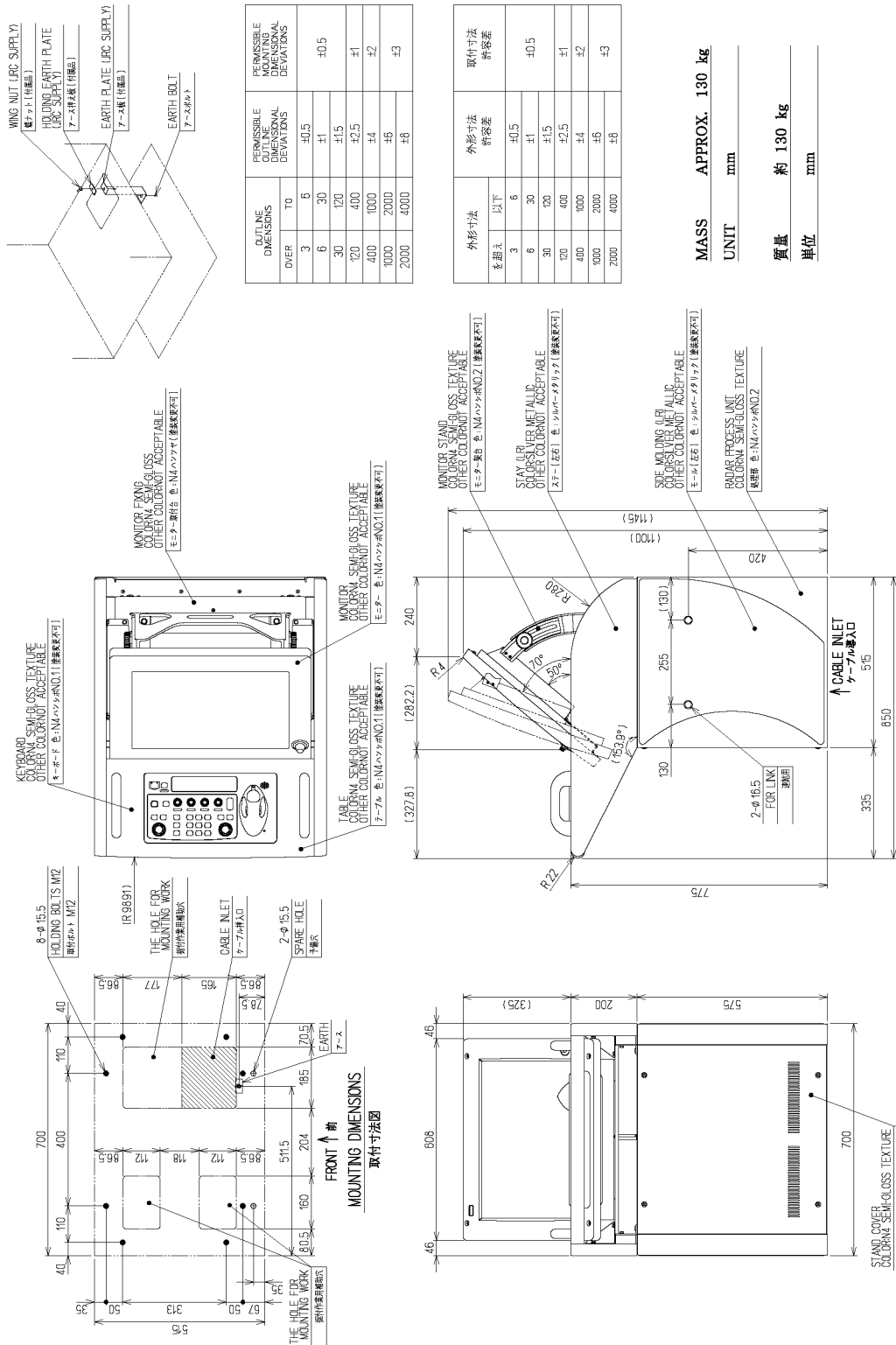
SCANNER UNIT OUTLINE DRAWING NKE-2103-6/NKE-2103-6HS

SC NKE5303

Fig 6-10: NKE-2103-6/NKE-2103-6HS



### 6.1.11 NCD-4990



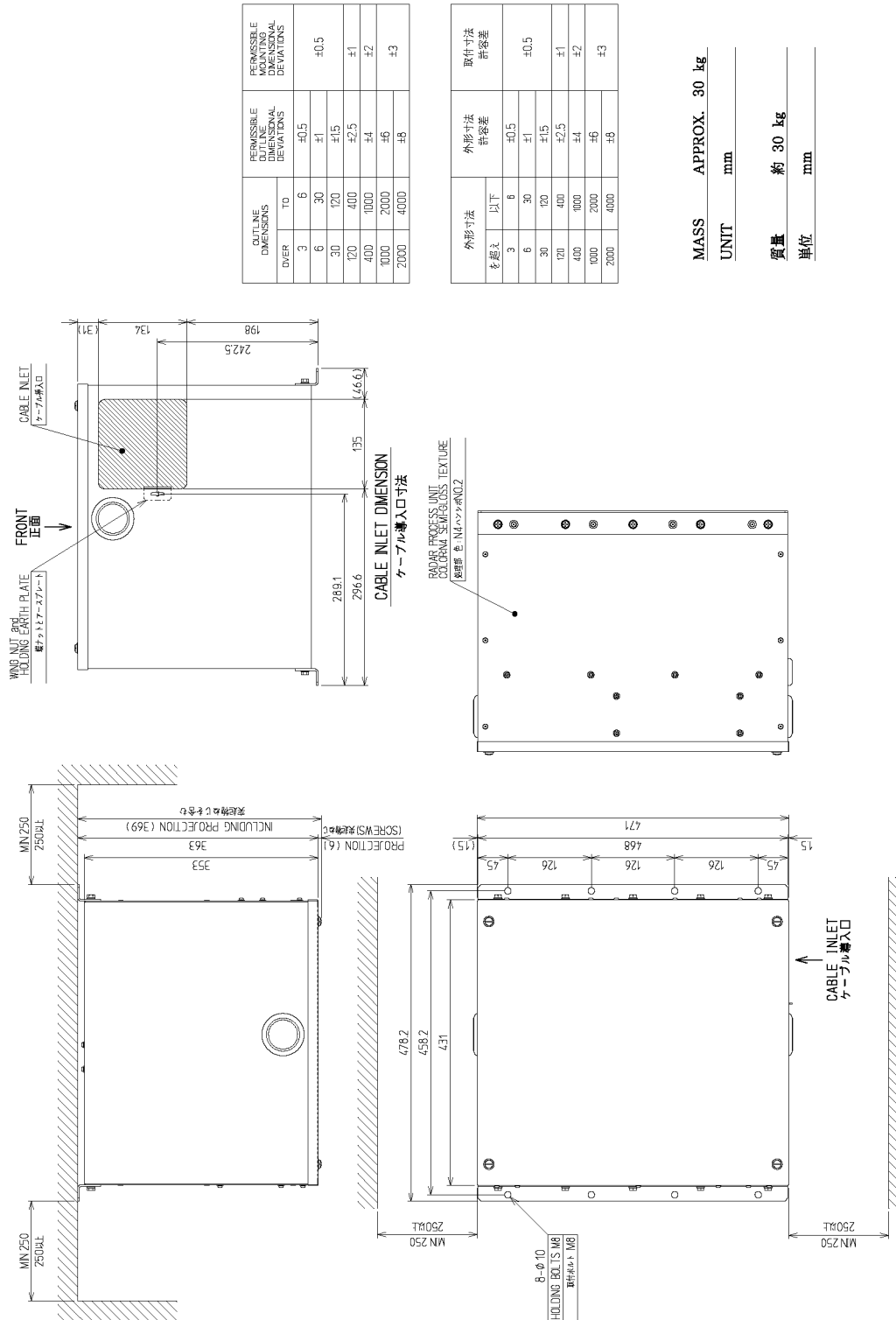
DISPLAY UNIT OUTLINE DRAWING

SCNCD5242

NCD-4990/JMA-9100

Fig 6-11: NCD-4990

### 6.1.12 NDC-1399-9



NDC-1399-9/JMA-9100

RADAR PROCESS UNIT OUTLINE DRAWING

SCNCD5243-3/3



Fig 6-12: NDC-1399-9

### 6.1.13 NCE-5163

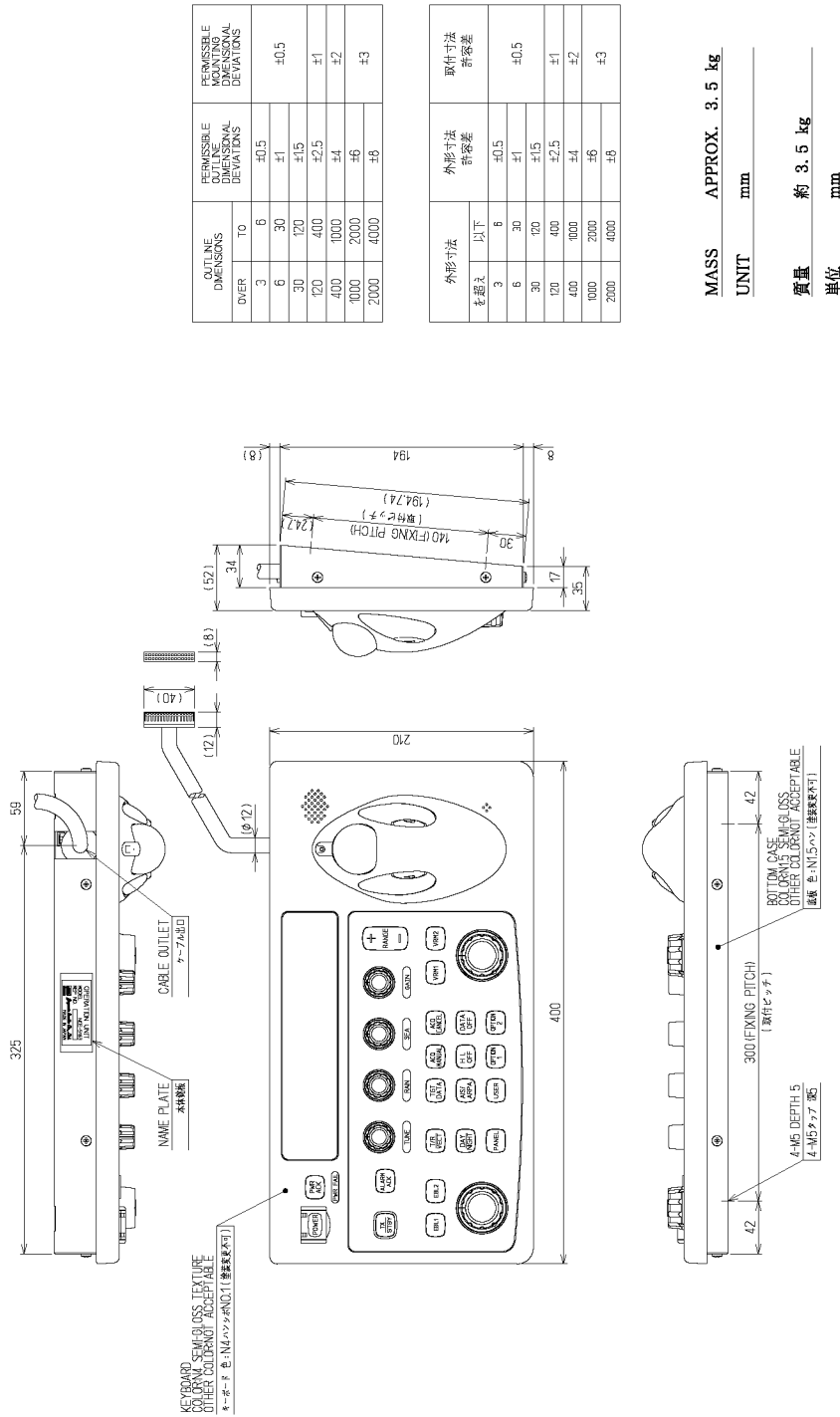


Fig 6-13: NCE-5163

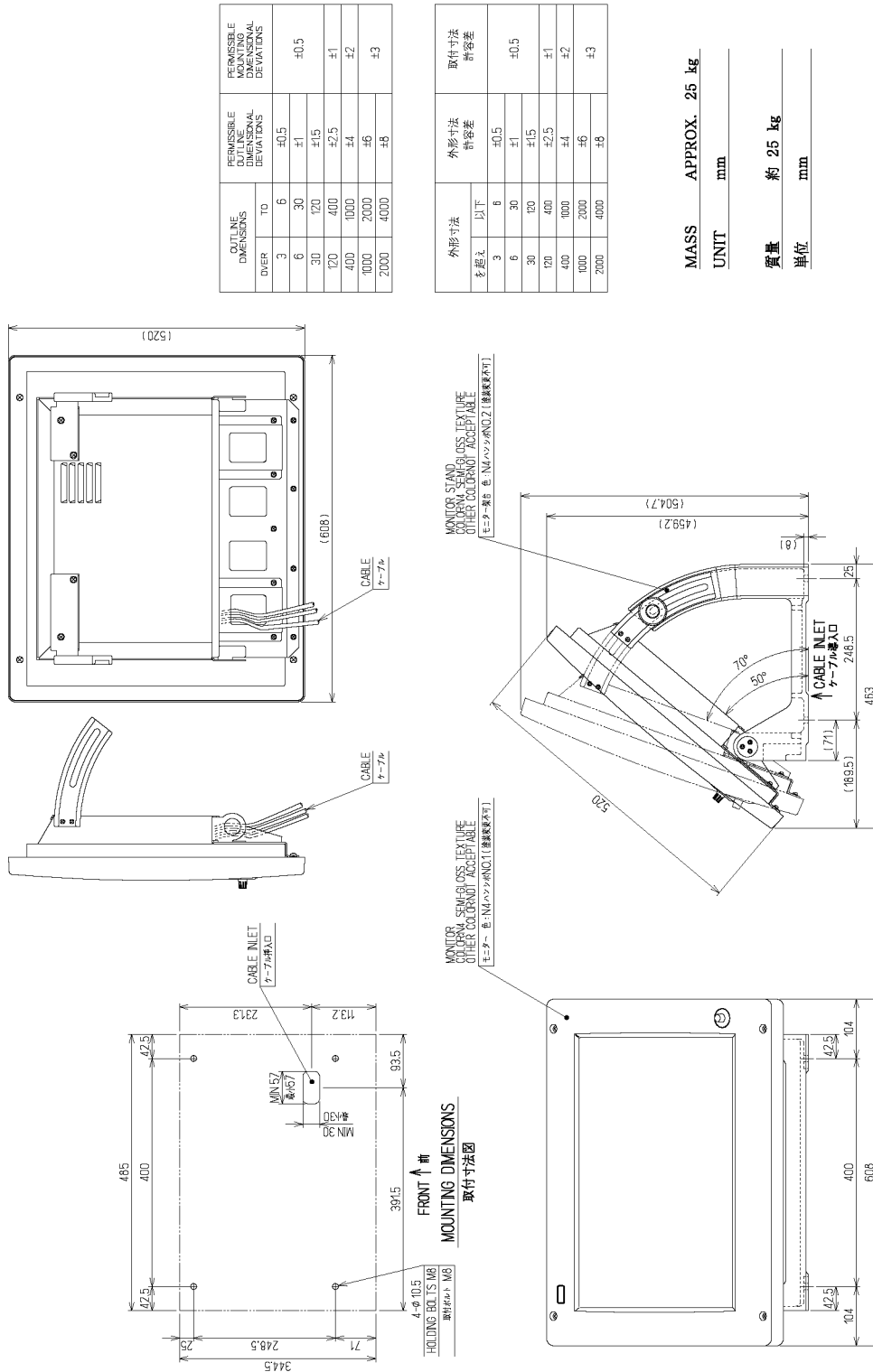
NCE-5163/JMA-9100

OPERATION UNIT OUTLINE DRAWING

SONCD5243-1/3



### 6.1.14 NWZ-170



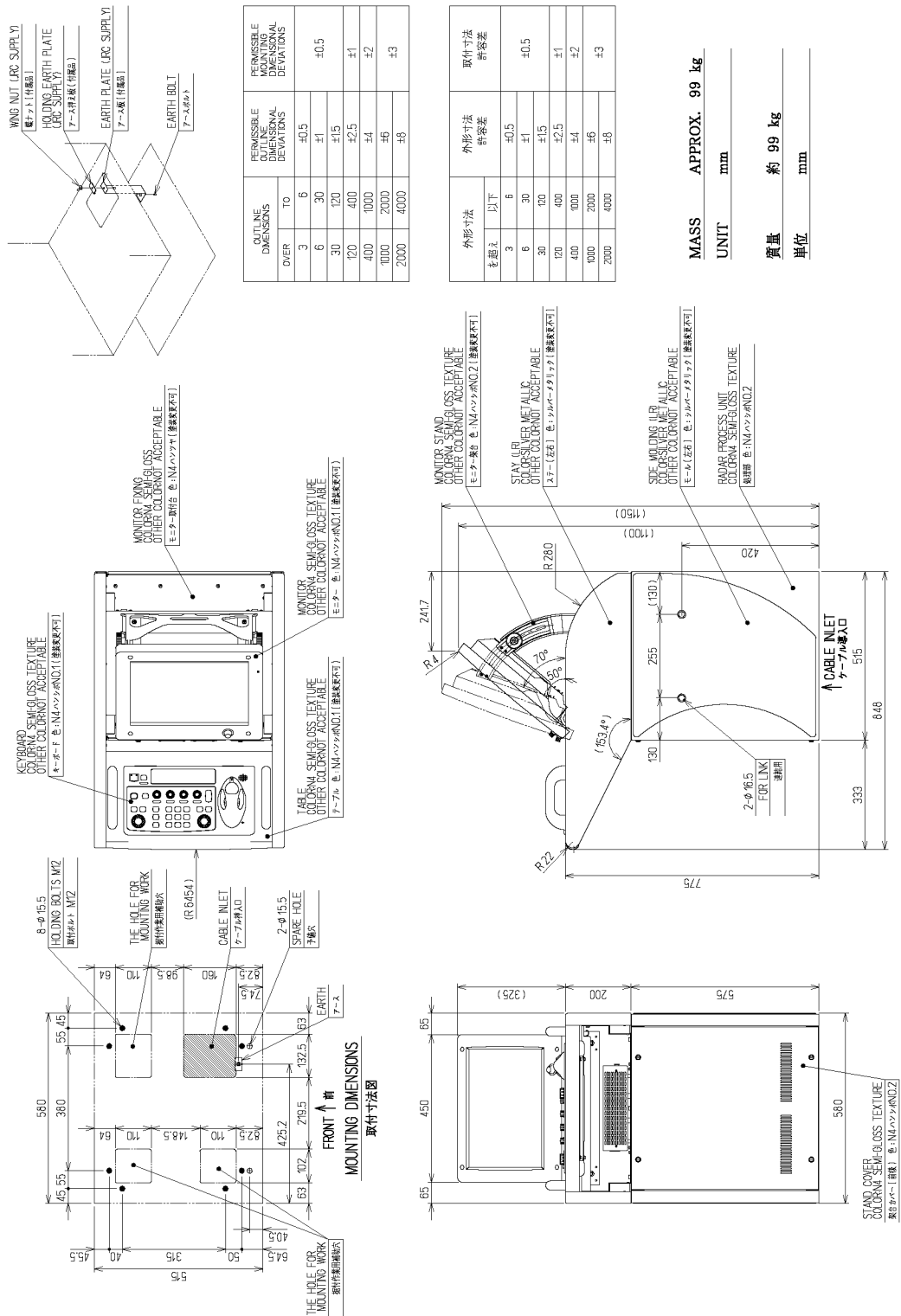
NWZ-170/JMA-9100

23.1 INCH MONITOR UNIT OUTLINE DRAWING

SCNCD5243-2/3

Fig 6-14: NWZ-170

### 6.1.15 NCD-4790



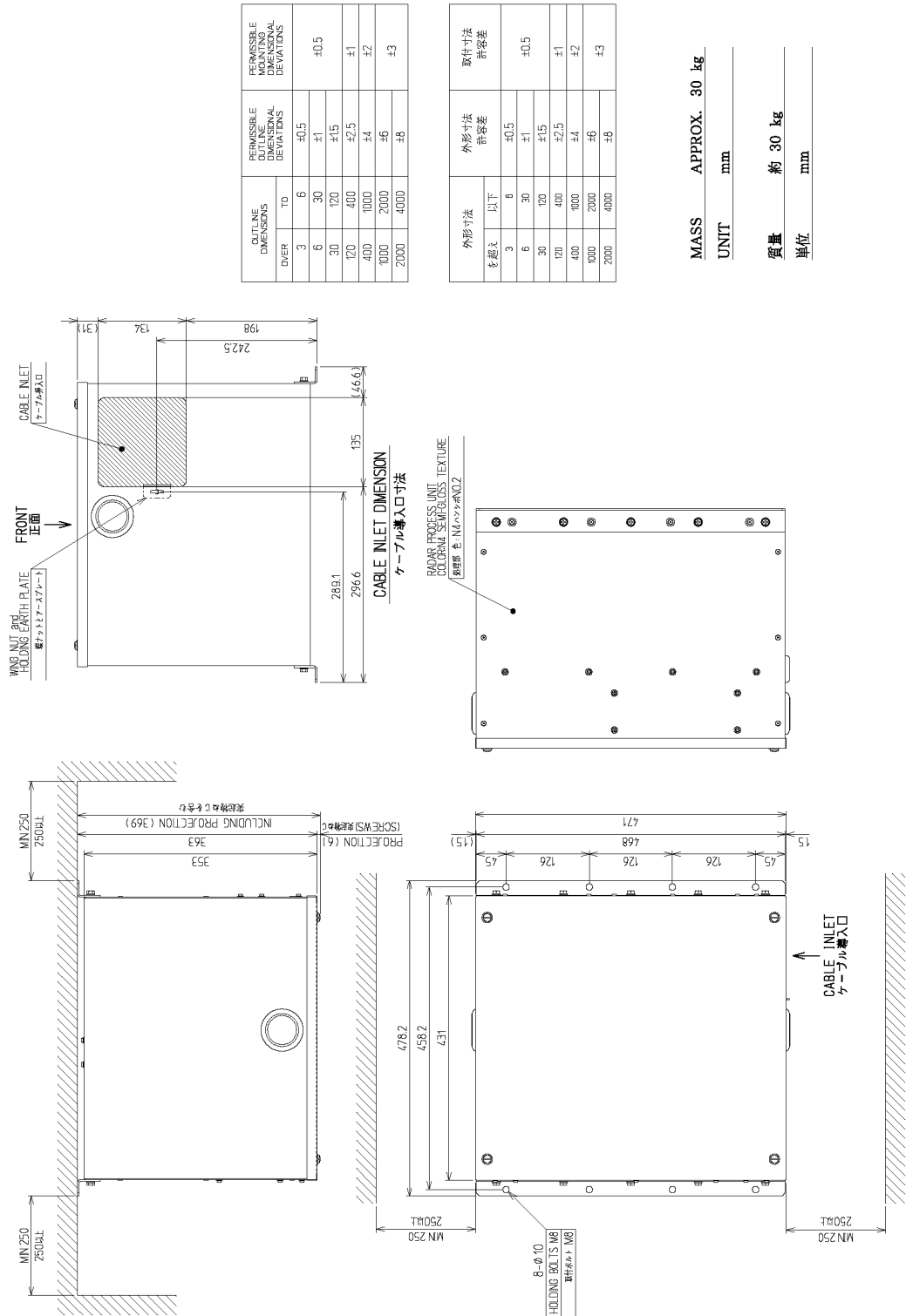
DISPLAY UNIT OUTLINE DRAWING

SONCD5244

NCD-4790/JMA-7100

Fig 6-15: NCD-4790

### 6.1.16 NDC-1399-7



NDC-1399-7 / JMA-7100

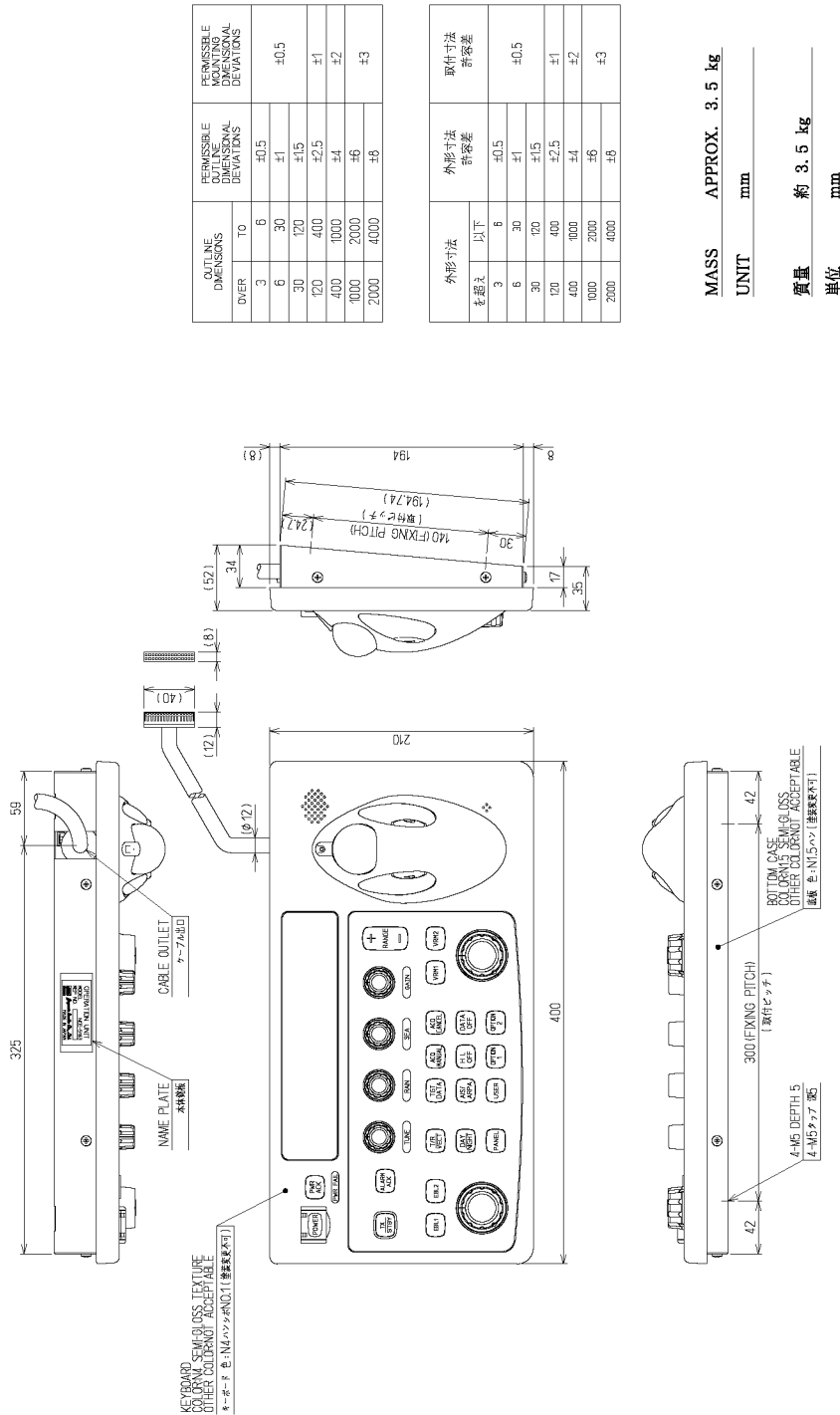
RADAR PROCESS UNIT OUTLINE DRAWING

SCNCD5245-3/3

Fig 6-16: NDC-1399-7



### 6.1.17 NCE-5163



NCE-5163/JMA-7100

OPERATION UNIT OUTLINE DRAWING

SONCD5245-1/3

Fig 6-17: NCE-5163

### 6.1.18 NWZ-173

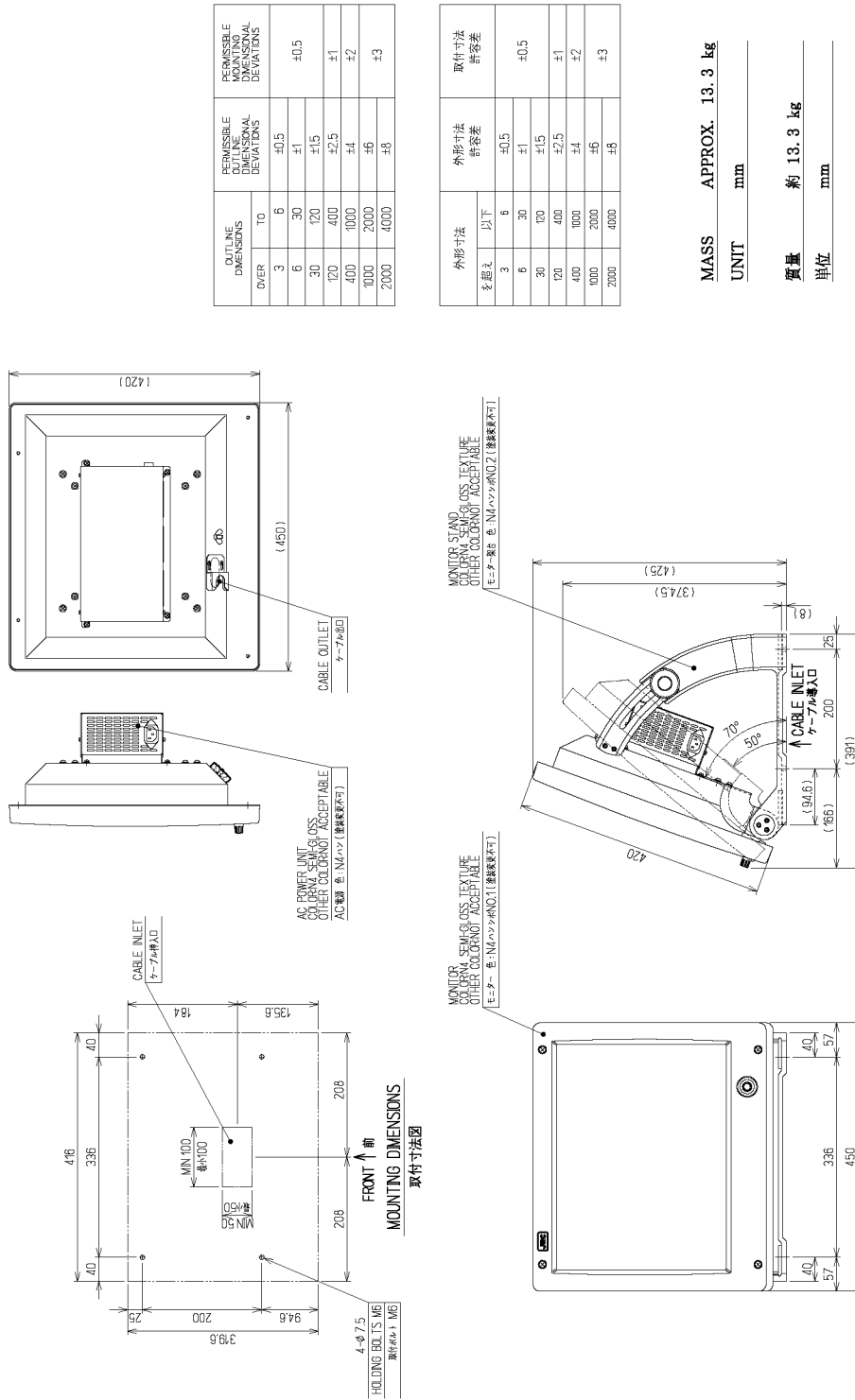


Fig 6-18: NWZ-173

NWZ-173/JMA-7100

19 INCH MONITOR UNIT OUTLINE DRAWING

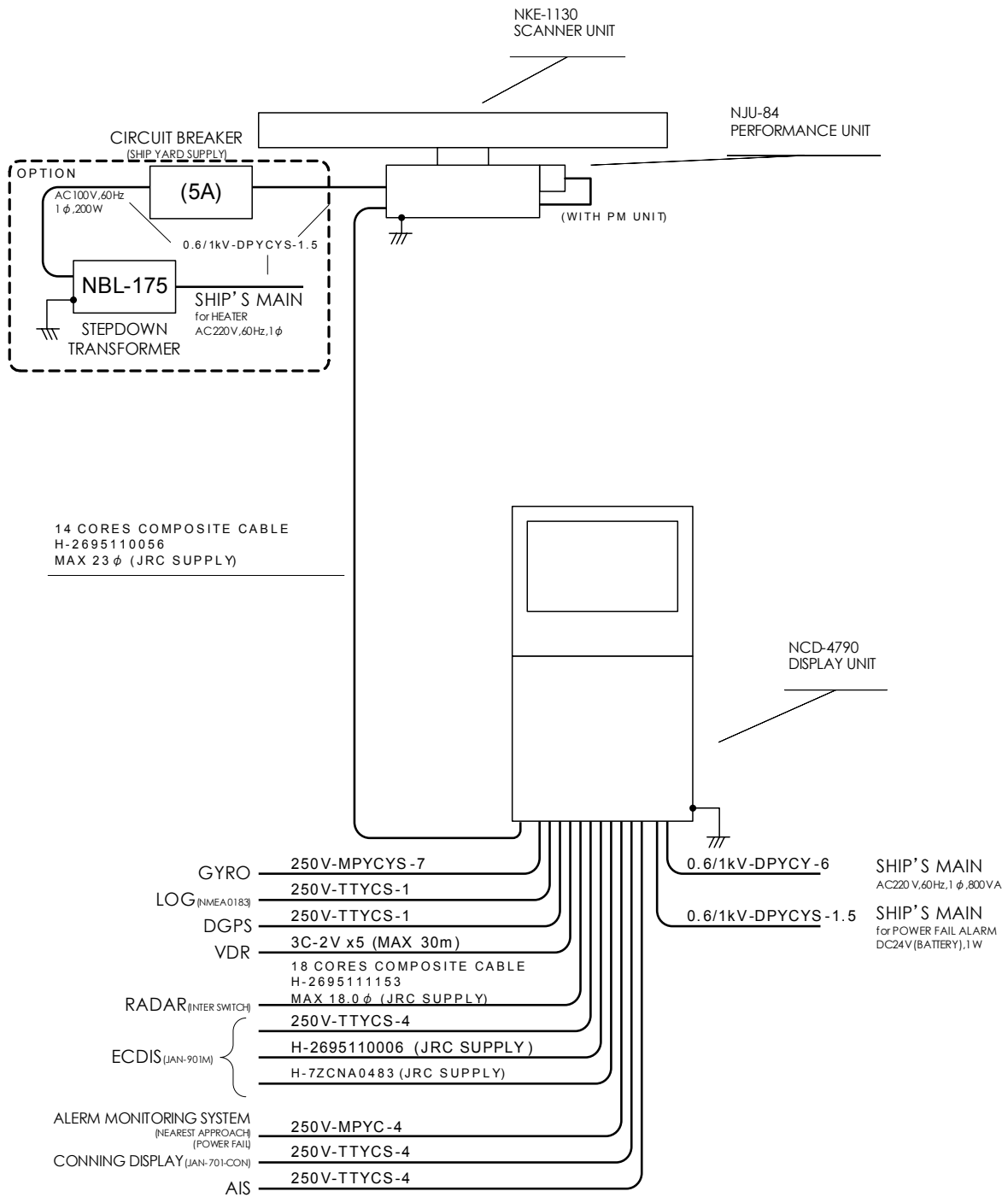
SONCD5245-2/3



## 6.2 GENERAL SYSTEM DIAGRAM

### 6.2.1 General system diagram of JMA-7100 (Self-standing type)

### 6.2.1.1 General system diagram of JMA-7132-SA (Self-standing)



6

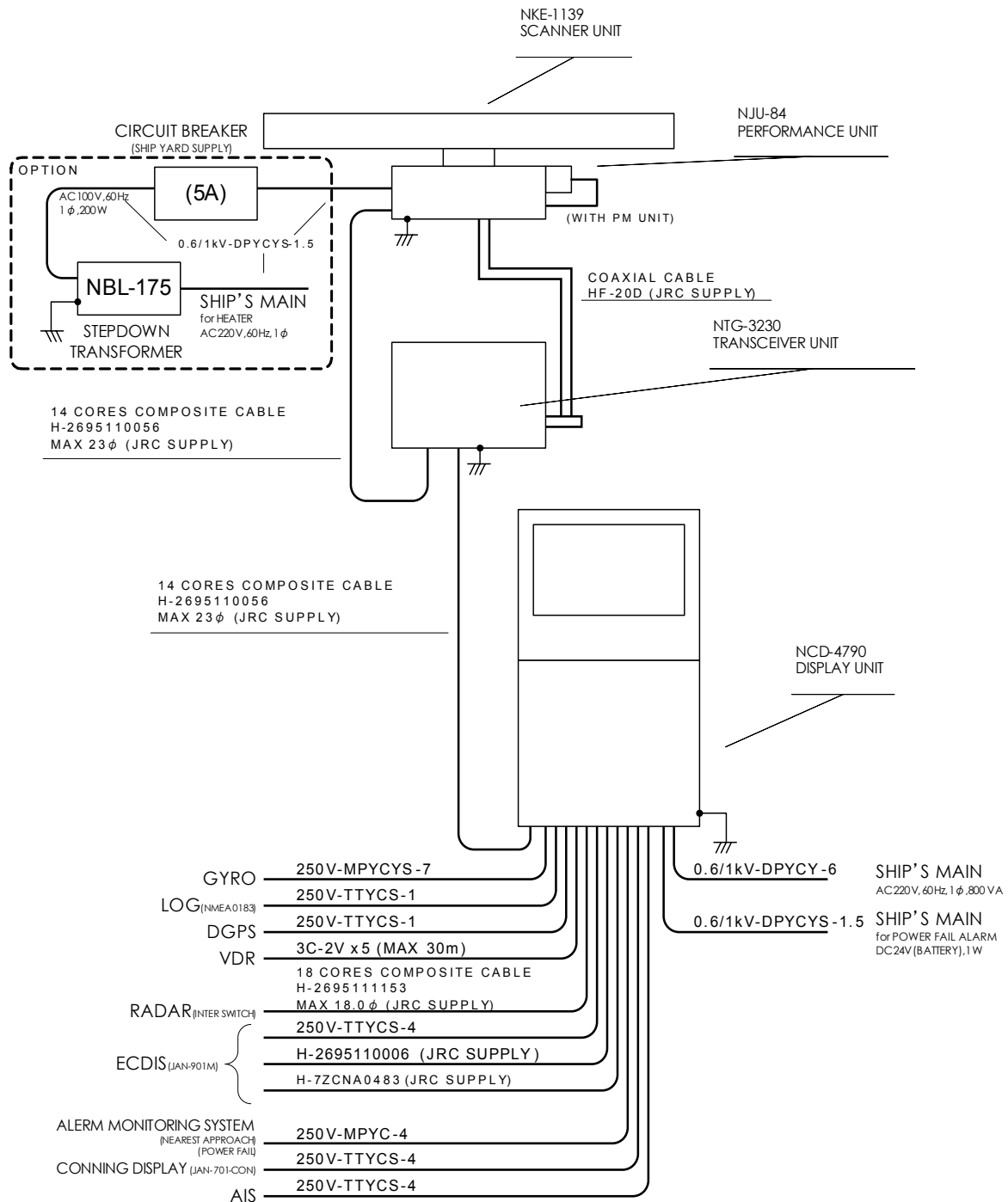
注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

NOTE: ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER, etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(S-BAND 30kW RADAR)  
JMA-7132-SA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7132-SA

Fig 6-19: JMA-7132-SA (self-standing)

### 6.2.1.2 General system diagram of JMA-7133-SA (Self-standing)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

NOTE ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(S-BAND 30kW RADAR)

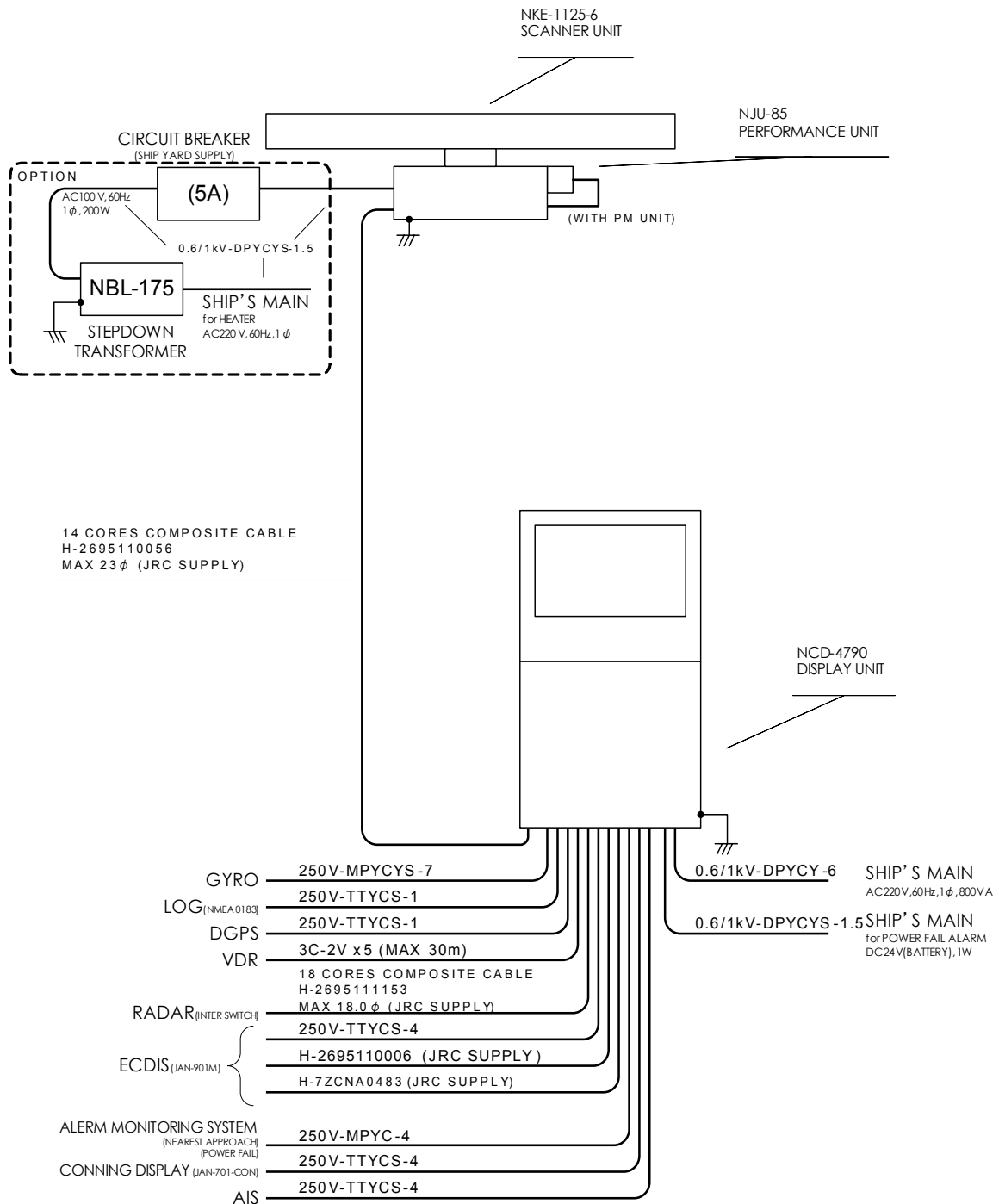
JMA-7133-SA形レーダー総合系統図

GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7133-SA

Fig 6-20: JMA-7133-SA (self-standing)



### 6.2.1.3 General system diagram of JMA-7122-6XA (Self-standing)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

NOTE: ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE, COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

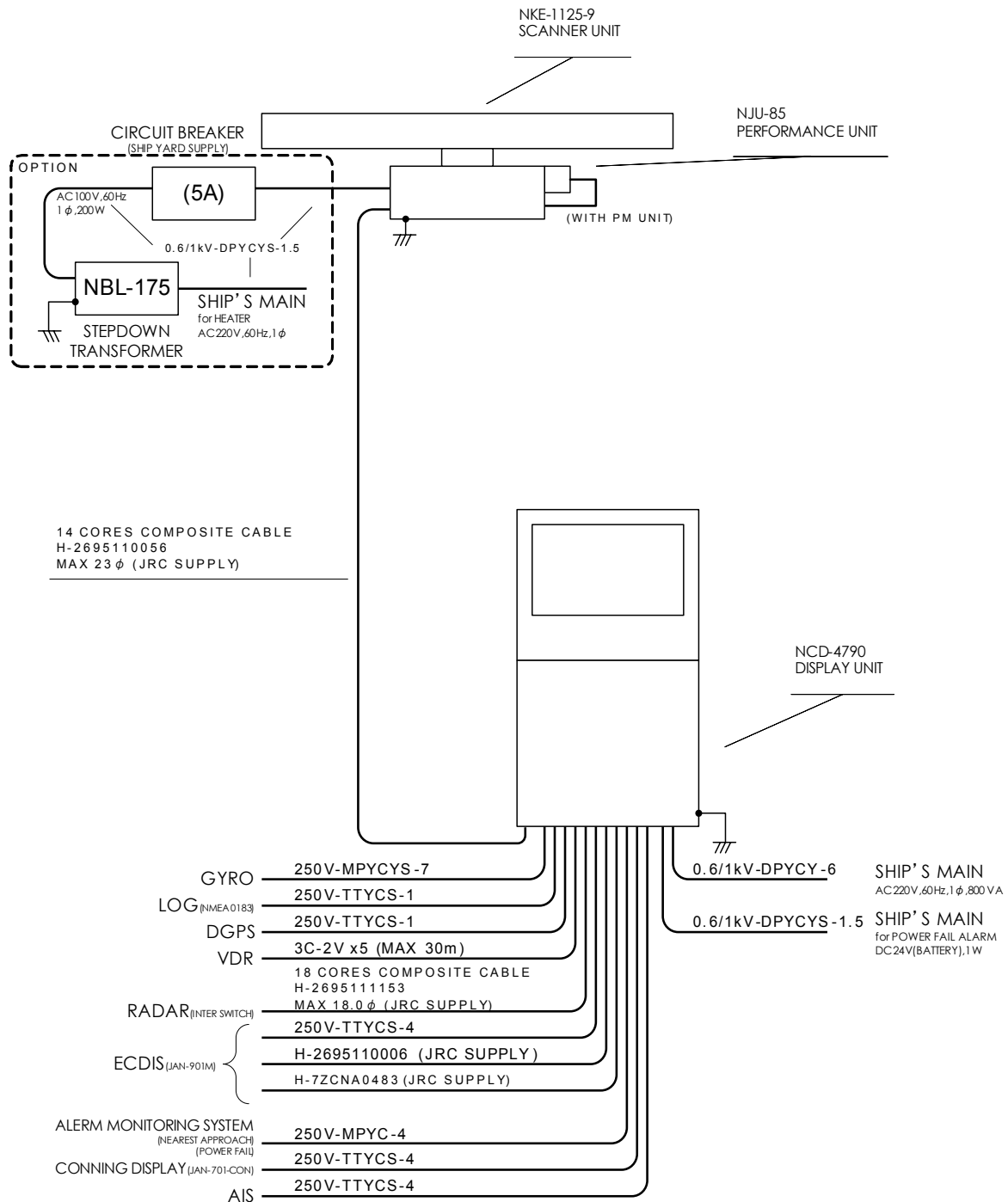
(X-BAND 25kW RADAR)

JMA-7122-6XA形レーダー総合系統図

GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7122-6XA

Fig 6-21: JMA-7122-6XA (self-standing)

### 6.2.1.4 General system diagram of JMA-7122-9XA (Self-standing)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

NOTE ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

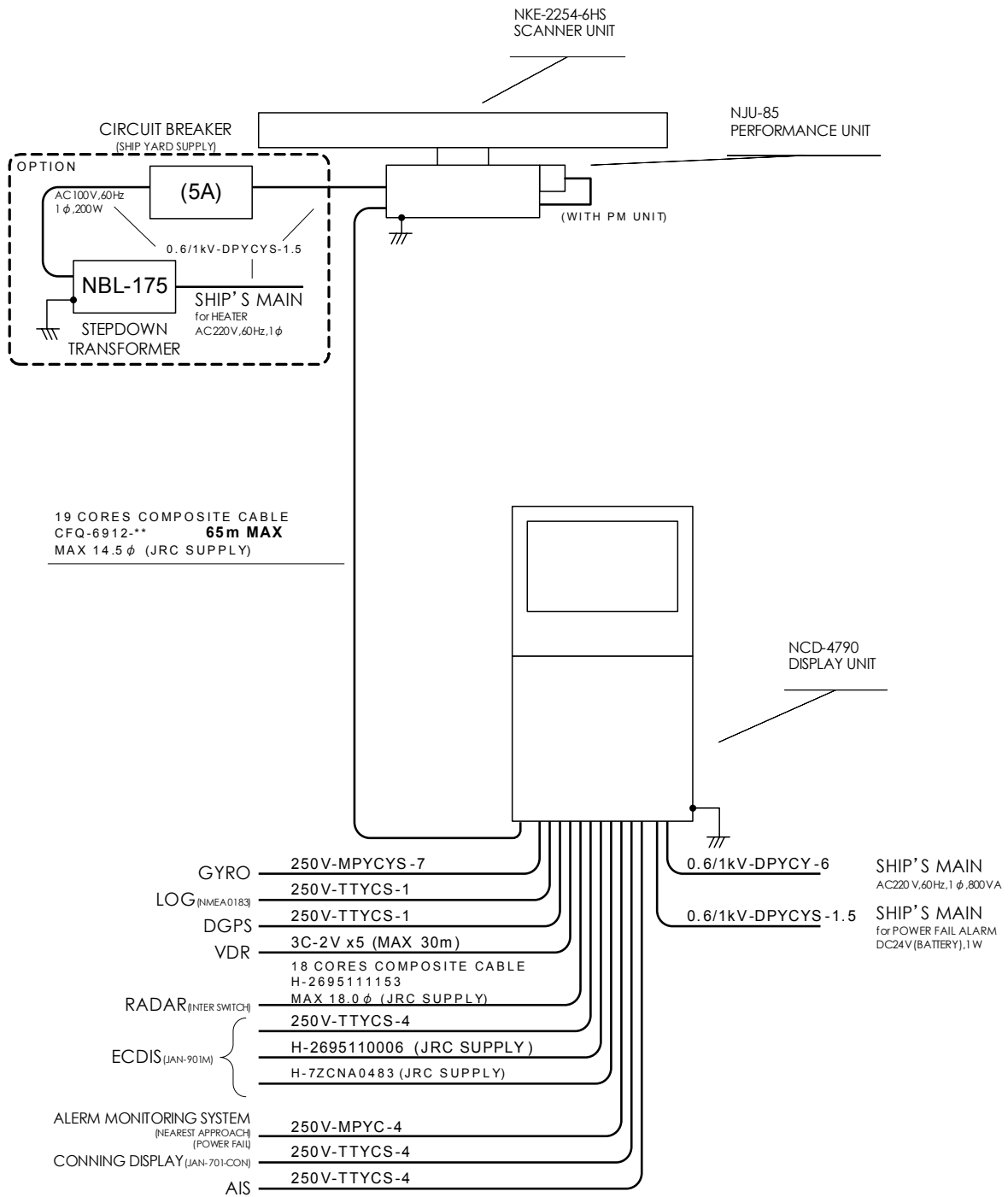
(X-BAND 25kW RADAR)

JMA-7122-9XA形レーダー総合系統図

GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7122-9XA

Fig 6-22: JMA-7122-9XA (self-standing)

### 6.2.1.5 General system diagram of JMA-7122-6XAH (Self-standing)

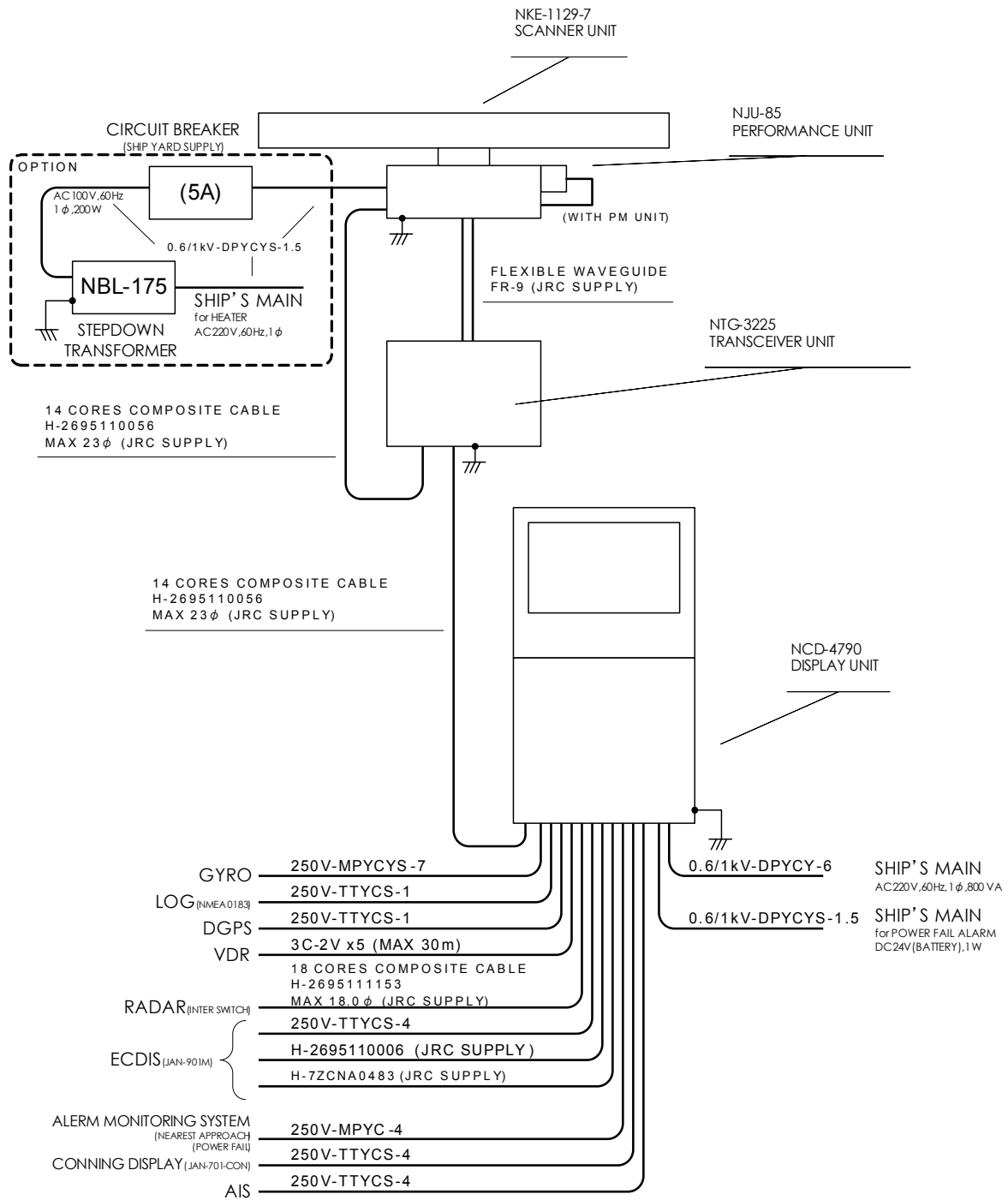


- 注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。
- NOTE: ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(X-BAND 25kW RADAR)  
JMA-7122-6XAH形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7122-6XAH

Fig 6-23: JMA-7122-6XAH (self-standing)

### 6.2.1.6 General system diagram of JMA-7123-7XA (Self-standing)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

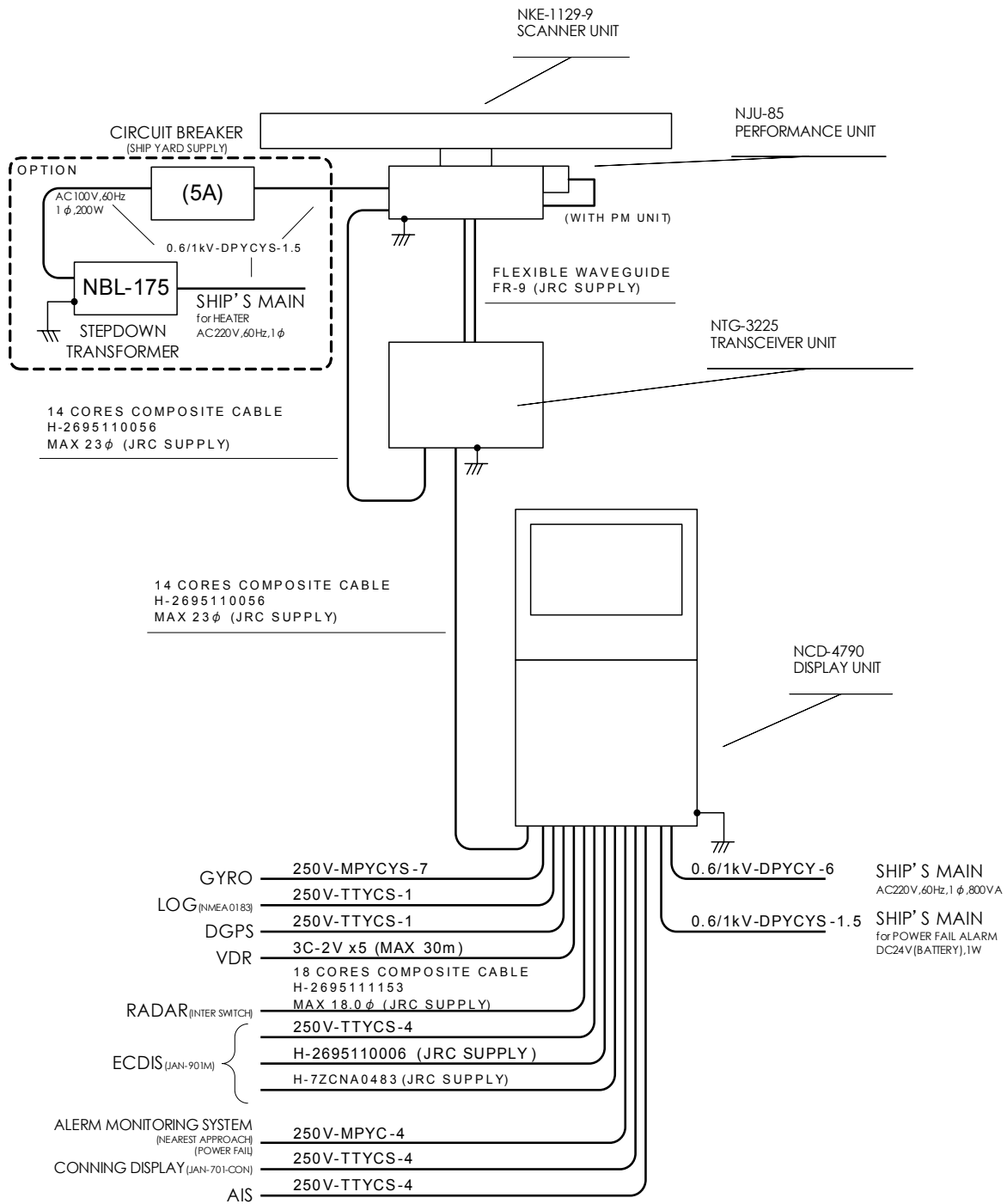
NOTE ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.) ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(X-BAND 25kW RADAR)

JMA-7123-7XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7123-7XA

Fig 6-24: JMA-7123-7XA (self-standing)

### 6.2.1.7 General system diagram of JMA-7123-9XA (Self-standing)



- 注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。
- NOTE: ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE, COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

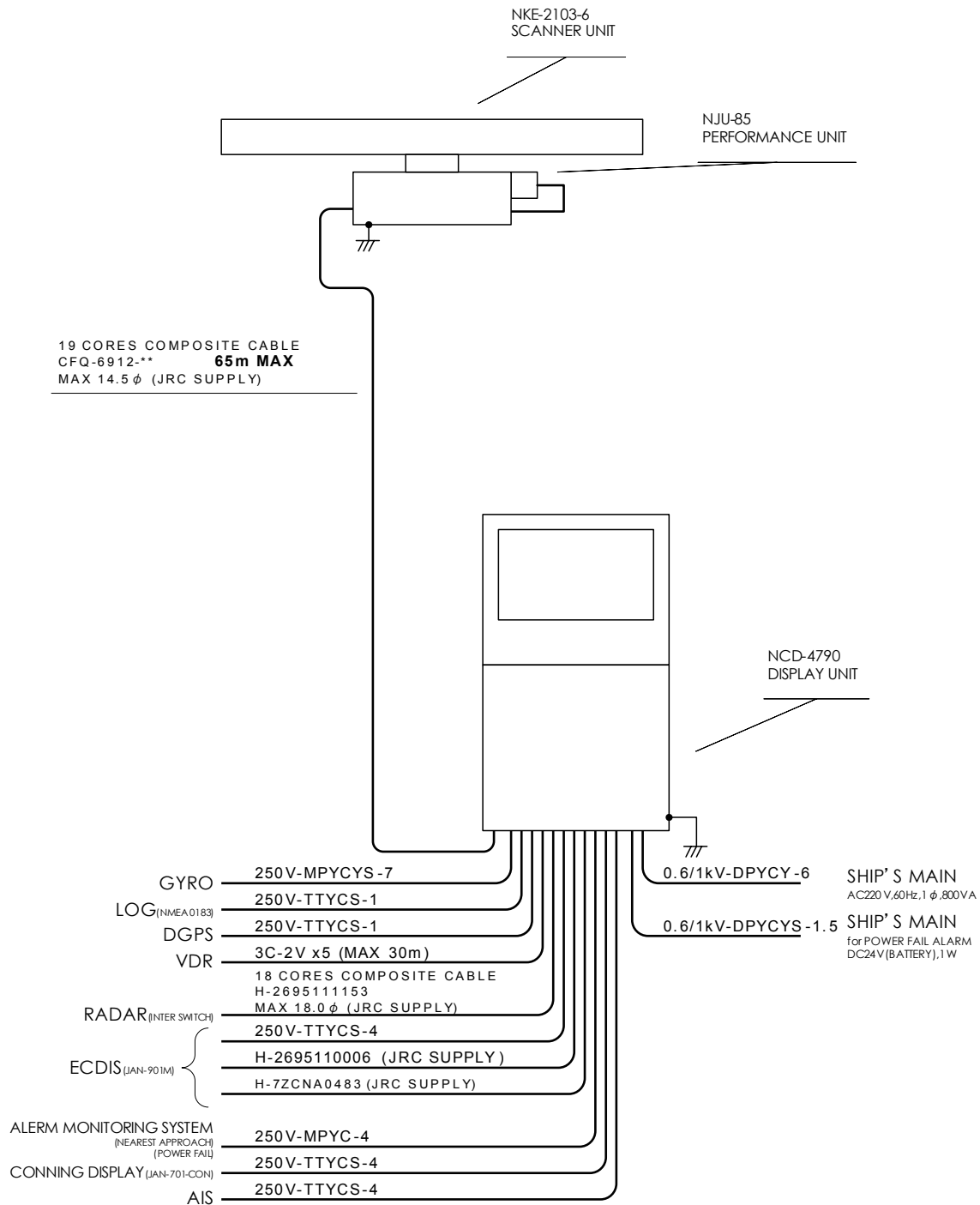
(X-BAND 25kW RADAR)

JMA-7123-9XA形レーダー総合系統図

GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7123-9XA

Fig 6-25: JMA-7123-9XA (self-standing)

### 6.2.1.8 General system diagram of JMA-7110-6XA (Self-standing)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

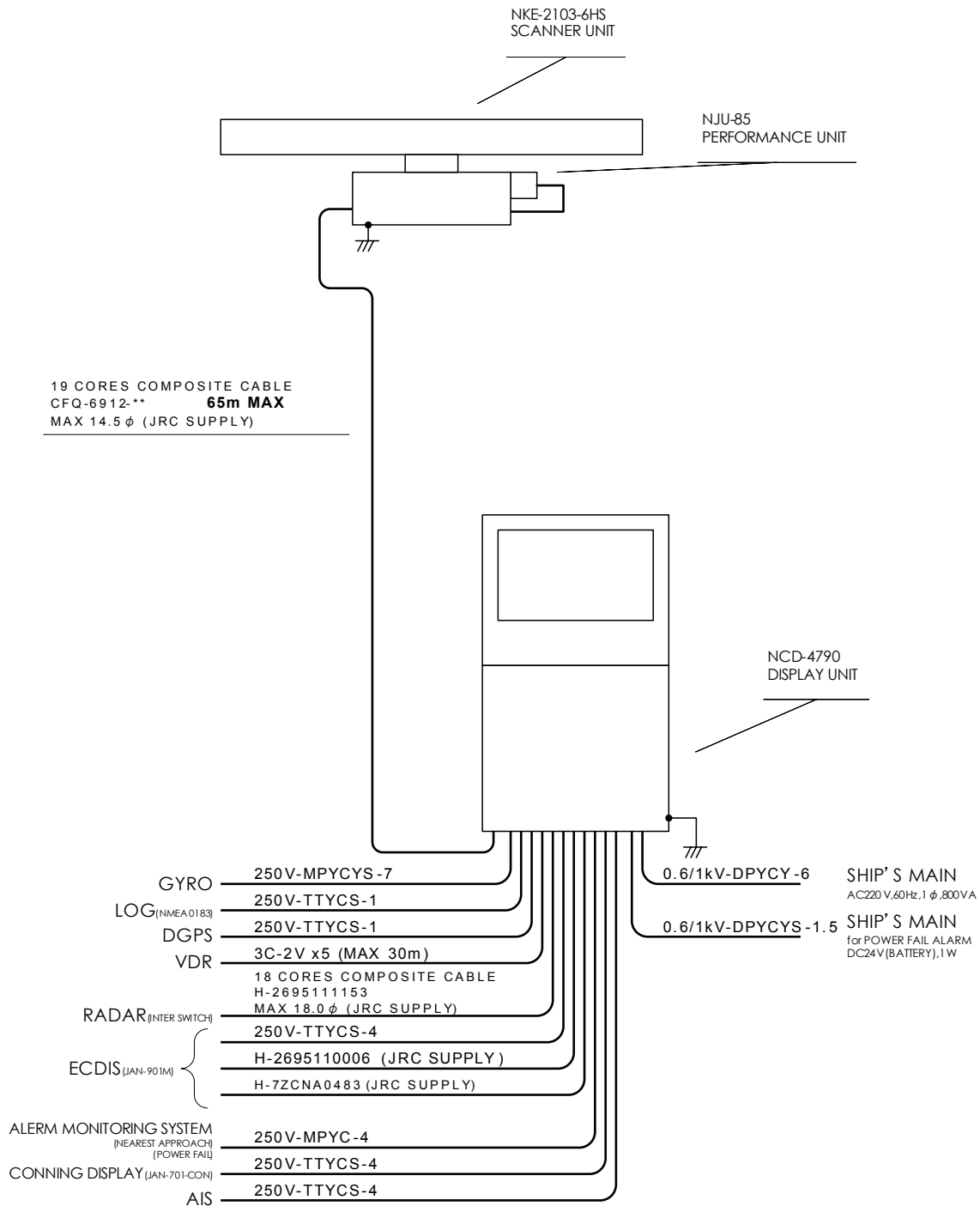
NOTE ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE, COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(X-BAND 10kW RADAR)

JMA-7110-6XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7110-6XA

Fig 6-26: JMA-7110-6XA (self-standing)

### 6.2.1.9 General system diagram of JMA-7110-6XAH (Self-standing)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

NOTE ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE, COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(X-BAND 10kW RADAR)

JMA-7110-6XAH形レーダー総合系統図

GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7110-6XAH

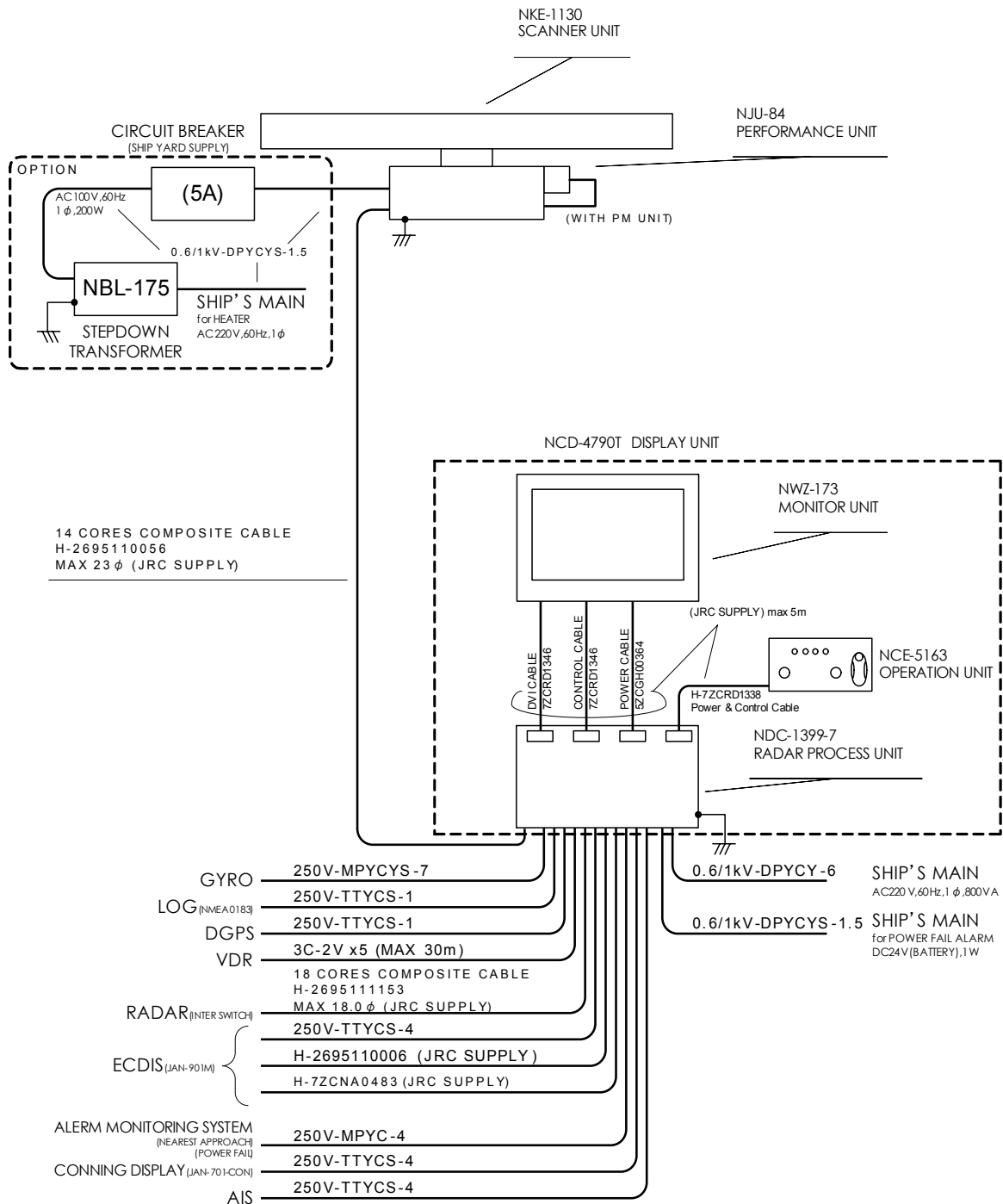
Fig 6-27: JMA-7110-6XAH (self-standing)

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## 6.2.2 General system diagram of JMA-7100 (Desktop type)



### 6.2.2.1 General system diagram of JMA-7132-SA (Desktop)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

NOTE ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

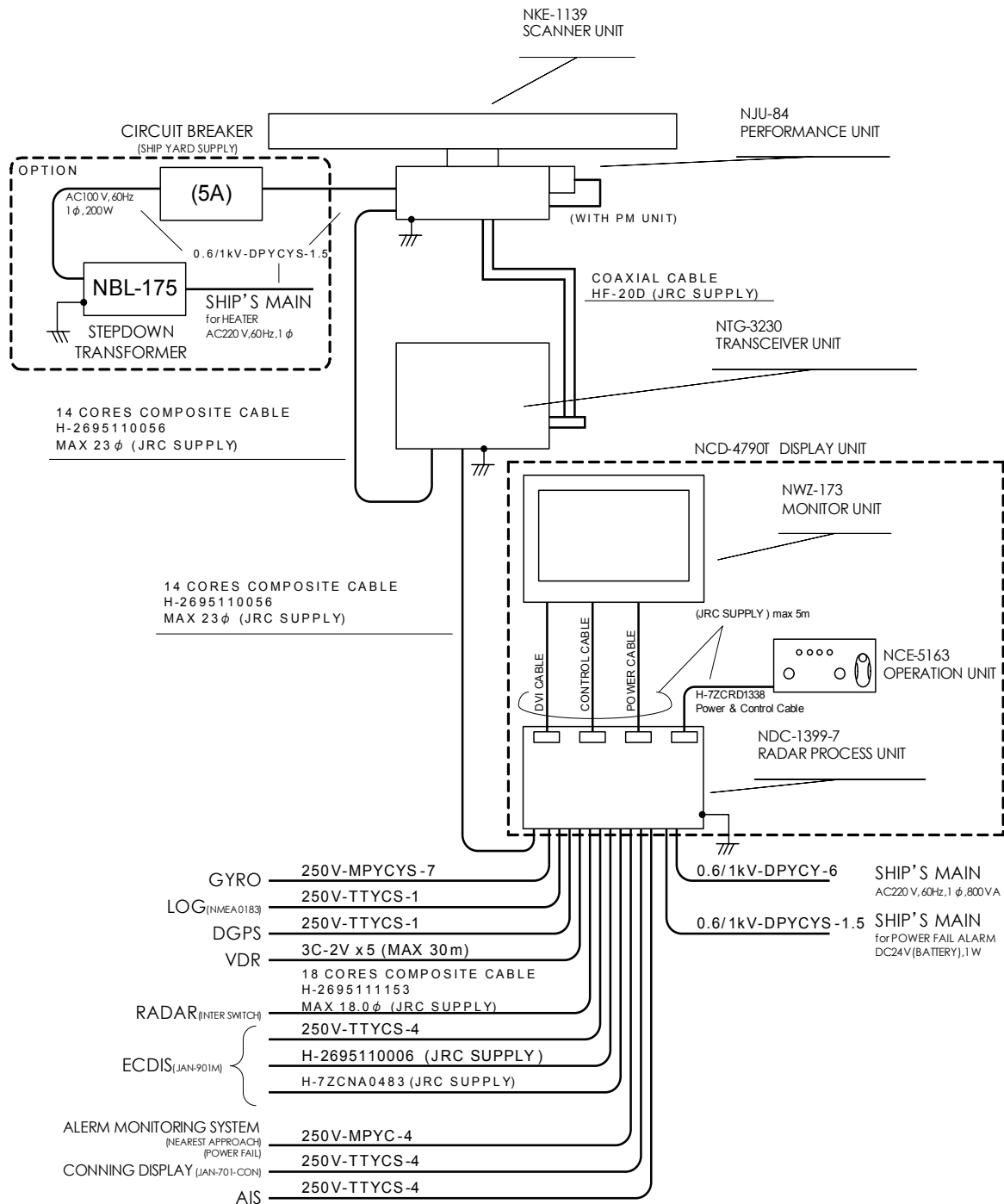
(S-BAND 30kW RADAR)

JMA-7132-SA形レーダー総合系統図

GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7132-SA

Fig 6-28: JMA-7132-SA (desktop)

### 6.2.2.2 General system diagram of JMA-7133-SA (Desktop)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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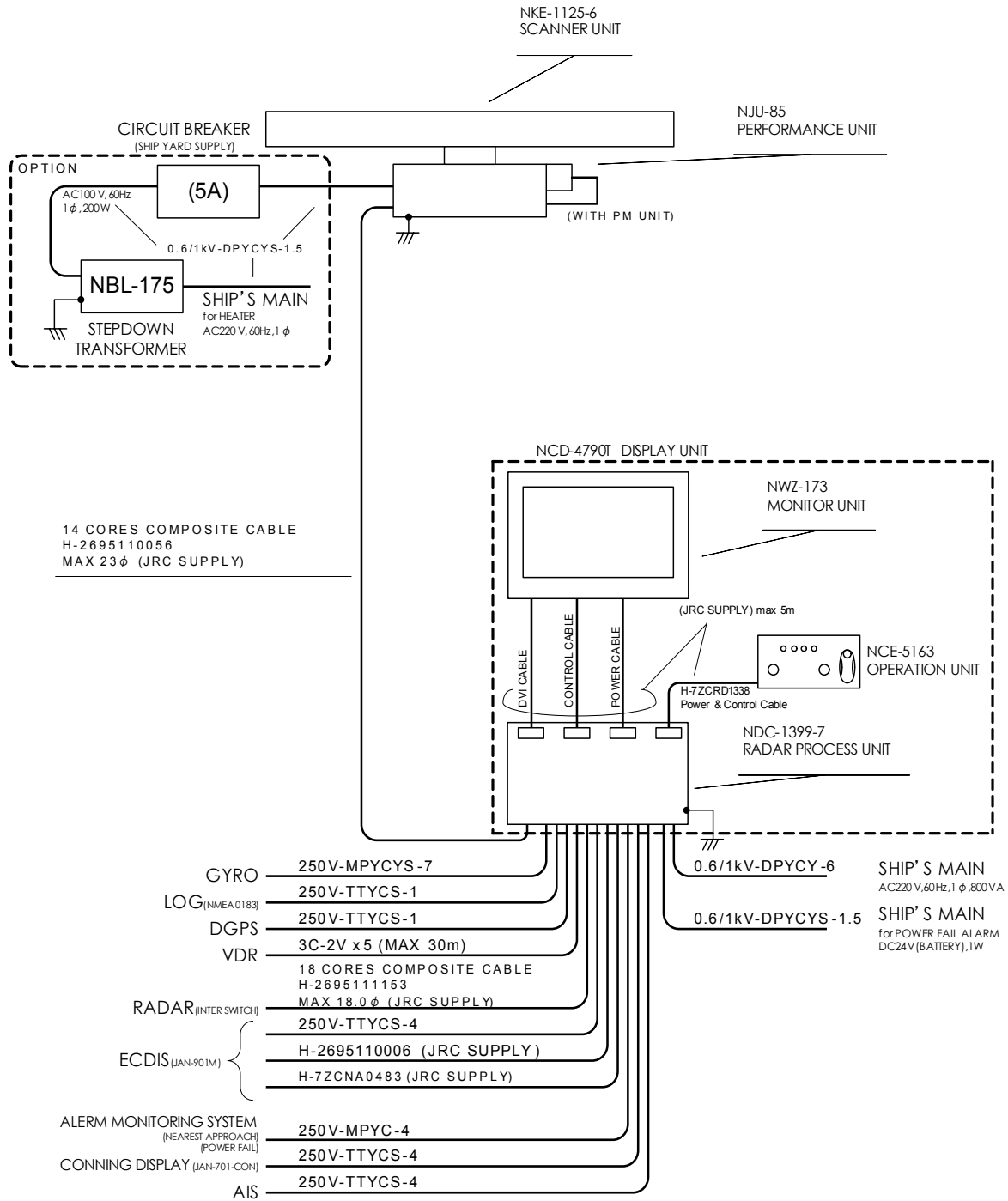
(S-BAND 30kW RADAR)

JMA-7133-SA形レーダー総合系統図

GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7133-SA

Fig 6-29: JMA-7133-SA (desktop)

### 6.2.2.3 General system diagram of JMA-7122-6XA (Desktop)



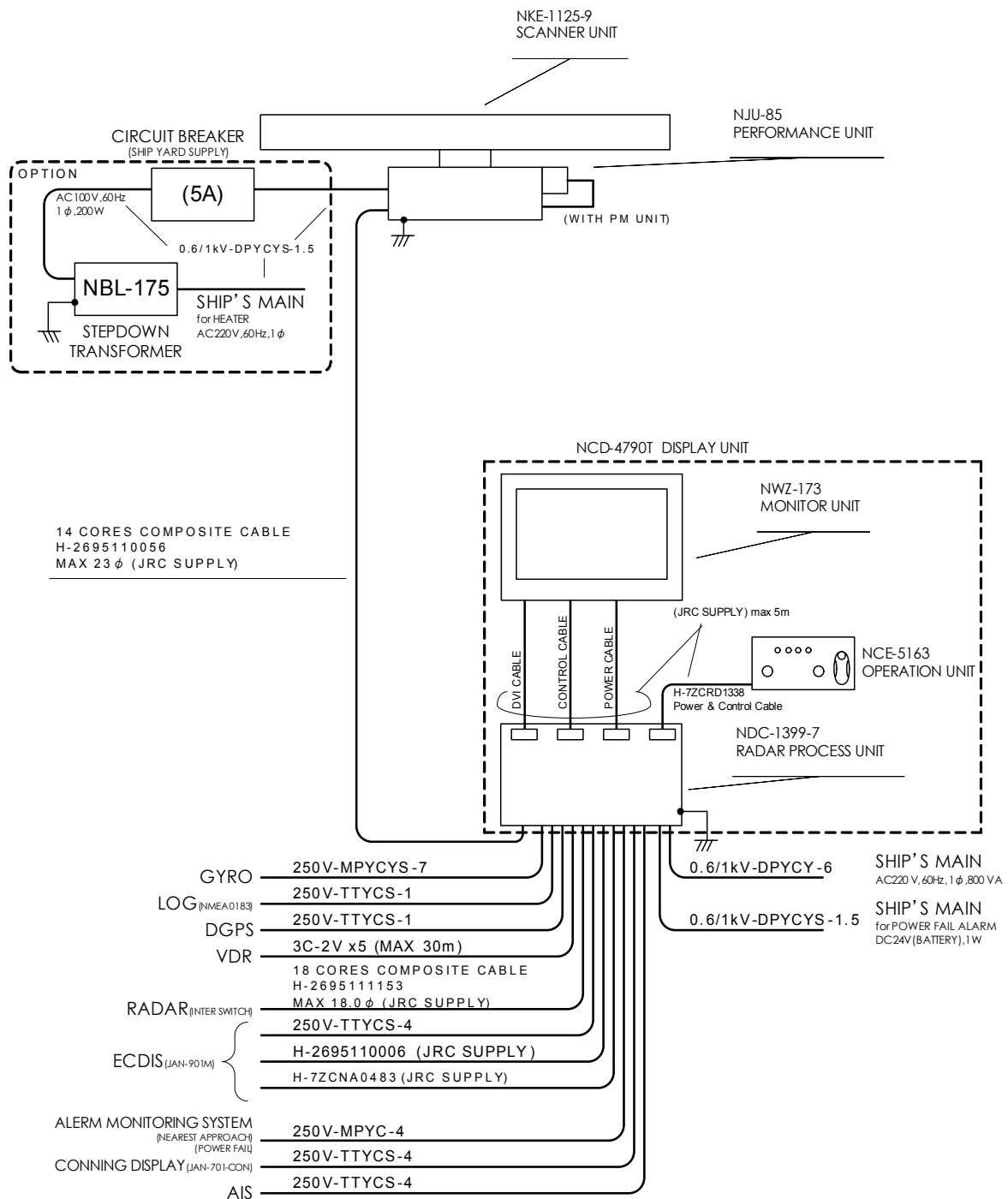
注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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(X-BAND 25kW RADAR)  
JMA-7122-6XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7122-6XA

Fig 6-30: JMA-7122-6XA (desktop)

### 6.2.2.4 General system diagram of JMA-7122-9XA (Desktop)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

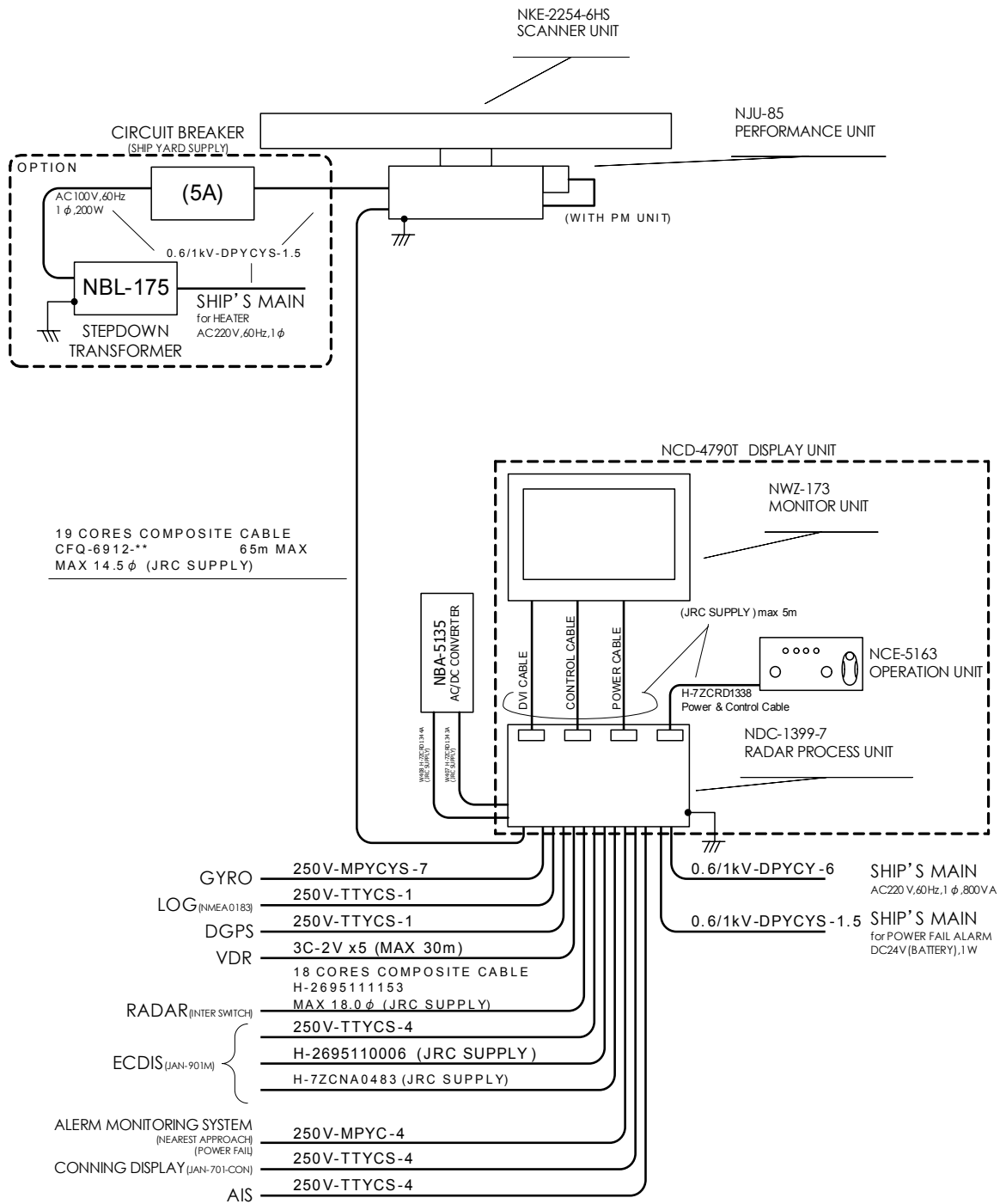
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(X-BAND 25kW RADAR)

JMA-7122-9XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7122-9XA

Fig 6-31: JMA-7122-9XA (desktop)

### 6.2.2.5 General system diagram of JMA-7122-6XAH (Desktop)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

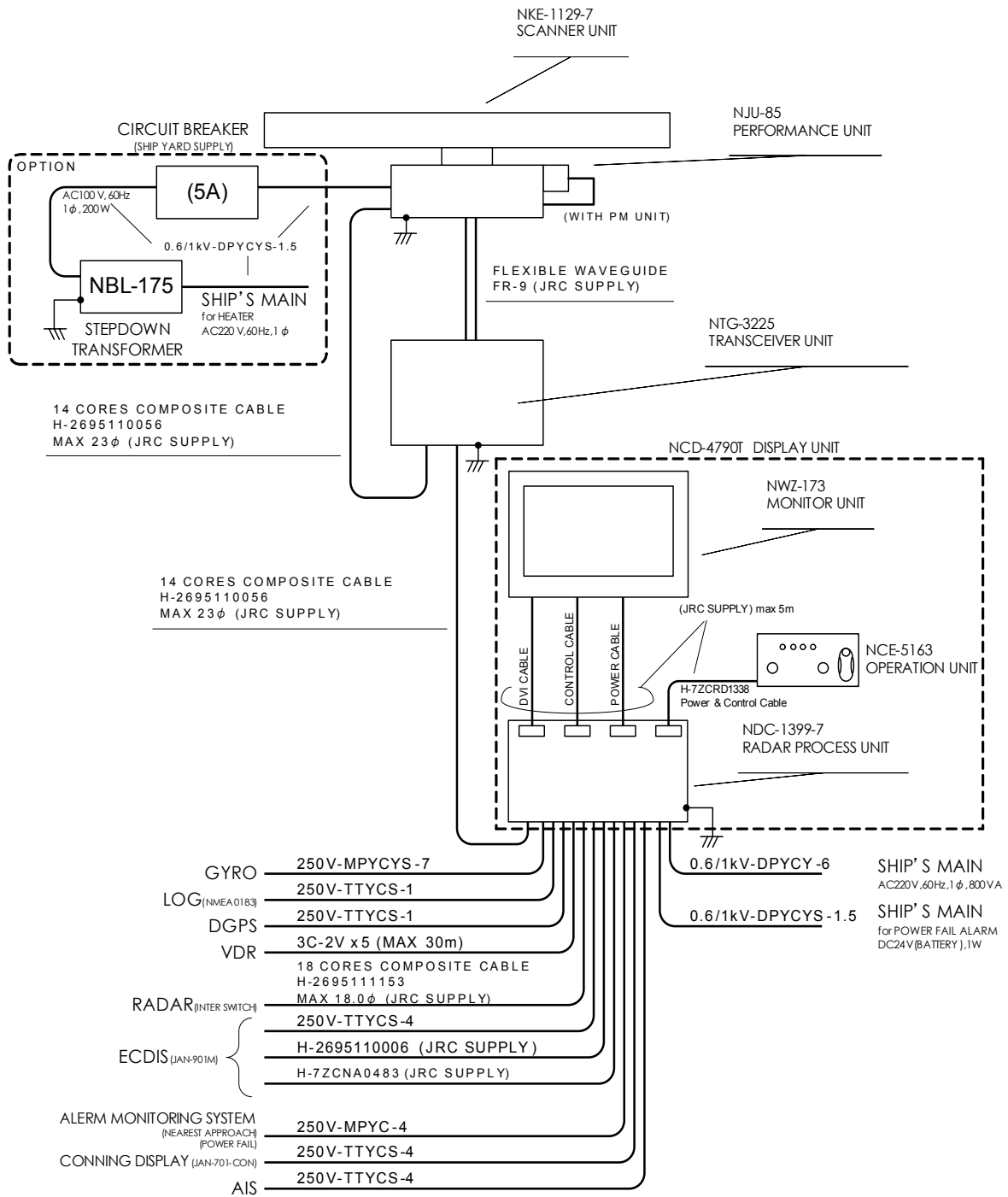
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(X-BAND 25kW RADAR)  
JMA-7122-6XAH形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7122-6XAH

Fig 6-32: JMA-7122-6XAH (desktop)



### 6.2.2.6 General system diagram of JMA-7123-7XA (Desktop)



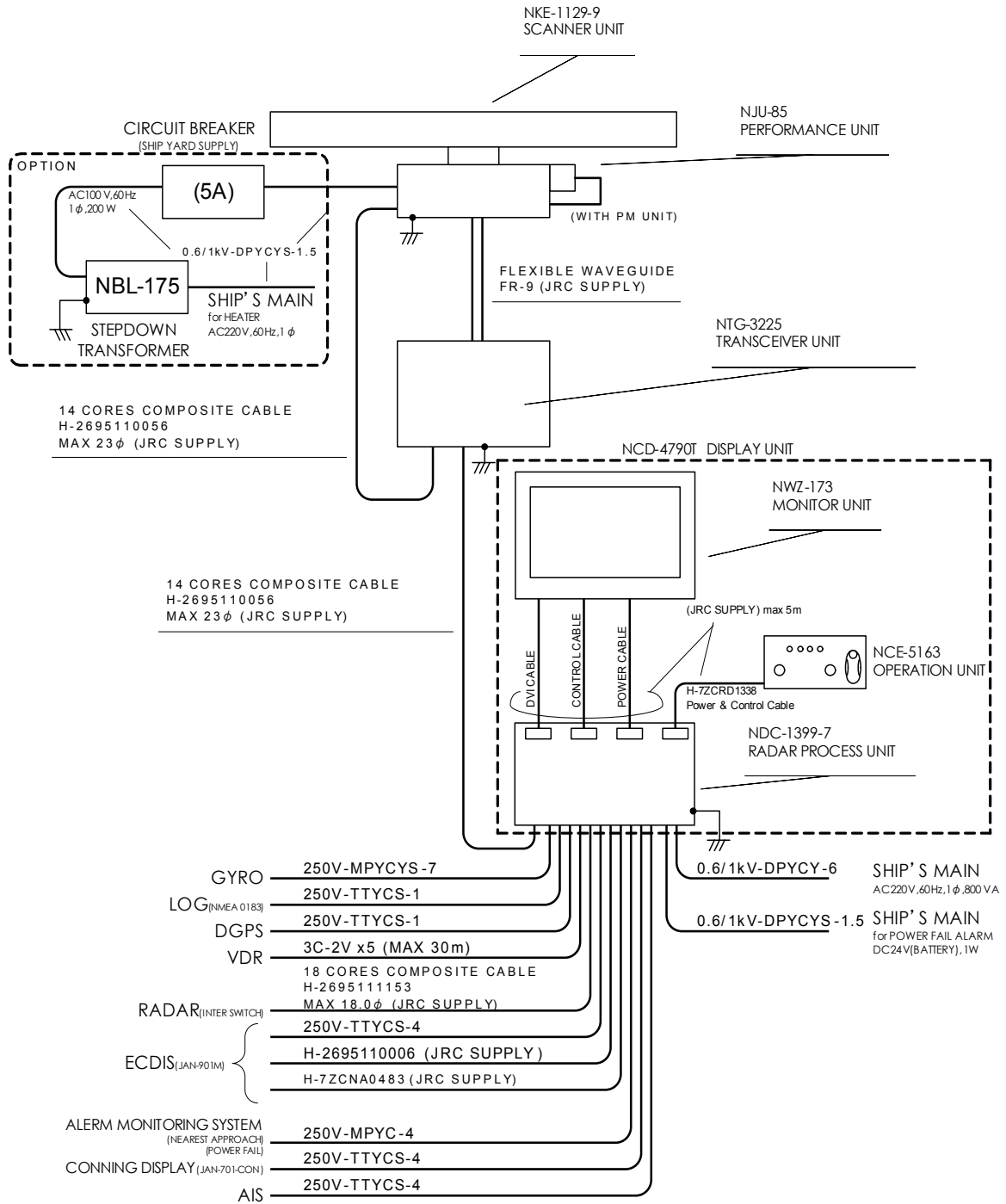
注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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(X-BAND 25kW RADAR)  
JMA-7123-7XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7123-7XA

Fig 6-33: JMA-7123-7XA (desktop)

### 6.2.2.7 General system diagram of JMA-7123-9XA (Desktop)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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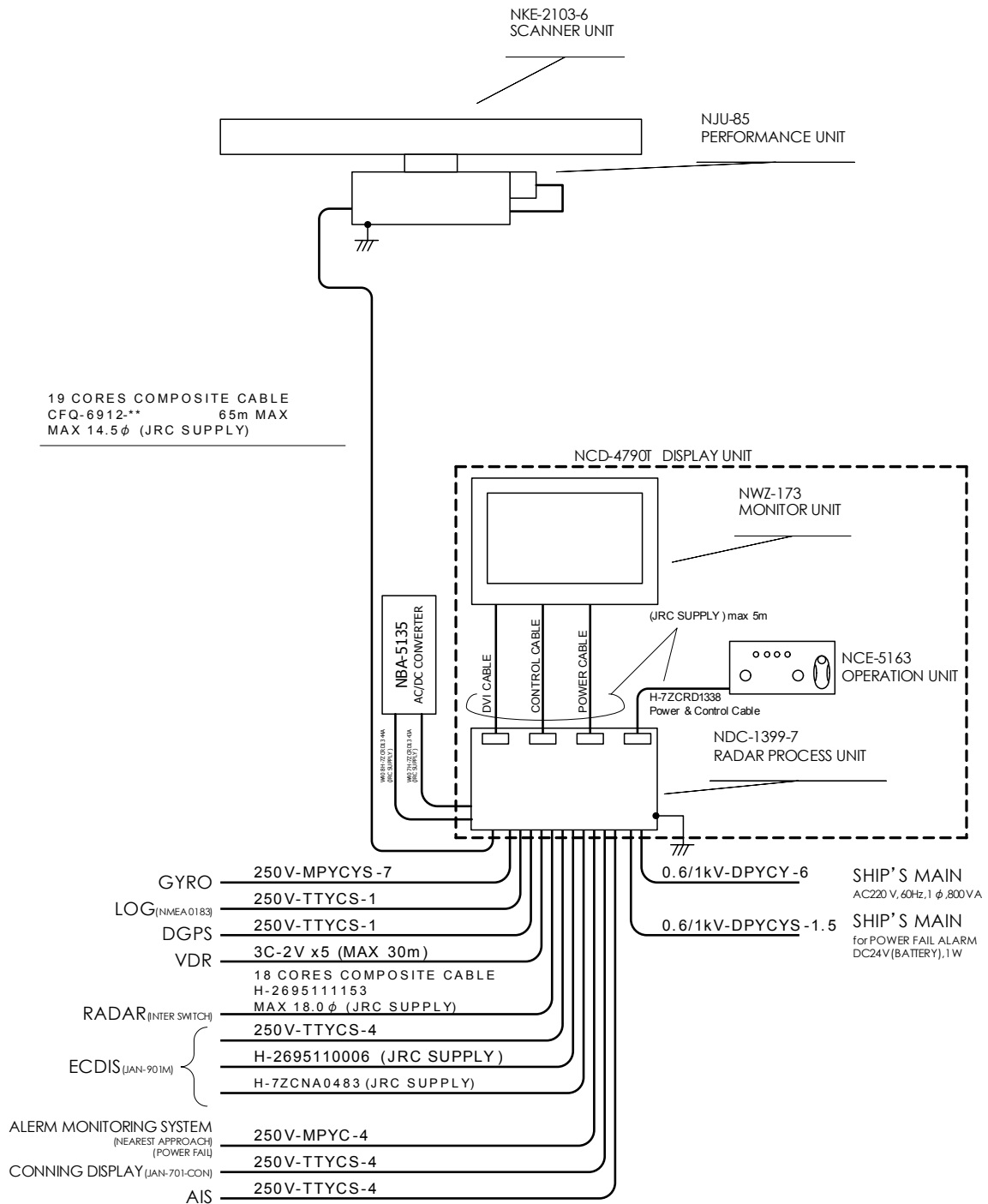
(X-BAND 25kW RADAR)

JMA-7123-9XA形レーダー総合系統図

GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7123-9XA

Fig 6-34: JMA-7123-9XA (desktop)

### 6.2.2.8 General system diagram of JMA-7110-6XA (Desktop)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

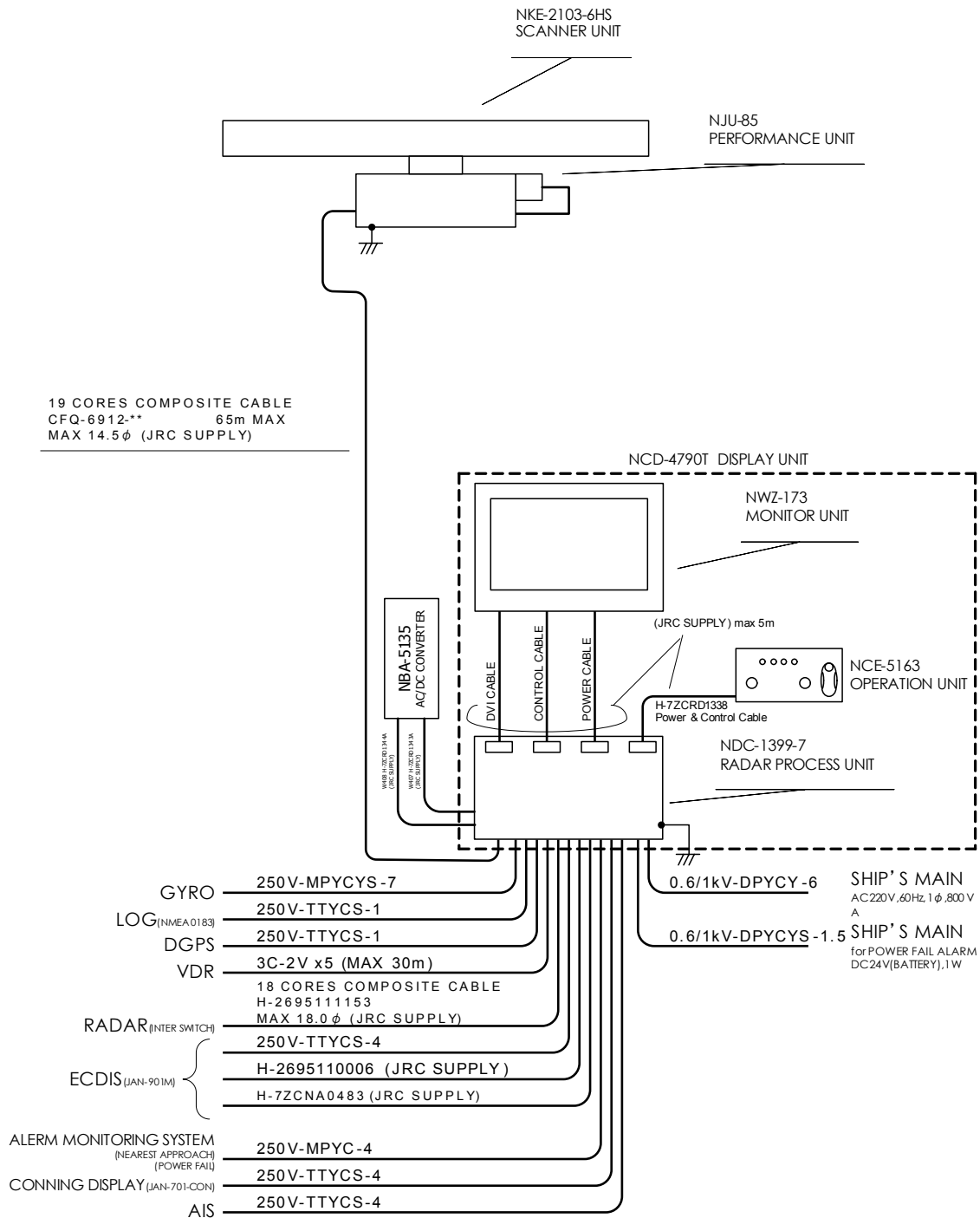
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(X-BAND 10kW RADAR)  
JMA-7110-6XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7110-6XA

Fig 6-35: JMA-7110-6XA (desktop)



6.2.2.9 General system diagram of JMA-7110-6XAH (Desktop)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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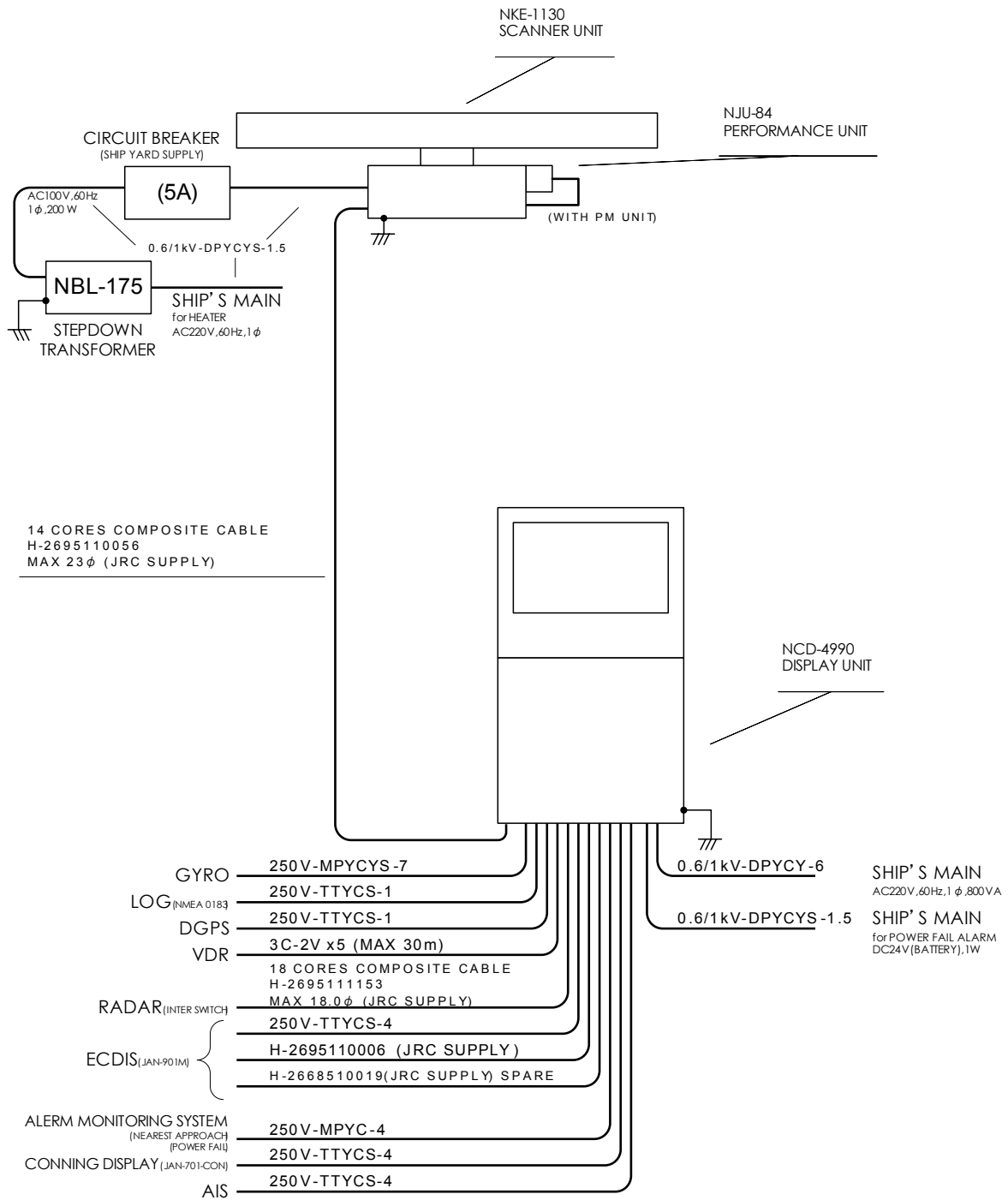
(X-BAND 10kW RADAR)

JMA-7110-6XAH形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-7110-6XAH

Fig 6-36: JMA-7110-6XAH (desktop)

### 6.2.3 General system diagram of JMA-9100 (Self-standing type)

### 6.2.3.1 General system diagram of JMA-9132-SA (Self-standing)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

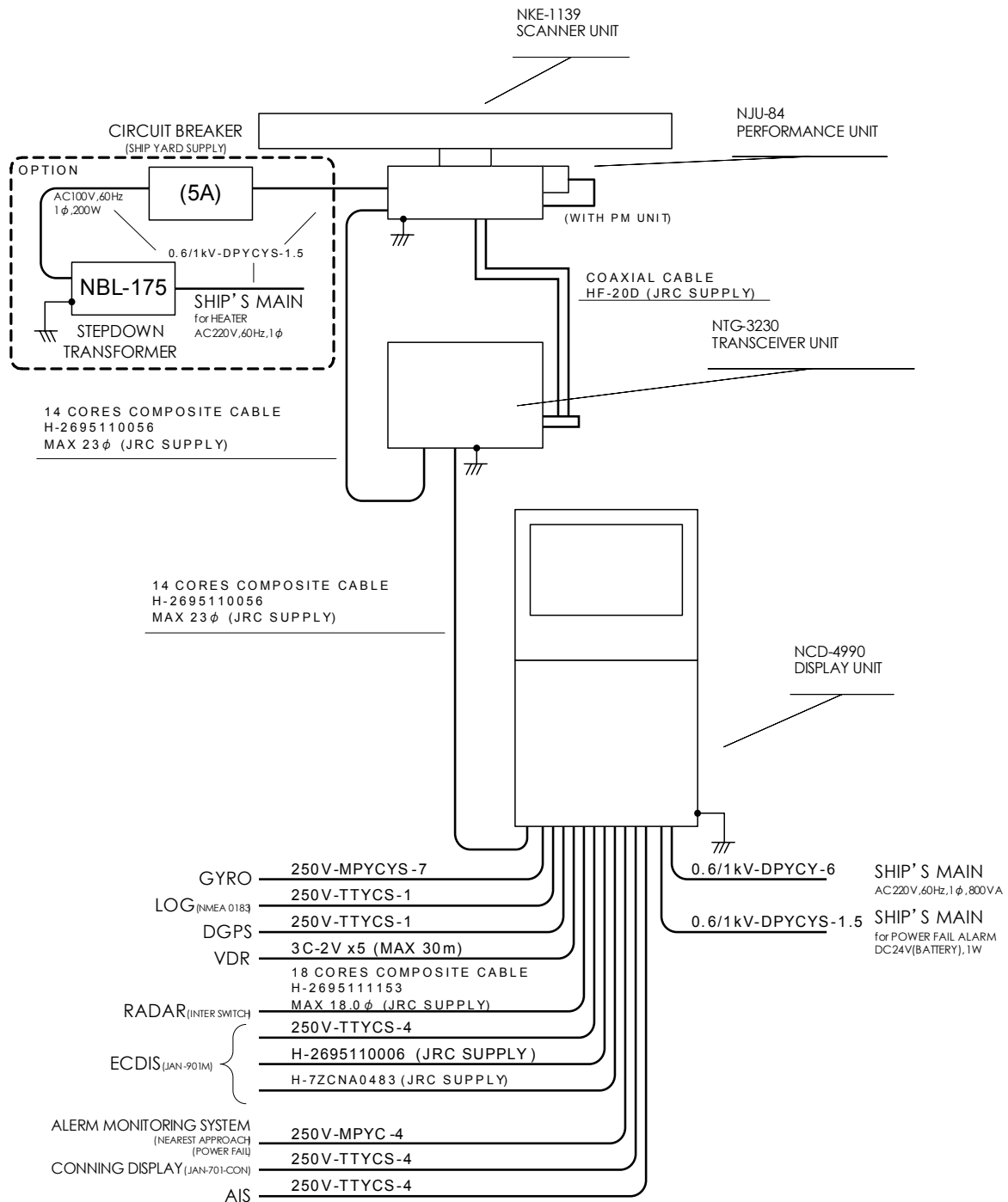
NOTE: ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
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(S-BAND 30kW RADAR)

JMA-9132-SA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9132-SA

Fig 6-37: JMA-9132-SA (self-standing)

### 6.2.3.2 General system diagram of JMA-9133-SA (Self-standing)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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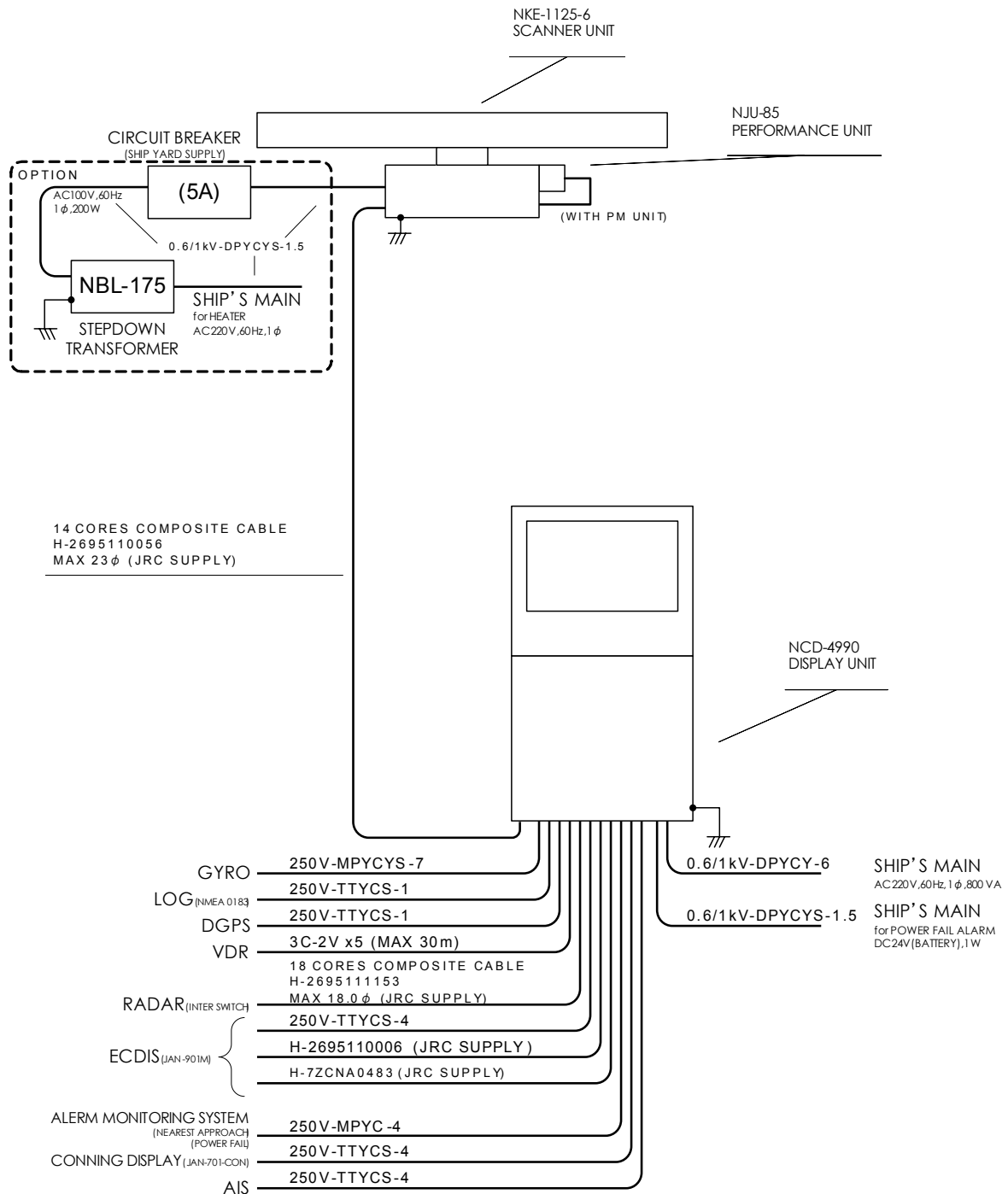
(S-BAND 30kW RADAR)

JMA-9133-SA形レーダー総合系統図

GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9133-SA

Fig 6-38: JMA-9133-SA (self-standing)

### 6.2.3.3 General system diagram of JMA-9122-6XA (Self-standing)



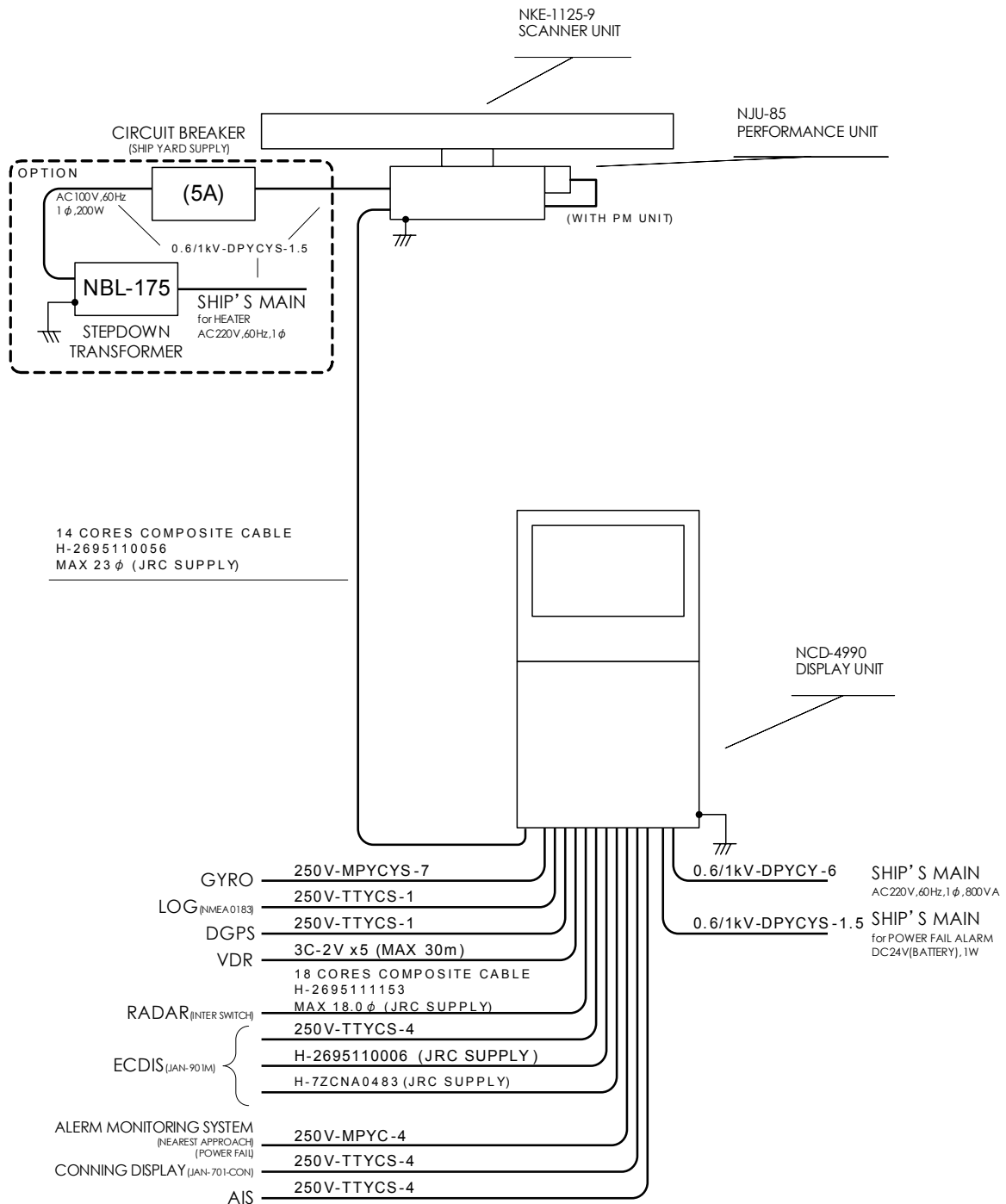
注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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(X-BAND 25kW RADAR)  
JMA-9122-6XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9122-6XA

Fig 6-39: JMA-9122-6XA (self-standing)

### 6.2.3.4 General system diagram of JMA-9122-9XA (Self-standing)



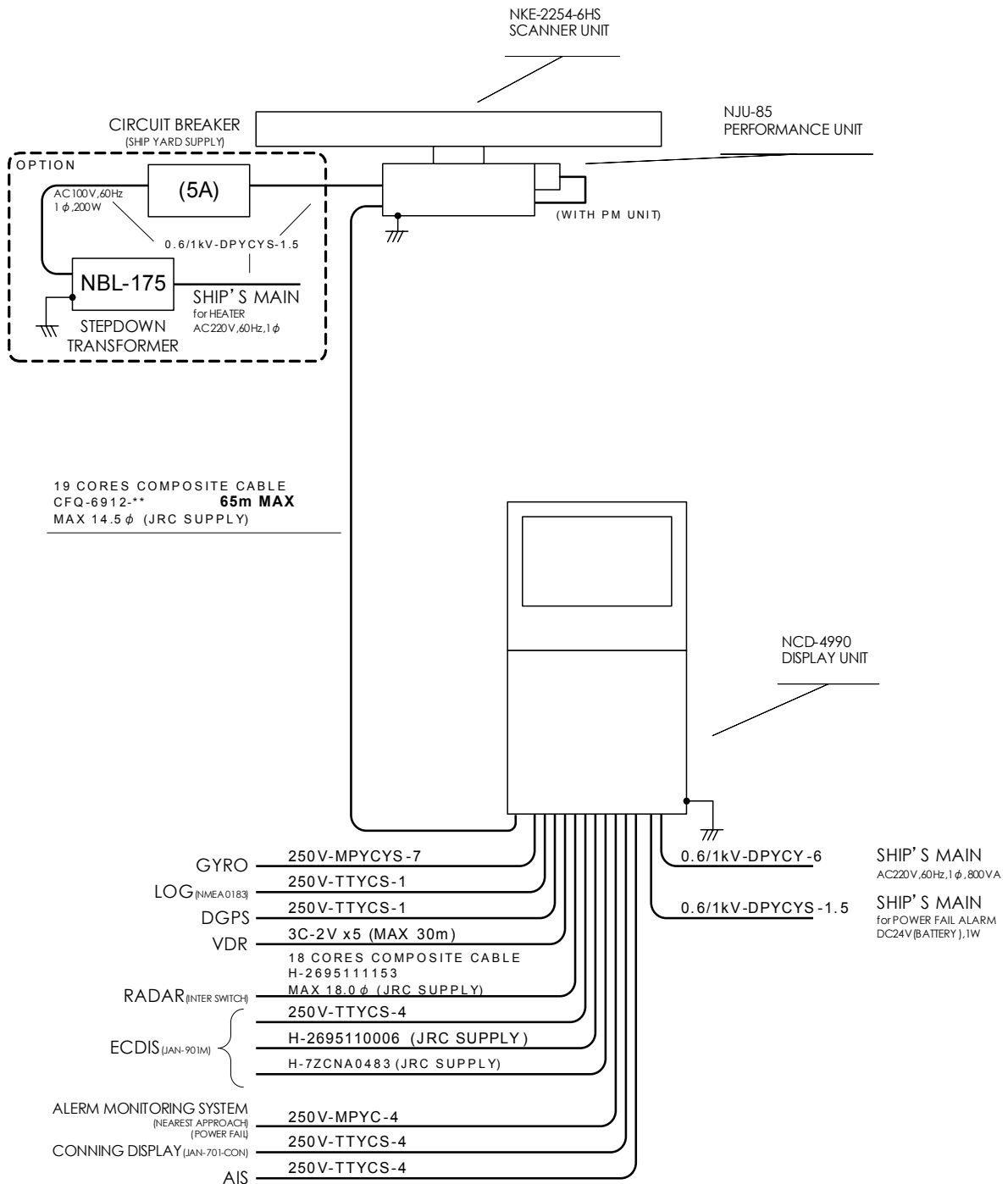
注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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(X-BAND 25kW RADAR)  
JMA-9122-9XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9122-9XA

Fig 6-40: JMA-9122-9XA (self-standing)

### 6.2.3.5 General system diagram of JMA-9122-6XAH (Self-standing)



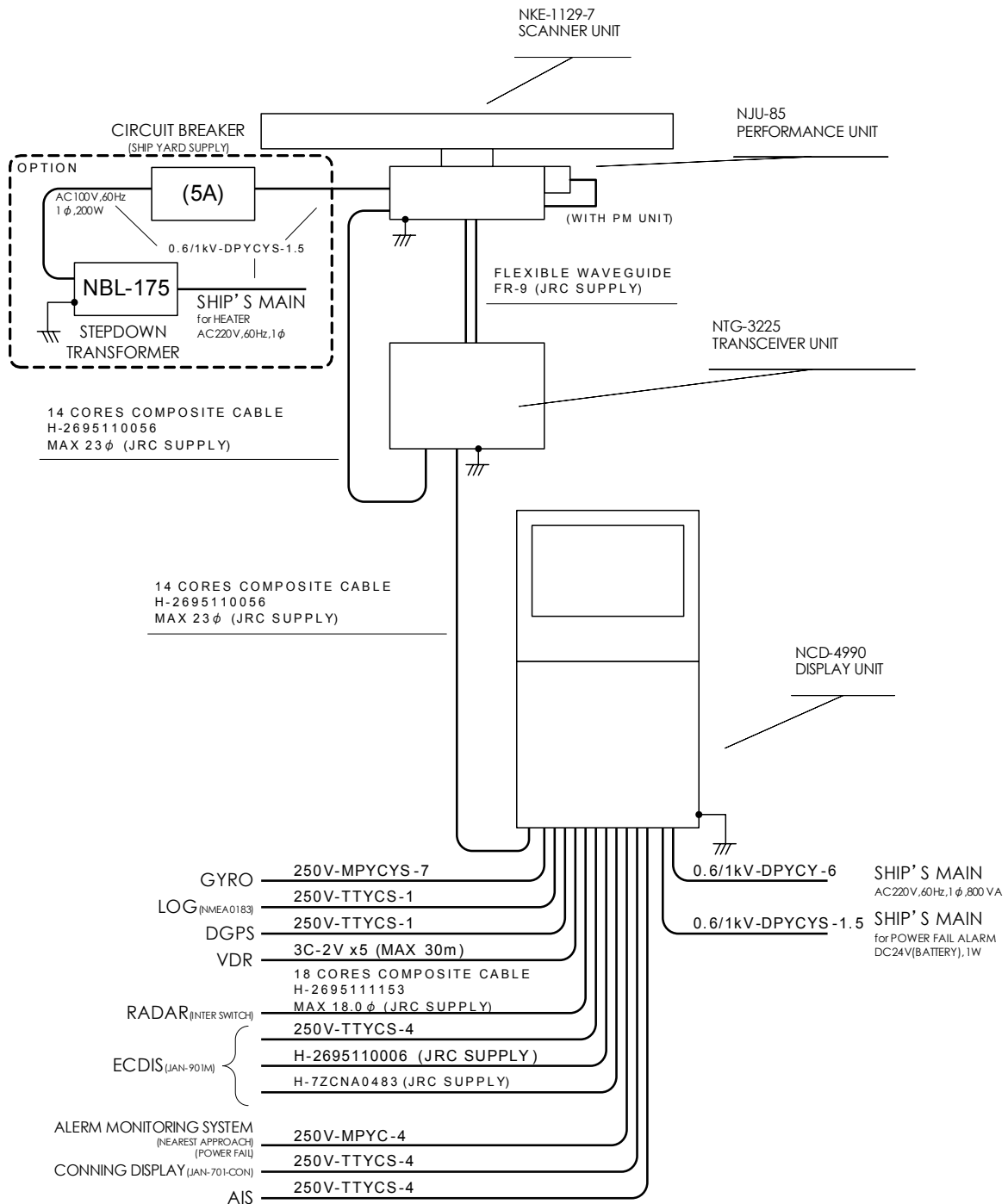
注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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(X-BAND 25kW RADAR)  
JMA-9122-6XAH形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9122-6XAH

Fig 6-41: JMA-9122-6XAH (self-standing)

### 6.2.3.6 General system diagram of JMA-9123-7XA (Self-standing)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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(X-BAND 25kW RADAR)

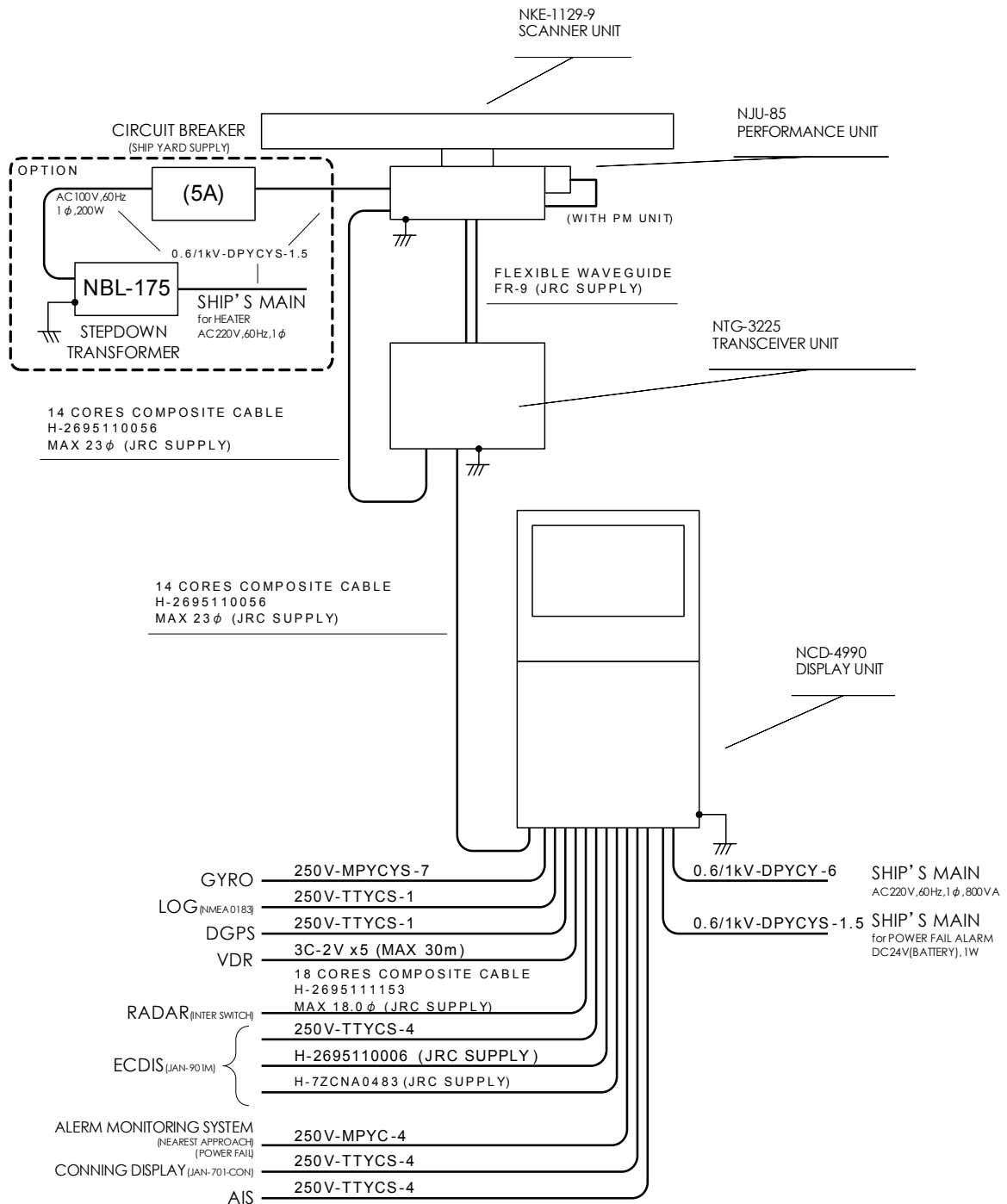
JMA-9123-7XA形レーダー総合系統図

GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9123-7XA

Fig 6-42: JMA-9123-7XA (self-standing)



### 6.2.3.7 General system diagram of JMA-9123-9XA (Self-standing)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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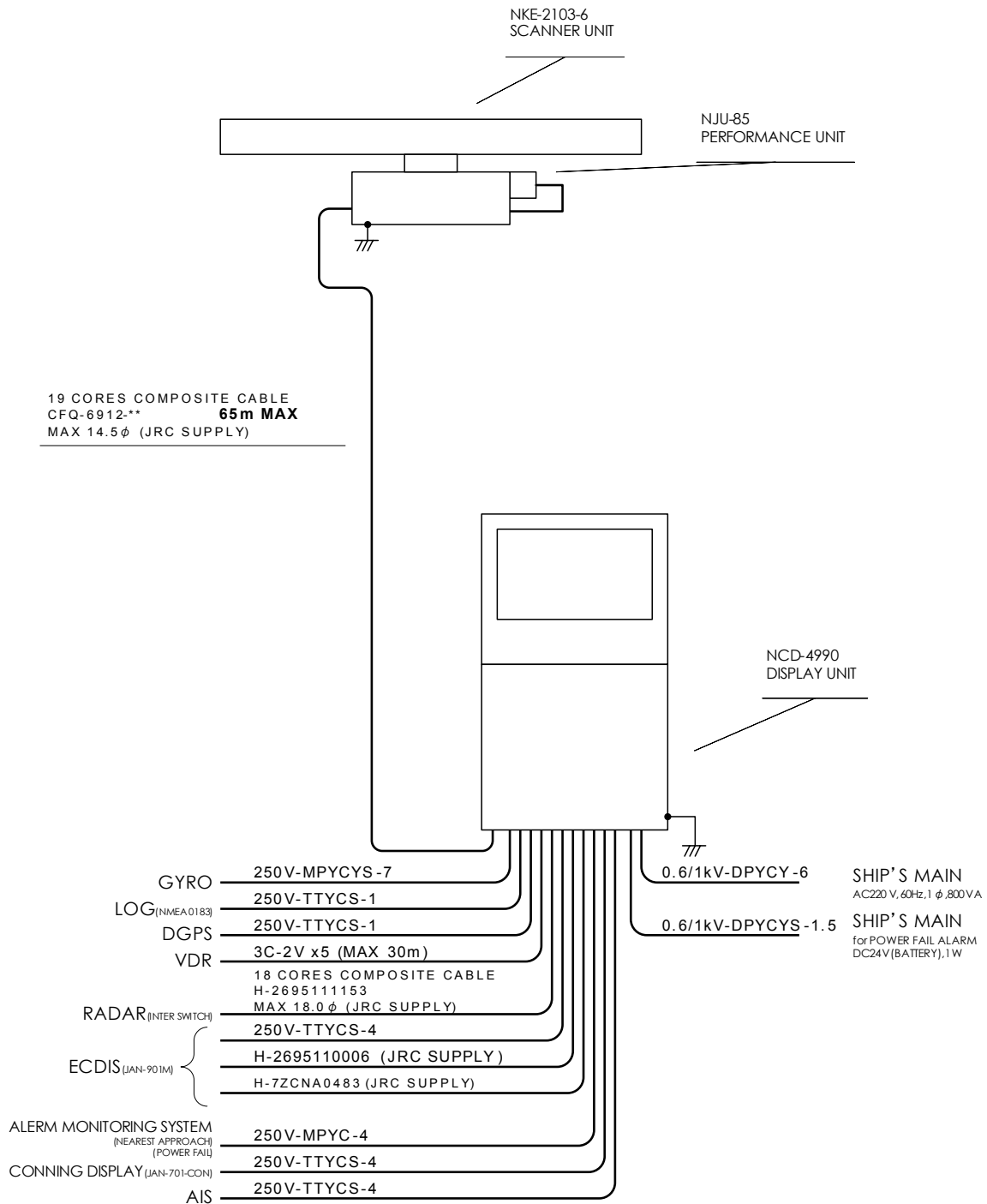
(X-BAND 25kW RADAR)

JMA-9123-9XA形レーダー総合系統図

GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9123-9XA

Fig 6-43: JMA-9123-9XA (self-standing)

### 6.2.3.8 General system diagram of JMA-9110-6XA (Self-standing)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

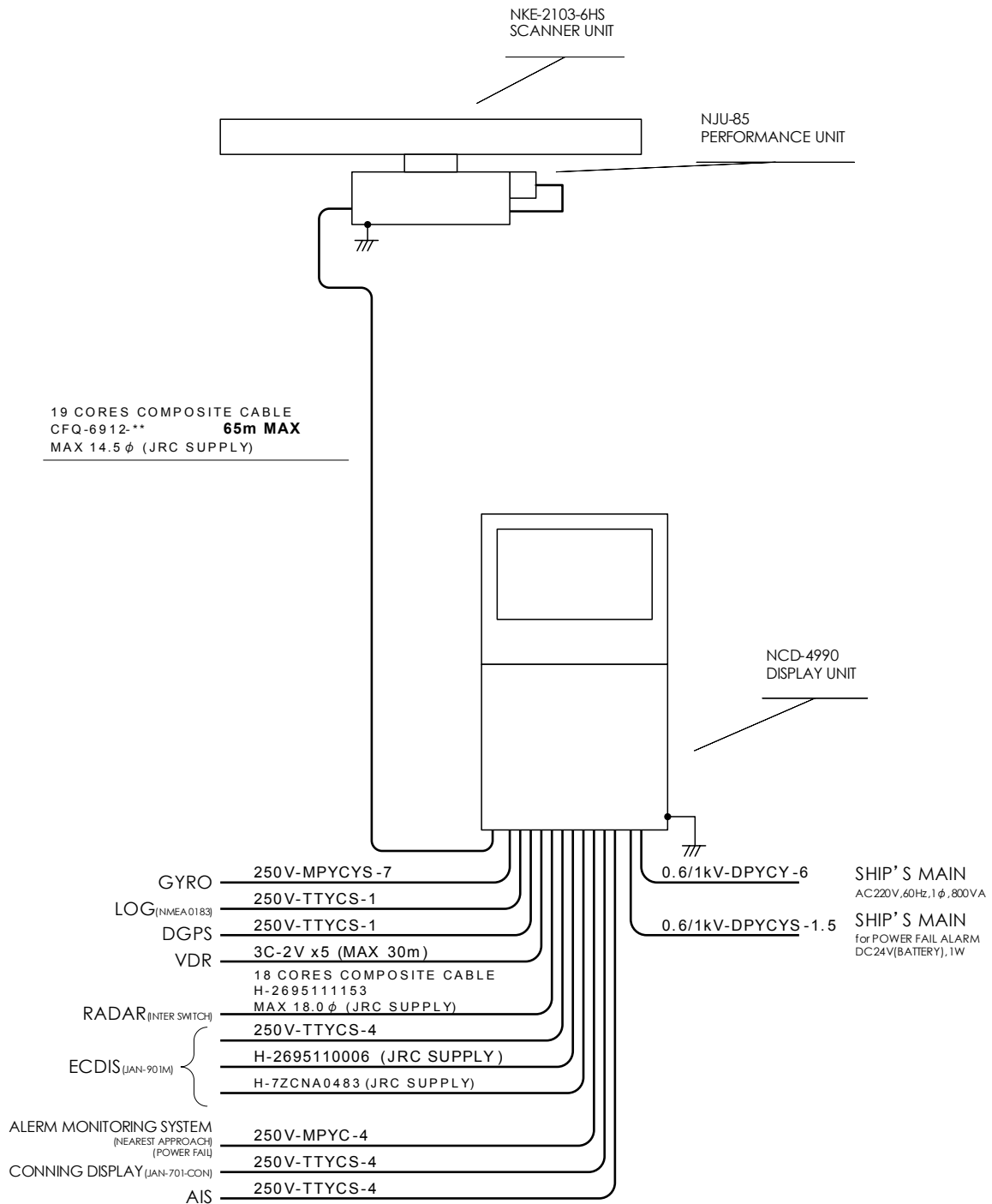
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(X-BAND 10kW RADAR)

JMA-9110-6XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9110-6XA

Fig 6-44: JMA-9110-6XA (self-standing)

### 6.2.3.9 General system diagram of JMA-9110-6XAH (Self-standing)



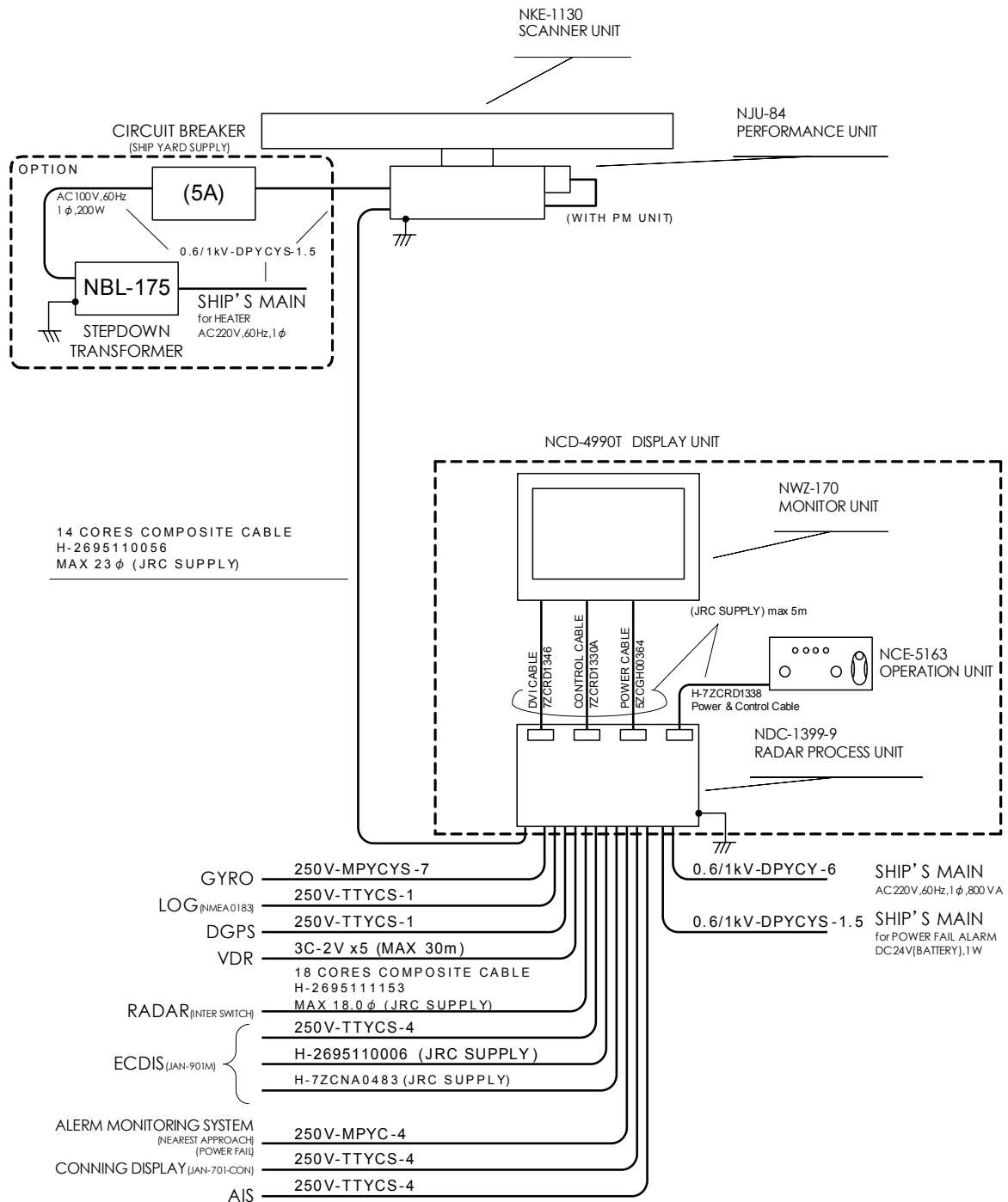
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- NOTE ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
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ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(X-BAND 10kW RADAR)  
JMA-9110-6XAH形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9110-6XAH

Fig 6-45: JMA-9110-6XAH (self-standing)

## 6.2.4 General system diagram of JMA-9100 (Desktop type)

### 6.2.4.1 General system diagram of JMA-9132-SA (Desktop)



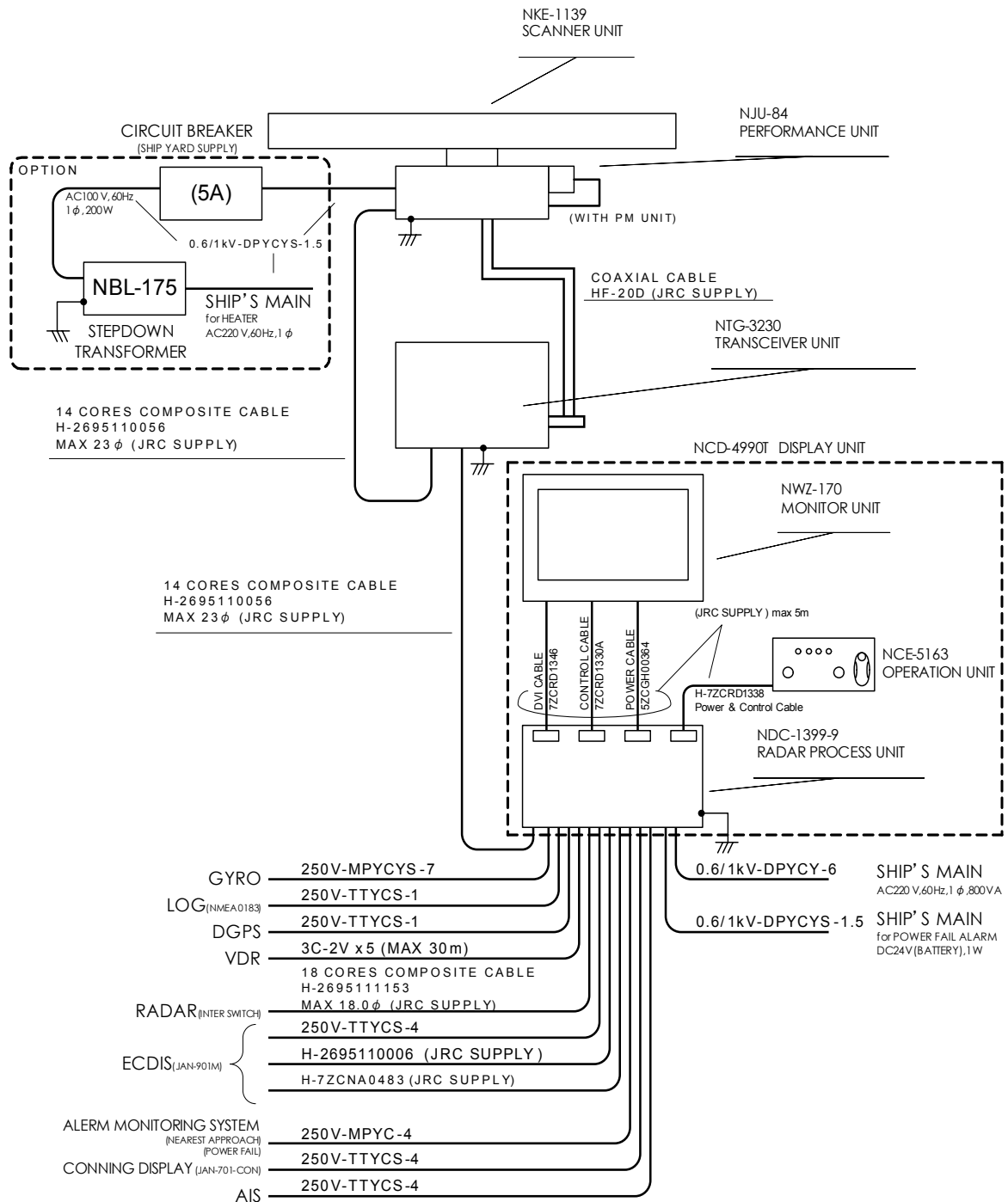
注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

NOTE ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(S-BAND 30kW RADAR)  
JMA-9132-SA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9132-SA

Fig 6-46: JMA-9132-SA (desktop)

### 6.2.4.2 General system diagram of JMA-9133-SA (Desktop)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

NOTE: ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

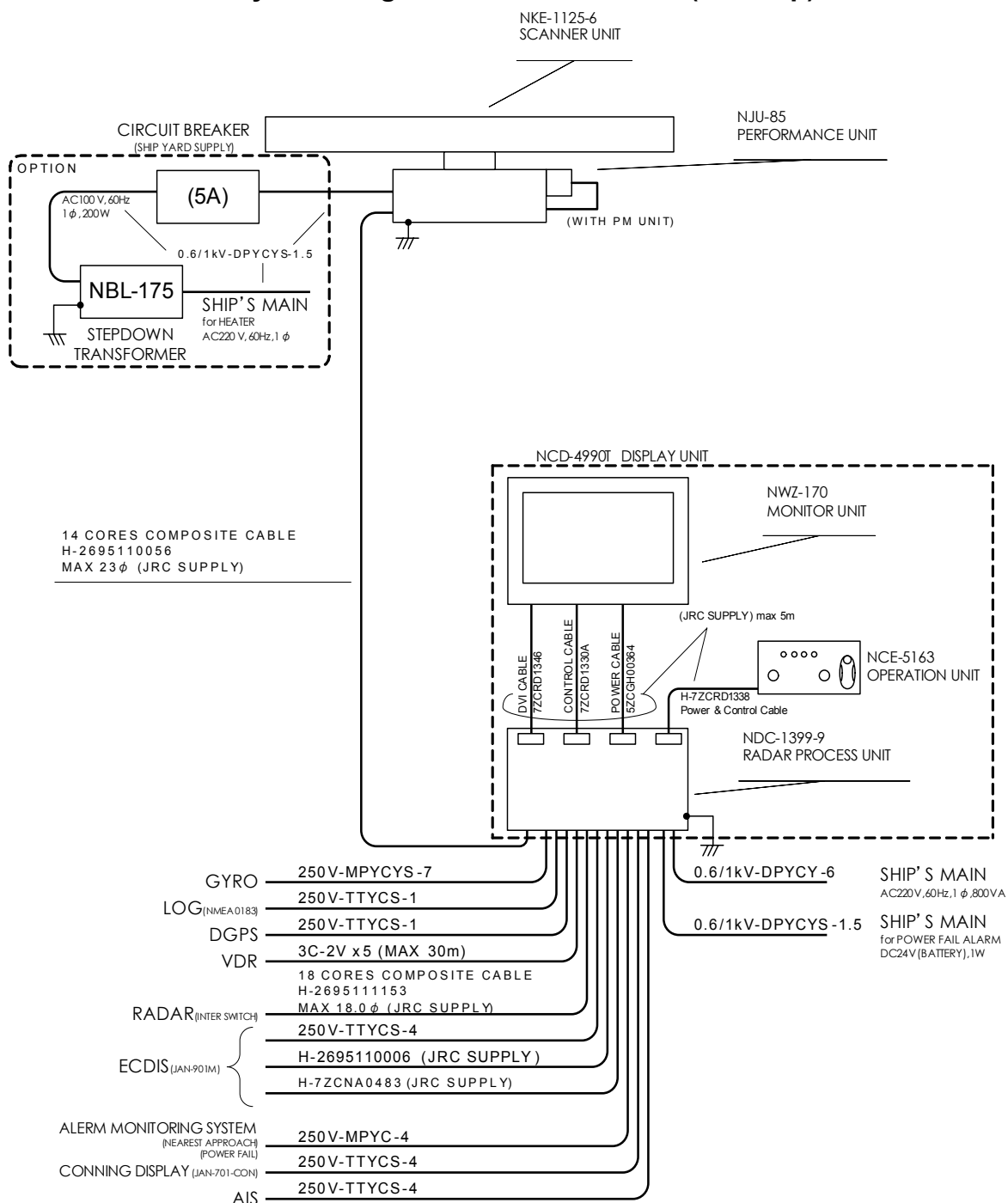
(S-BAND 30kW RADAR)

JMA-9133-SA形レーダー総合系統図

GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9133-SA

Fig 6-47: JMA-9133-SA (desktop)

### 6.2.4.3 General system diagram of JMA-9122-6XA (Desktop)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

NOTE) ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE, COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

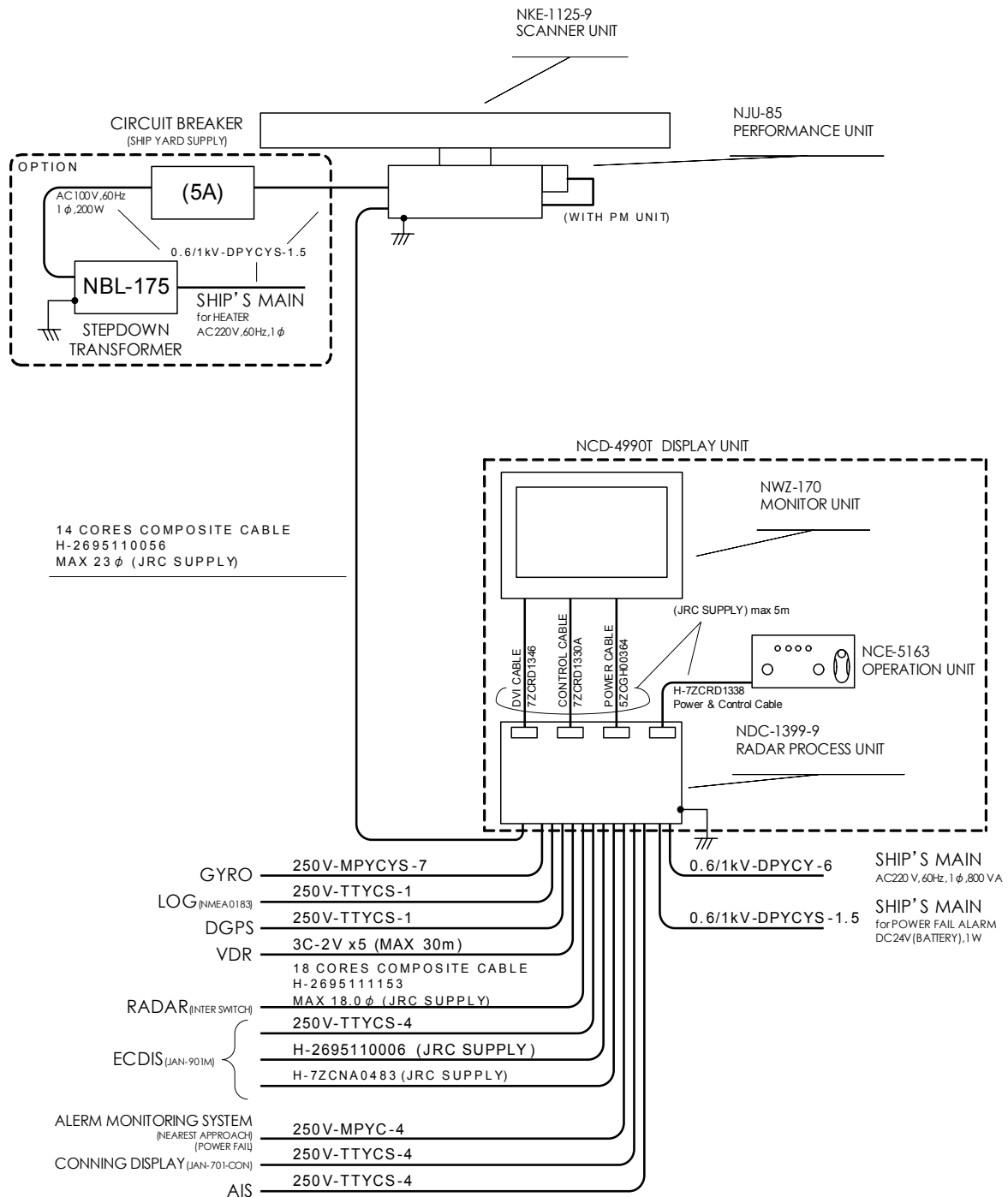
(X-BAND 25kW RADAR)

JMA-9122-6XA形レーダー総合系統図

GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9122-6XA

Fig 6-48: JMA-9122-6XA (desktop)

### 6.2.4.4 General system diagram of JMA-9122-9XA (Desktop)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

NOTE ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

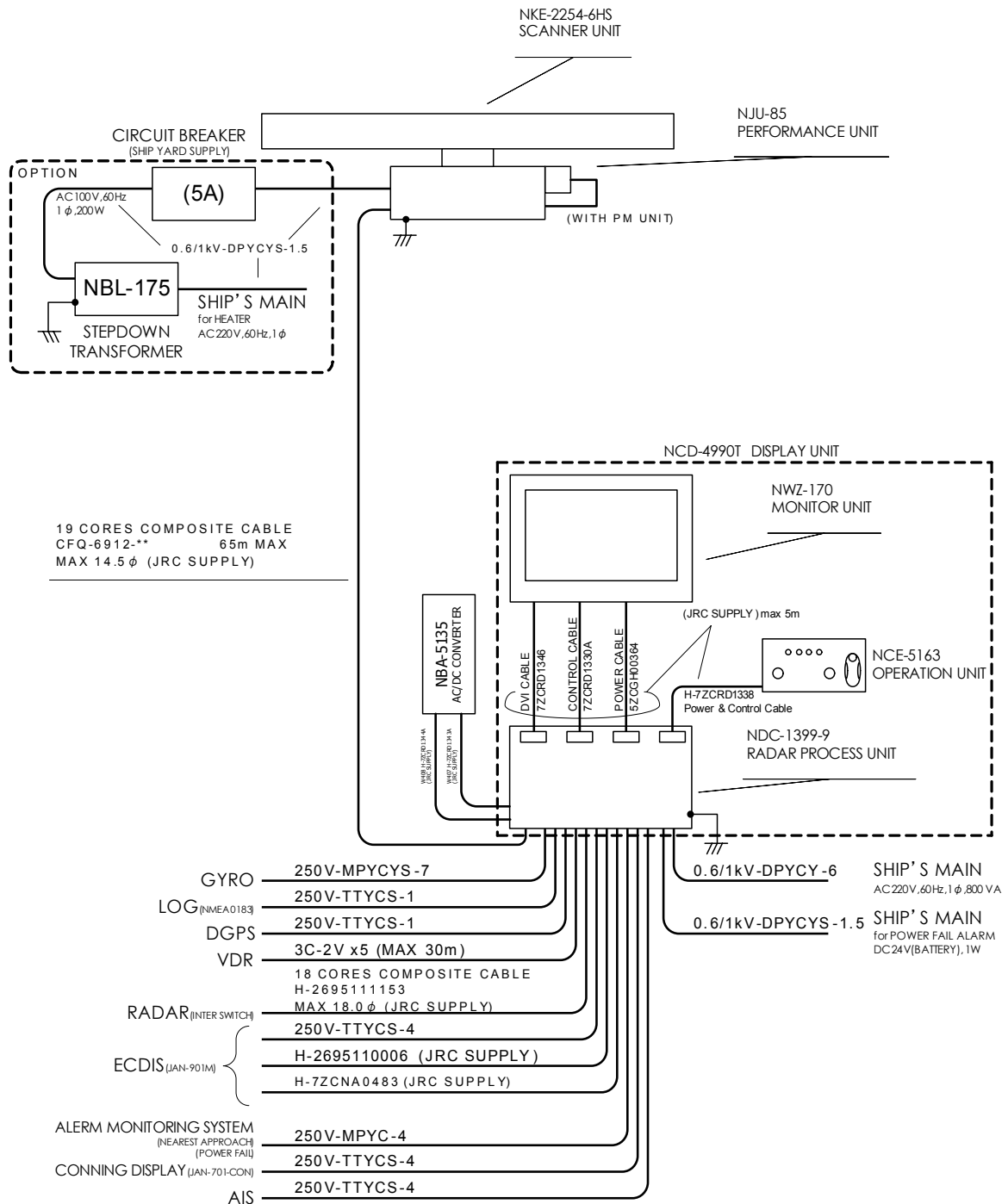
(X-BAND 25kW RADAR)

JMA-9122-9XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9122-9XA

Fig 6-49: JMA-9122-9XA (desktop)



### 6.2.4.5 General system diagram of JMA-9122-6XAH (Desktop)



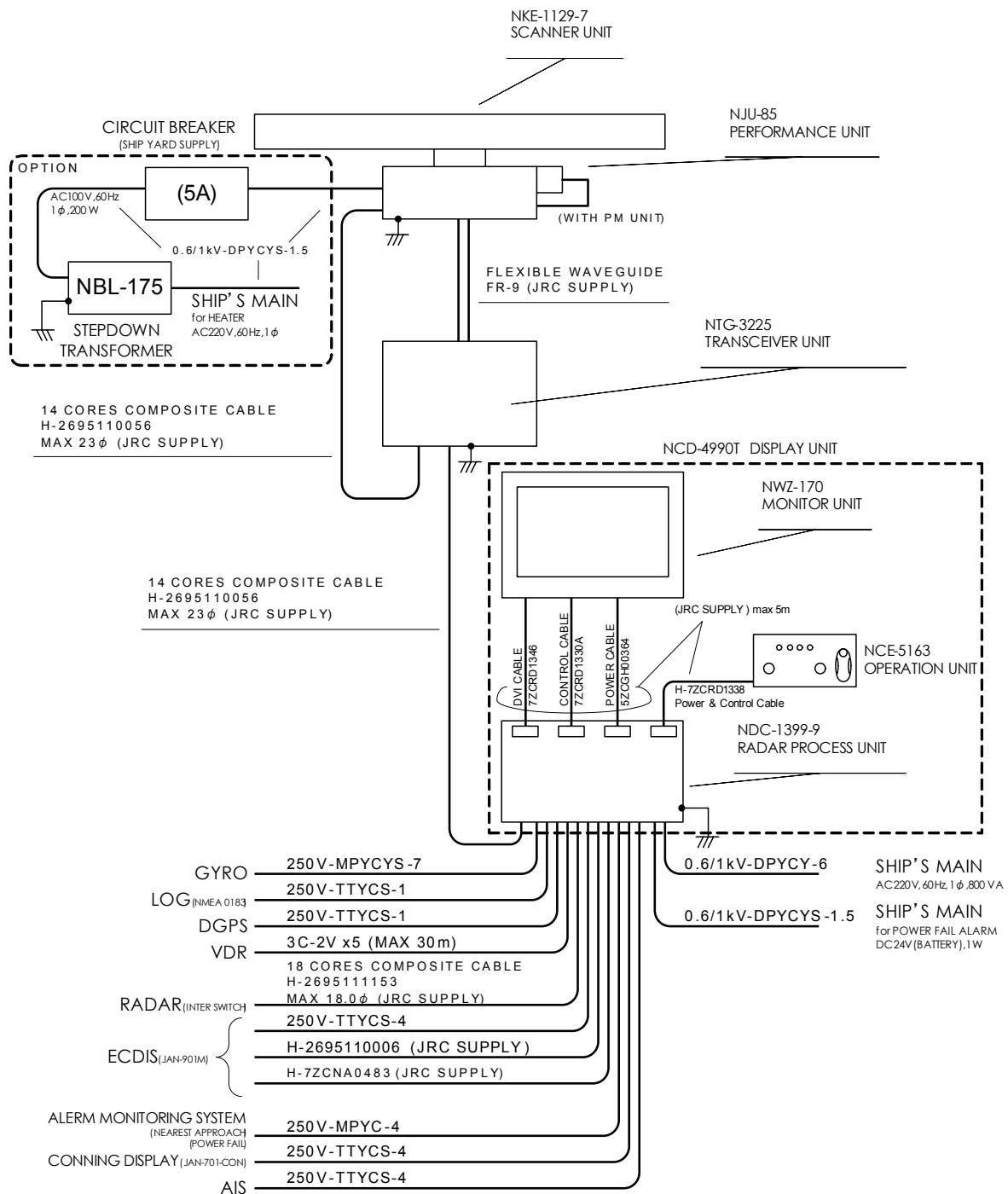
注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

NOTE ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(X-BAND 25kW RADAR)  
JMA-9122-6XAH形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9122-6XAH

Fig 6-50: JMA-9122-6XAH (desktop)

### 6.2.4.6 General system diagram of JMA-9123-7XA (Desktop)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

NOTE: ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
 ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
 ESPECIALLY INTERWRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

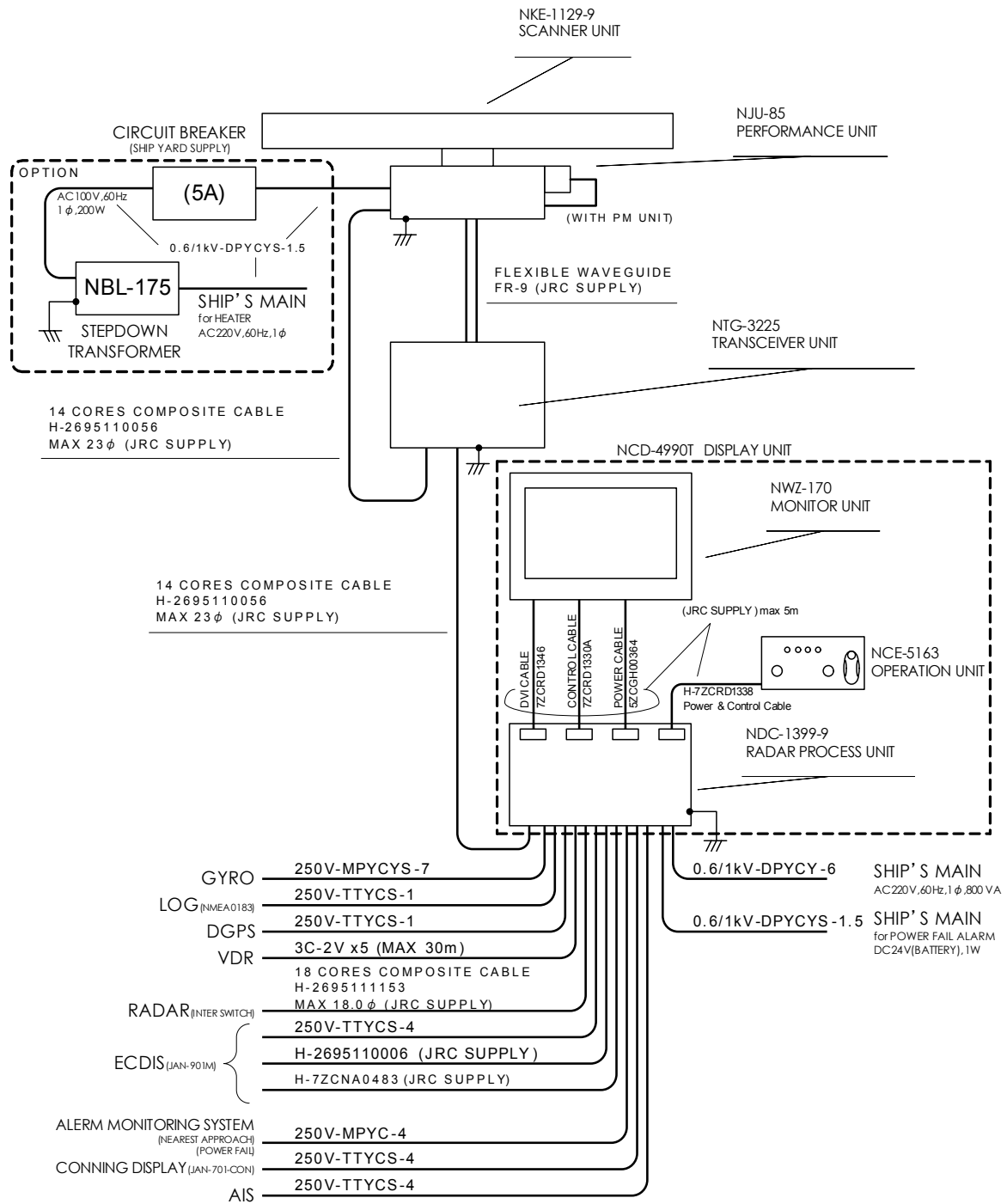
(X-BAND 25kW RADAR)

JMA-9123-7XA形レーダー総合系統図

GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9123-7XA

Fig 6-51: JMA-9123-7XA (desktop)

### 6.2.4.7 General system diagram of JMA-9123-9XA (Desktop)



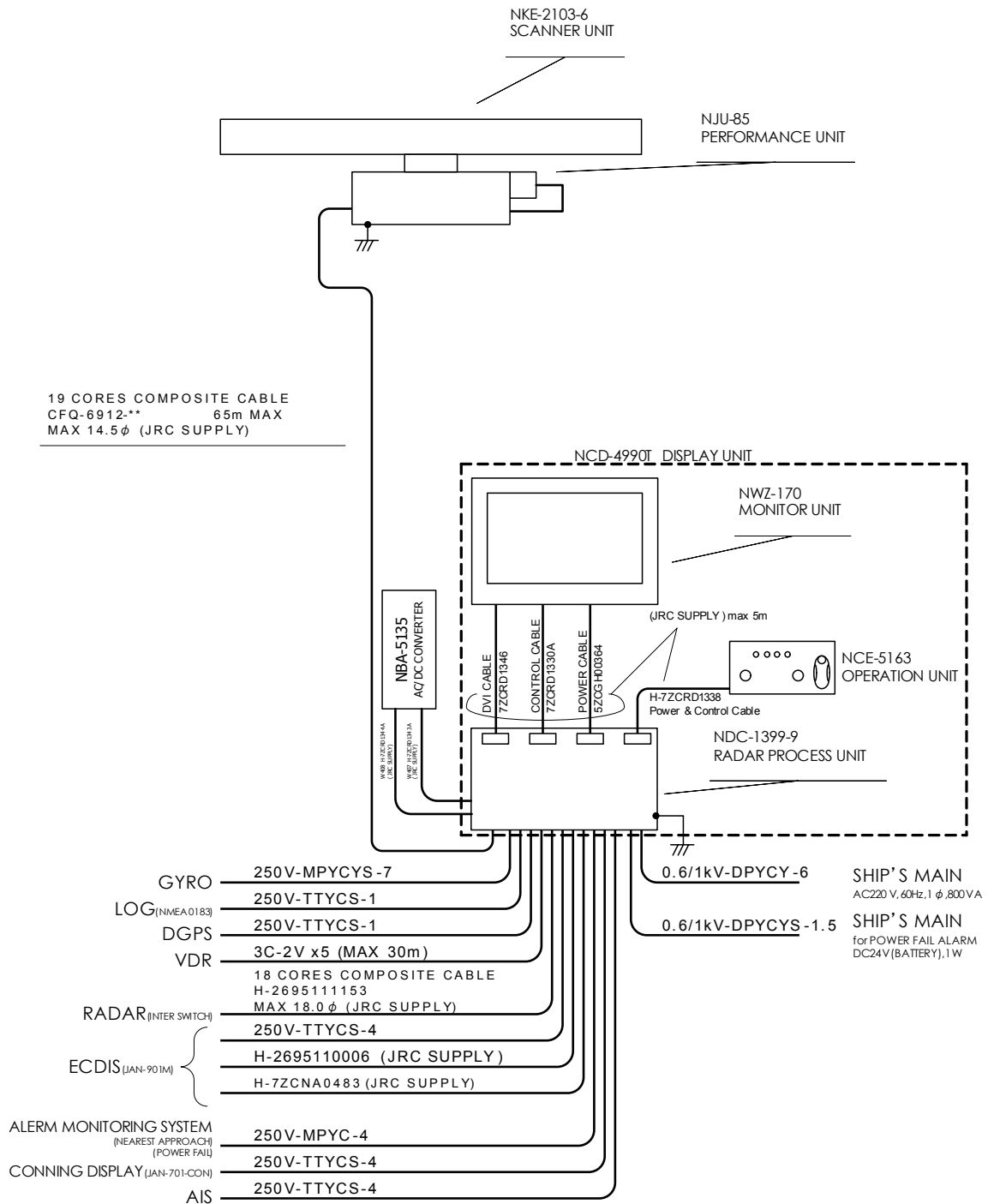
注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

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ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(X-BAND 25kW RADAR)  
JMA-9123-9XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9123-9XA

Fig 6-52: JMA-9123-9XA (desktop)

### 6.2.4.8 General system diagram of JMA-9110-6XA (Desktop)



注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。

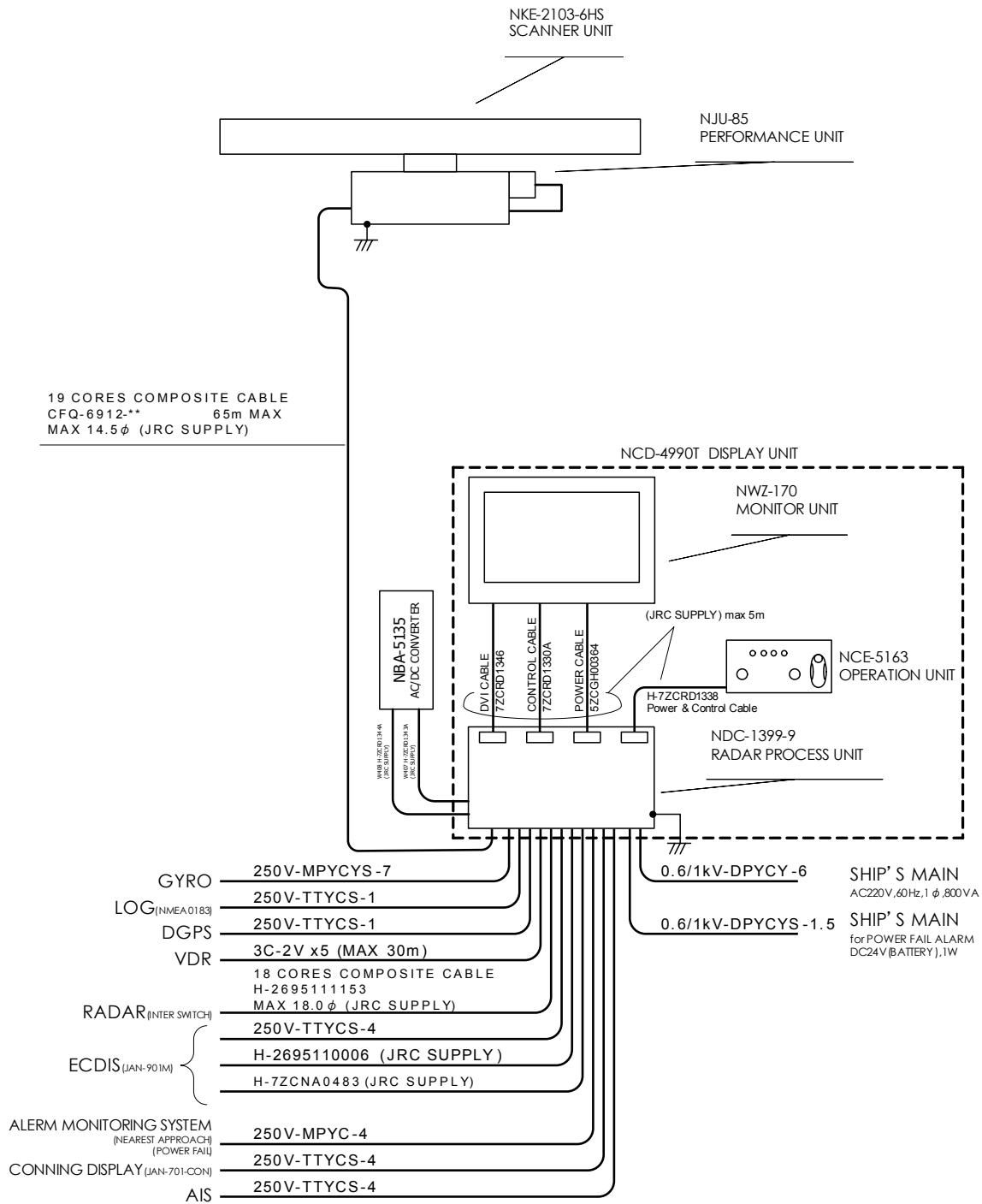
NOTE ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
ALL CABLES OF THE RADAR ARE TO BE RUN AWAY FROM THE CABLES OF RADIO EQUIPMENT (ex. RADIOTELEPHONE COMMUNICATIONS RECEIVER and DIRECTION FINDER etc.)  
ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(X-BAND 10kW RADAR)

JMA-9110-6XA形レーダー総合系統図  
GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9110-6XA

Fig 6-53: JMA-9110-6XA (desktop)

### 6.2.4.9 General system diagram of JMA-9110-6XAH (Desktop)



- 注) レーダーの動作が他の無線装置に、雑音妨害を与えることを防止するために、レーダーケーブルを他の無線装置のケーブルから極力離して敷設して下さい。特に、空中線ケーブルを他の無線装置のケーブルと平行に敷設しないで下さい。
- NOTE ELIMINATING THE INTERFERENCE ON FREQUENCIES USED FOR MARINE COMMUNICATIONS AND NAVIGATION DUE TO OPERATION OF THE RADAR  
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ESPECIALLY INTERWIRING CABLES BETWEEN SCANNER UNIT AND DISPLAY UNIT OF THE RADAR SHOULD NOT BE RUN PARALLEL WITH THE CABLES OF RADIO EQUIPMENT

(X-BAND 10kW RADAR)

JMA-9110-6XAH形レーダー総合系統図

GENERAL SYSTEM DIAGRAM OF RADAR TYPE JMA-9110-6XAH

Fig 6-54: JMA-9110-6XAH (desktop)

## **6.3** INTER-BOARD CONNECTION DIAGRAM

### **6.3.1 Inter-board connection diagram of JMA-7100**

### 6.3.1.1 Inter-board connection diagram of JMA-7132-SA

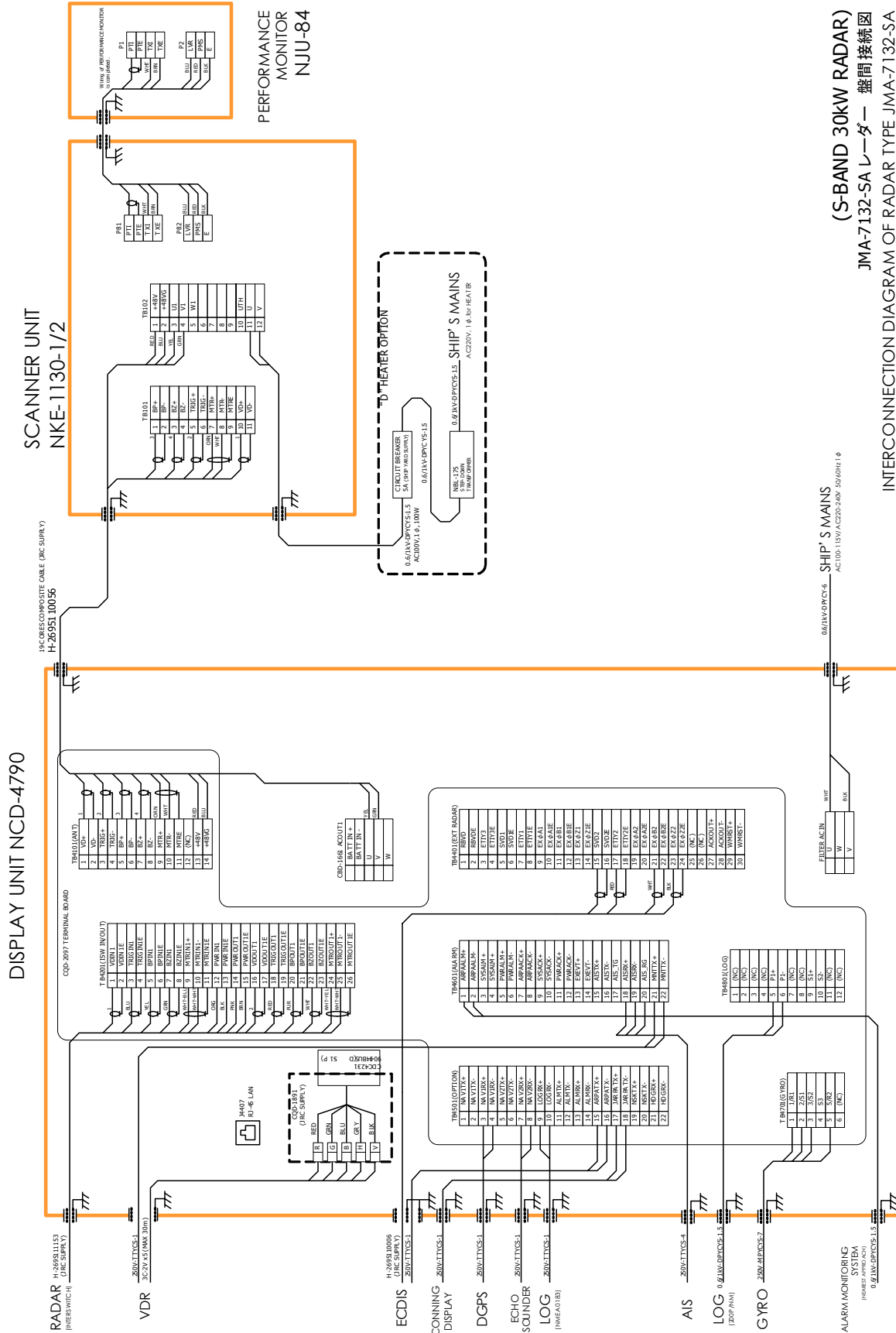


Fig 6-55: JMA-7132-SA

(S-BAND 30kW RADAR)  
JMA-7132-SAレーダー 盤間接続図  
INTERCONNECTION DIAGRAM OF RADAR TYPE JMA-7132-SA

### 6.3.1.2 Inter-board connection diagram of JMA-7133-SA

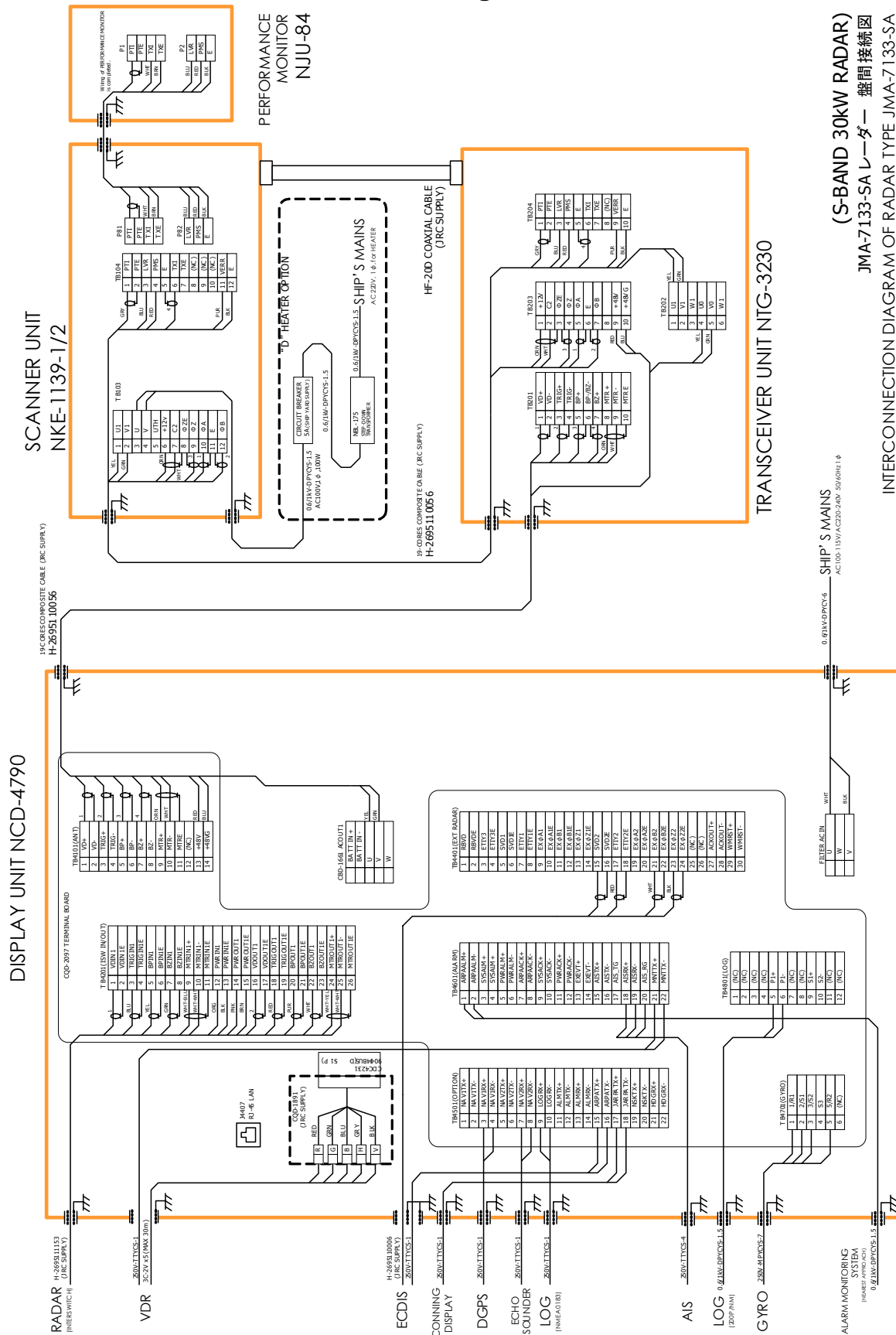


Fig 6-56: JMA-7133-SA

(S-BAND 30kW RADAR)  
JMA-7133-SA レーダー 盤間接続図  
INTERCONNECTION DIAGRAM OF RADAR TYPE JMA-7133-SA



### 6.3.1.3 Inter-board connection diagram of JMA-7122-6XA/9XA

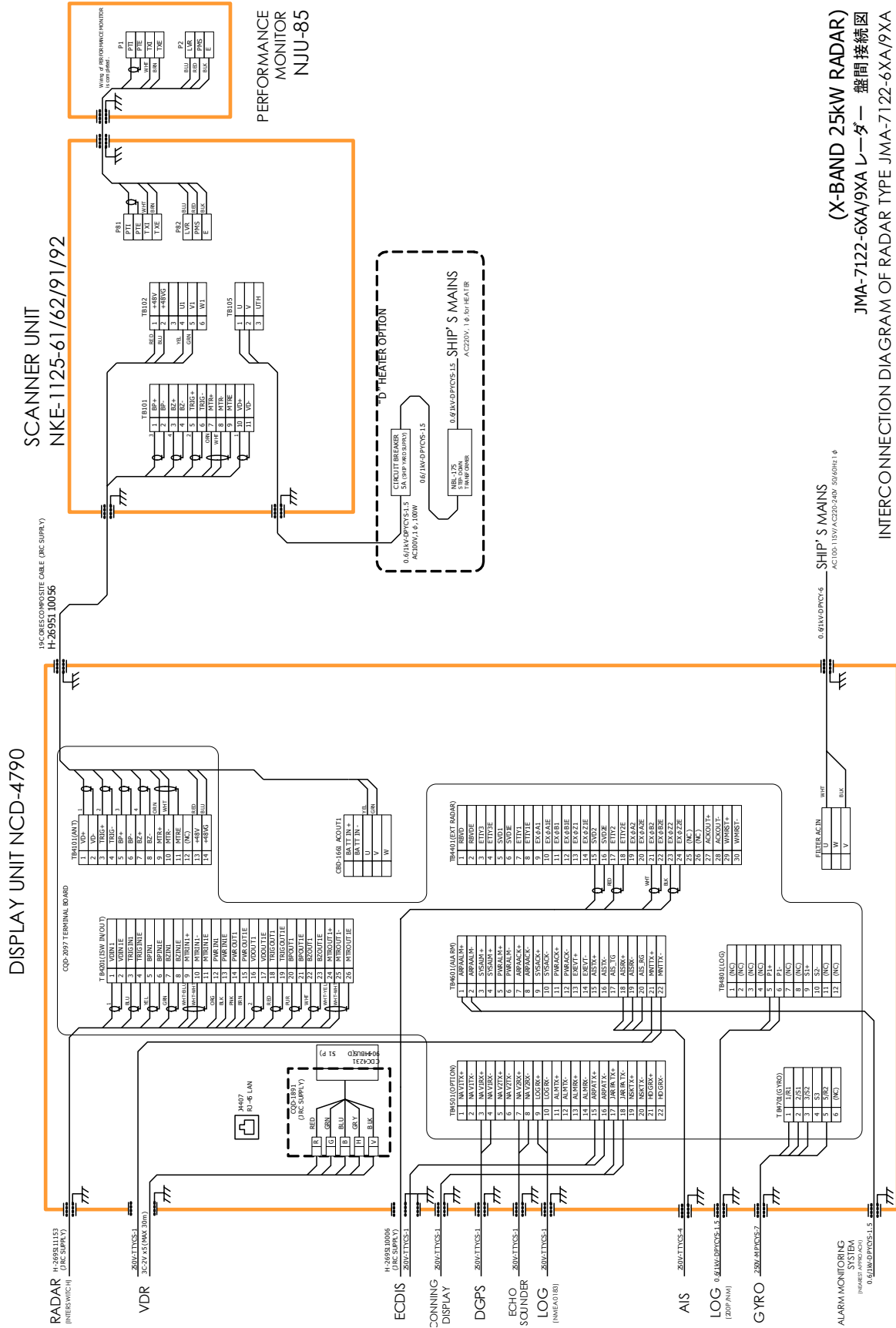


Fig 6-57: JMA-7122-6XA/9XA

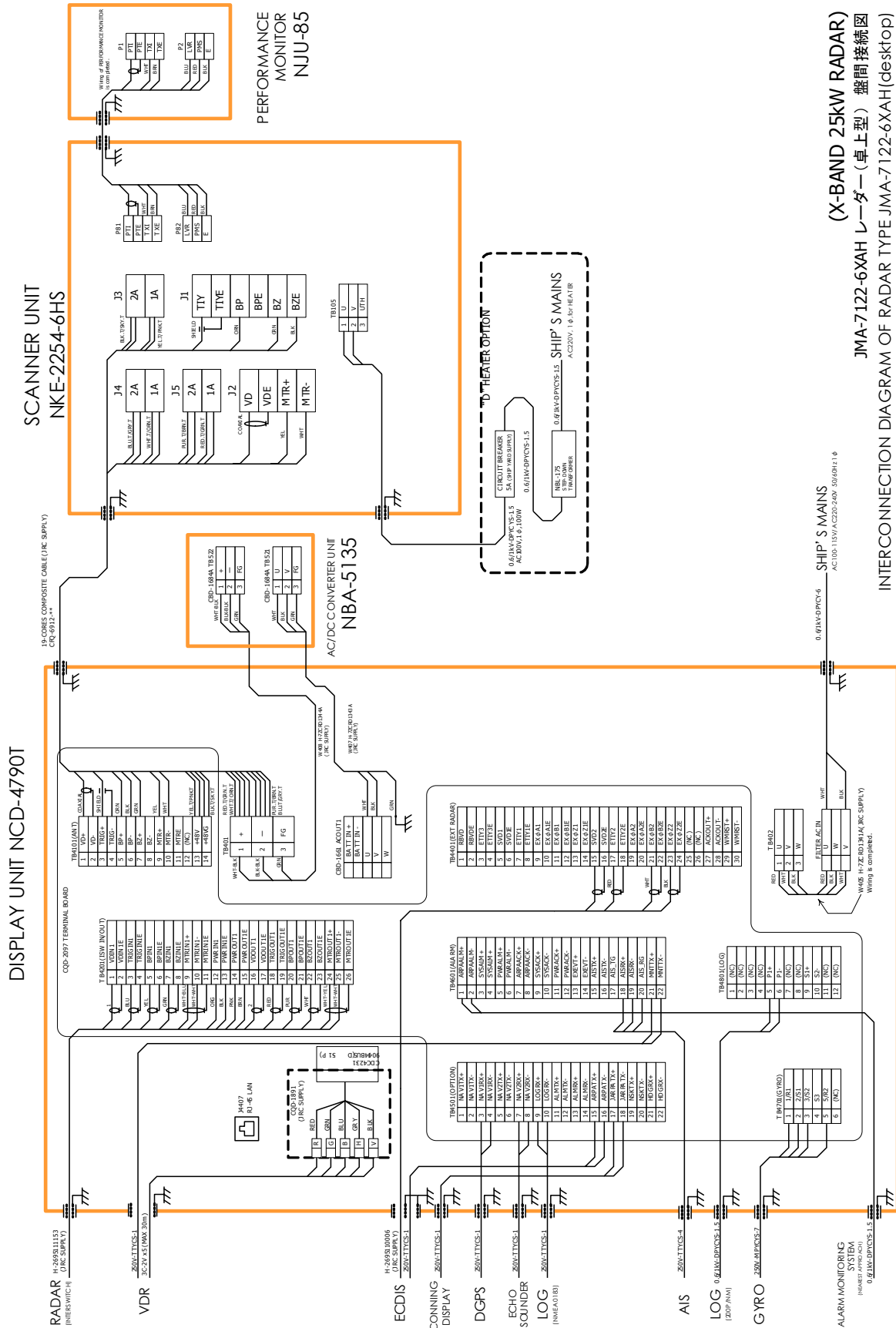
(X-BAND 25kW RADAR)  
JMA-7122-6XA/9XA レーダー 盤間接続図

INTERCONNECTION DIAGRAM OF RADAR TYPE JMA-7122-6XA/9XA





6.3.1.5 Inter-board connection diagram of JMA-7122-6XAH(Desktop)



(X-BAND 25kW RADAR)  
 JMA-7122-6XAH レーダー(卓上型) 盤間接続図  
 INTERCONNECTION DIAGRAM OF RADAR TYPE JMA-7122-6XAH(desktop)



Fig 6-59: JMA-7122-6XAH (desktop)





6.3.1.8 Inter-board connection diagram of JMA-7110-6XA/6XAH(Desktop)

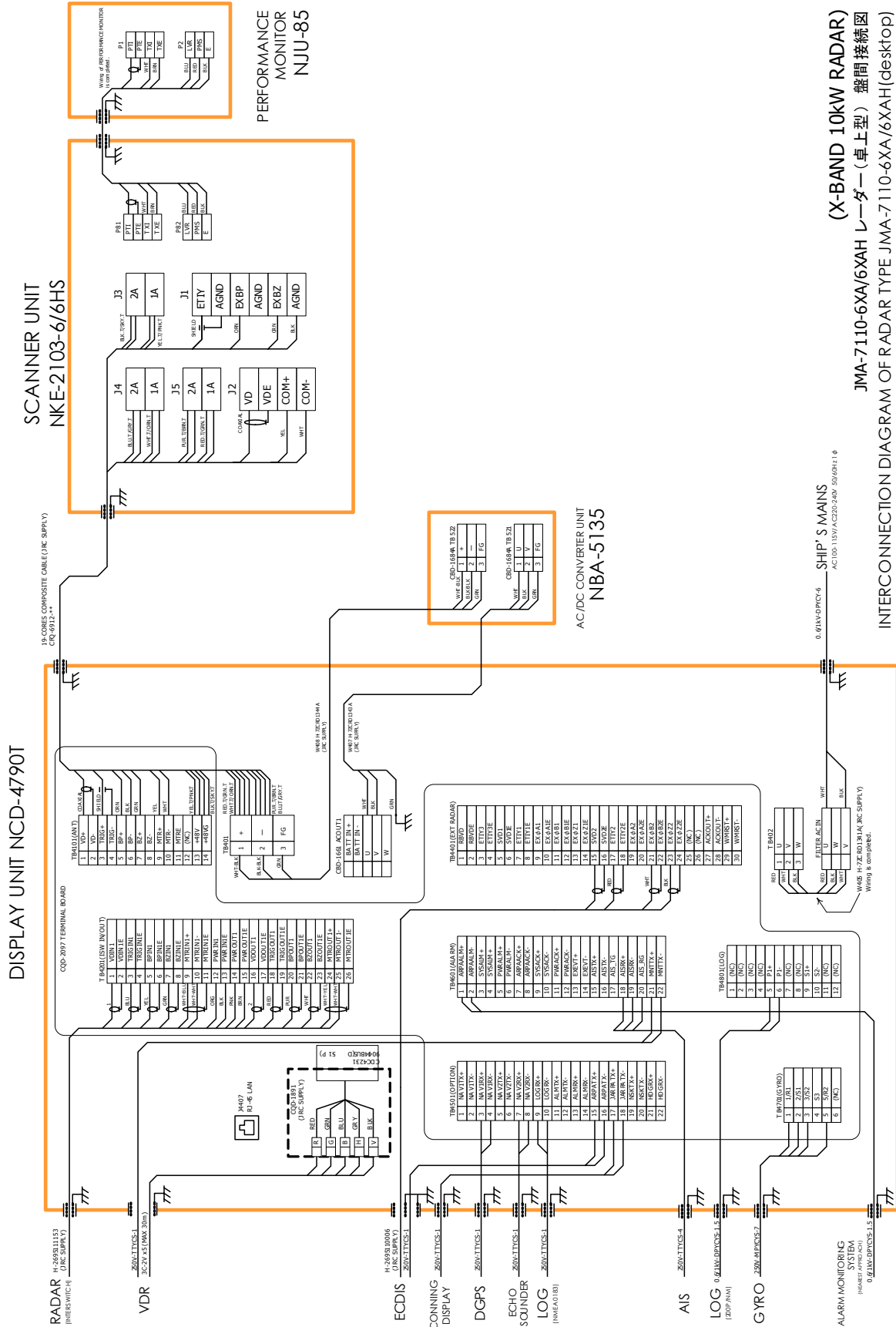
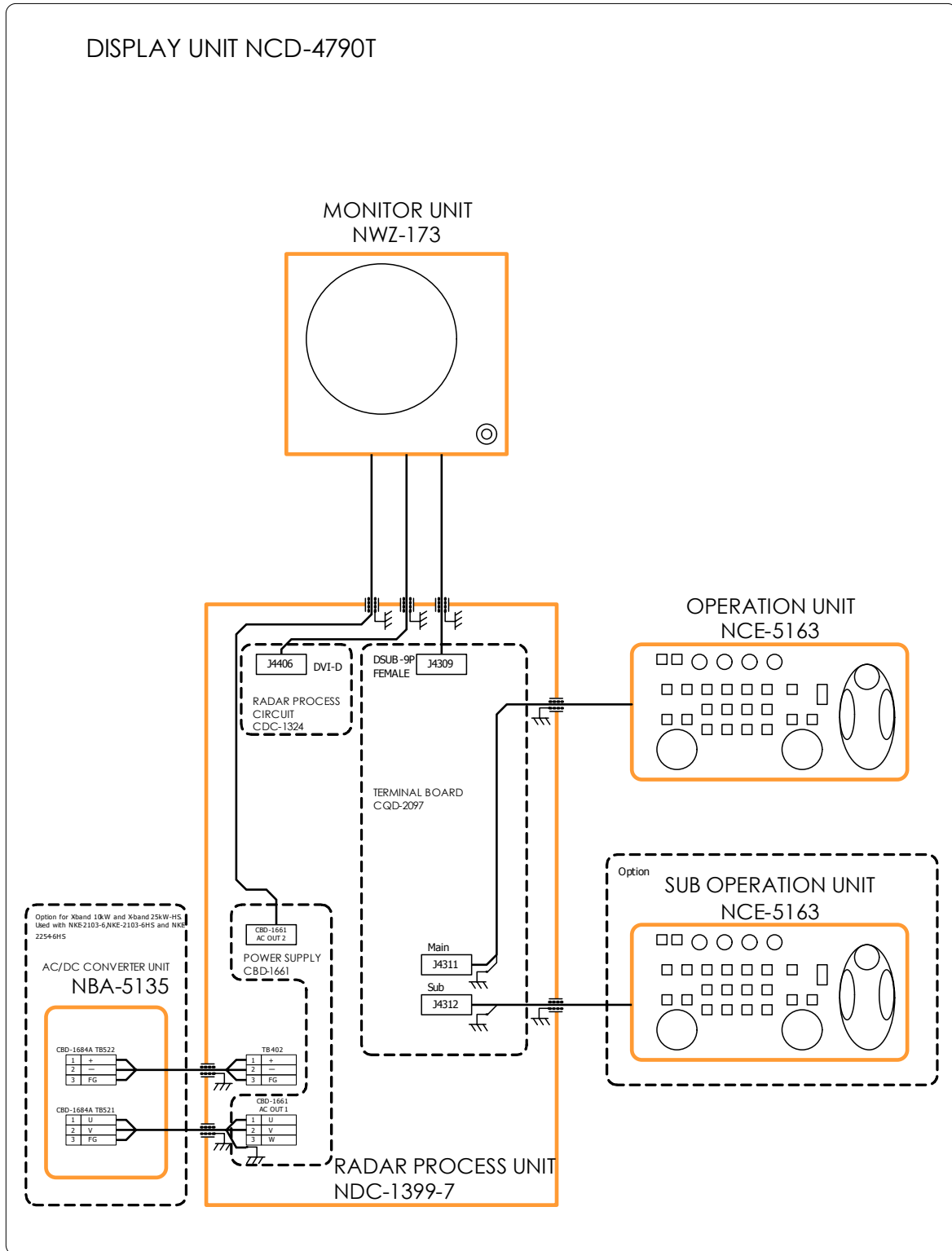


Fig 6-62: JMA-7110-6XA/6XAH (desktop)

6.3.1.9 Inter-unit connection diagram of NCD-4790T



JMA-7100 Series RADAR  
 NCD-4790T 卓上型レーダー指示機 ユニット間接続図  
 INTERCONNECTION DIAGRAM OF DISPLAY UNIT TYPE NCD4790T(desktop)

Fig 6-63: NCD-4790T

## 6.3.2 Inter-board connection diagram of JMA-9100



### 6.3.2.1 Inter-board connection diagram of JMA-9132-SA

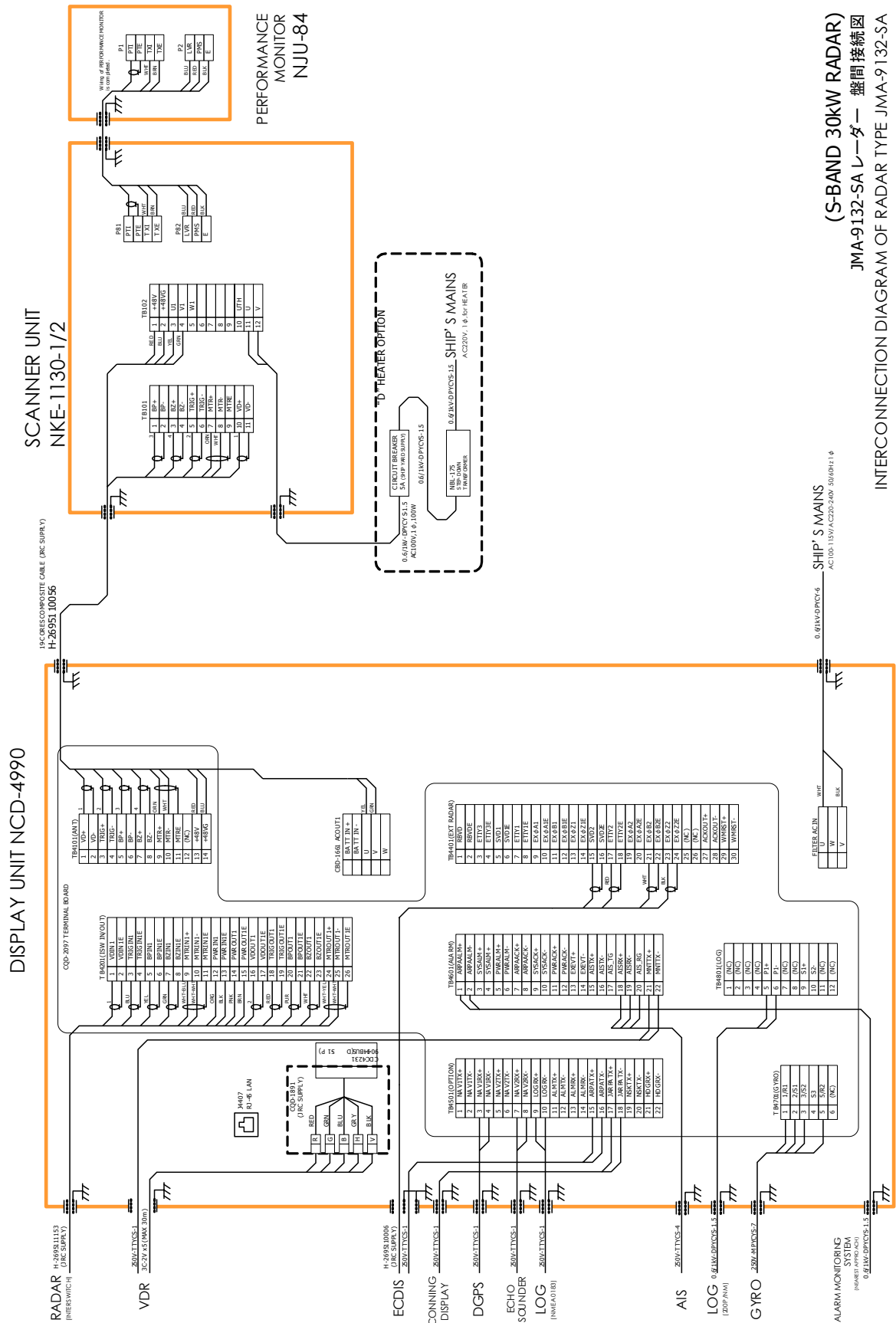


Fig 6-64: JMA-9132-SA

(S-BAND 30kW RADAR)  
JMA-9132-SA レーダー 盤間接続図  
INTERCONNECTION DIAGRAM OF RADAR TYPE JMA-9132-SA

### 6.3.2.2 Inter-board connection diagram of JMA-9133-SA

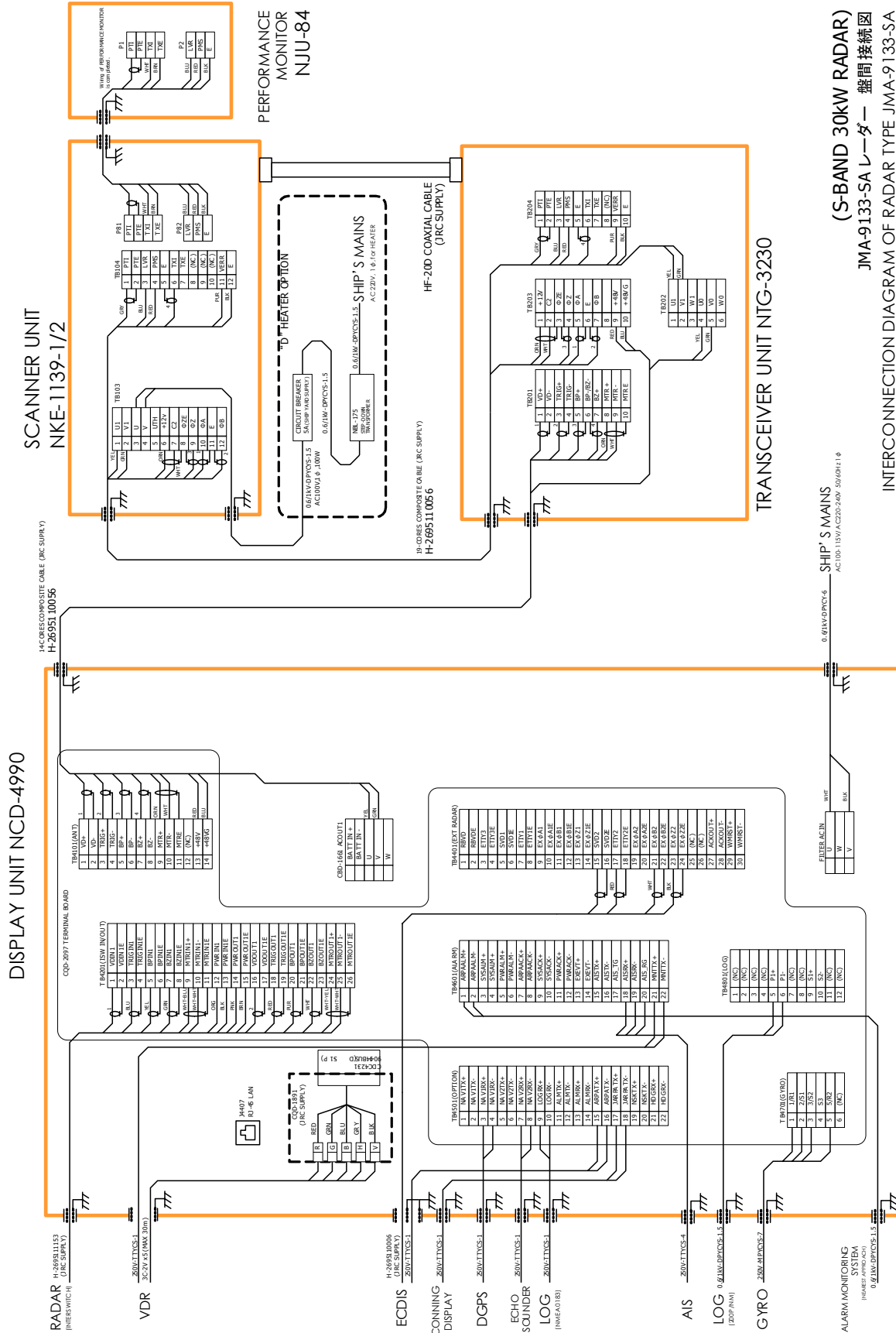
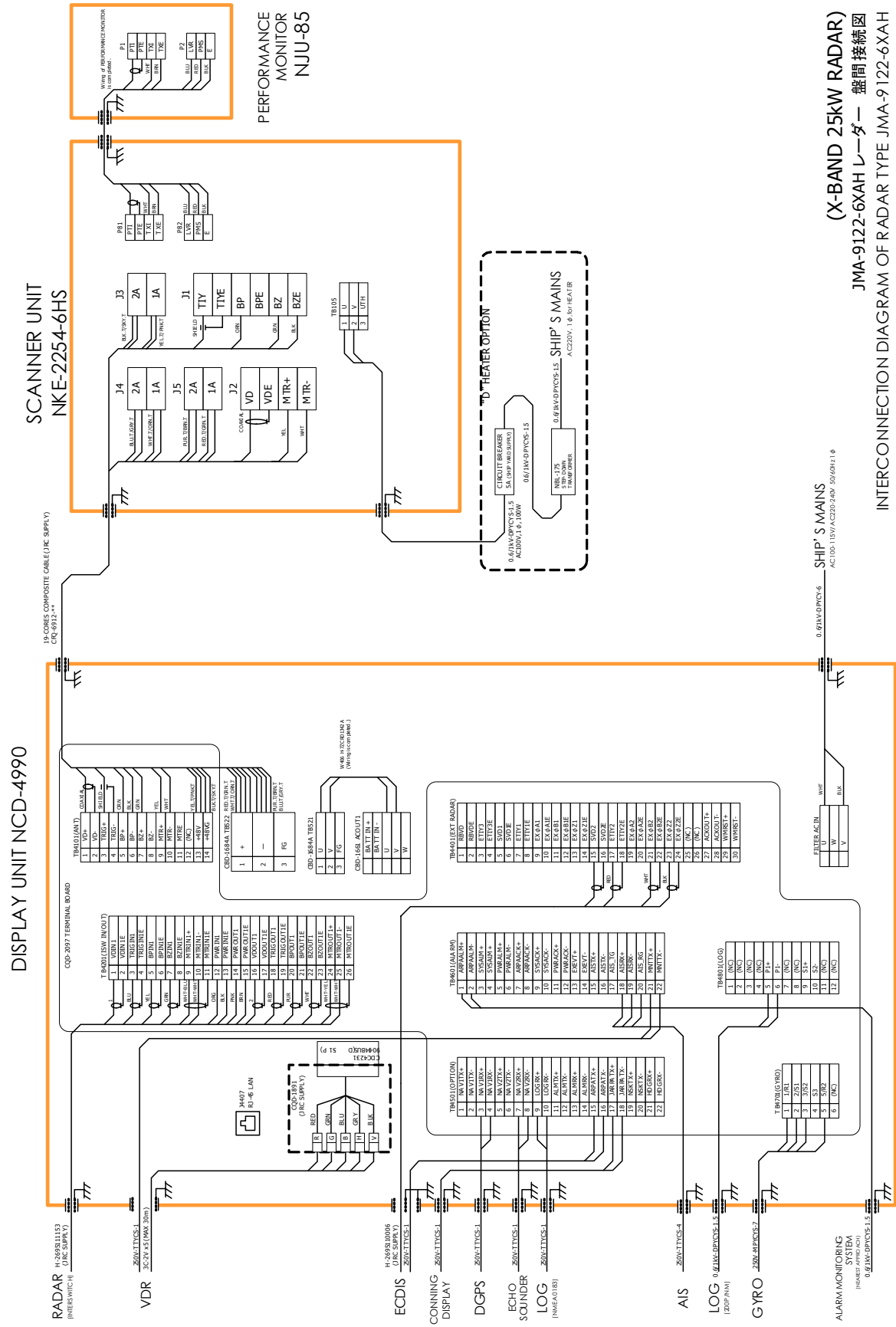


Fig 6-65: JMA-9133-SA



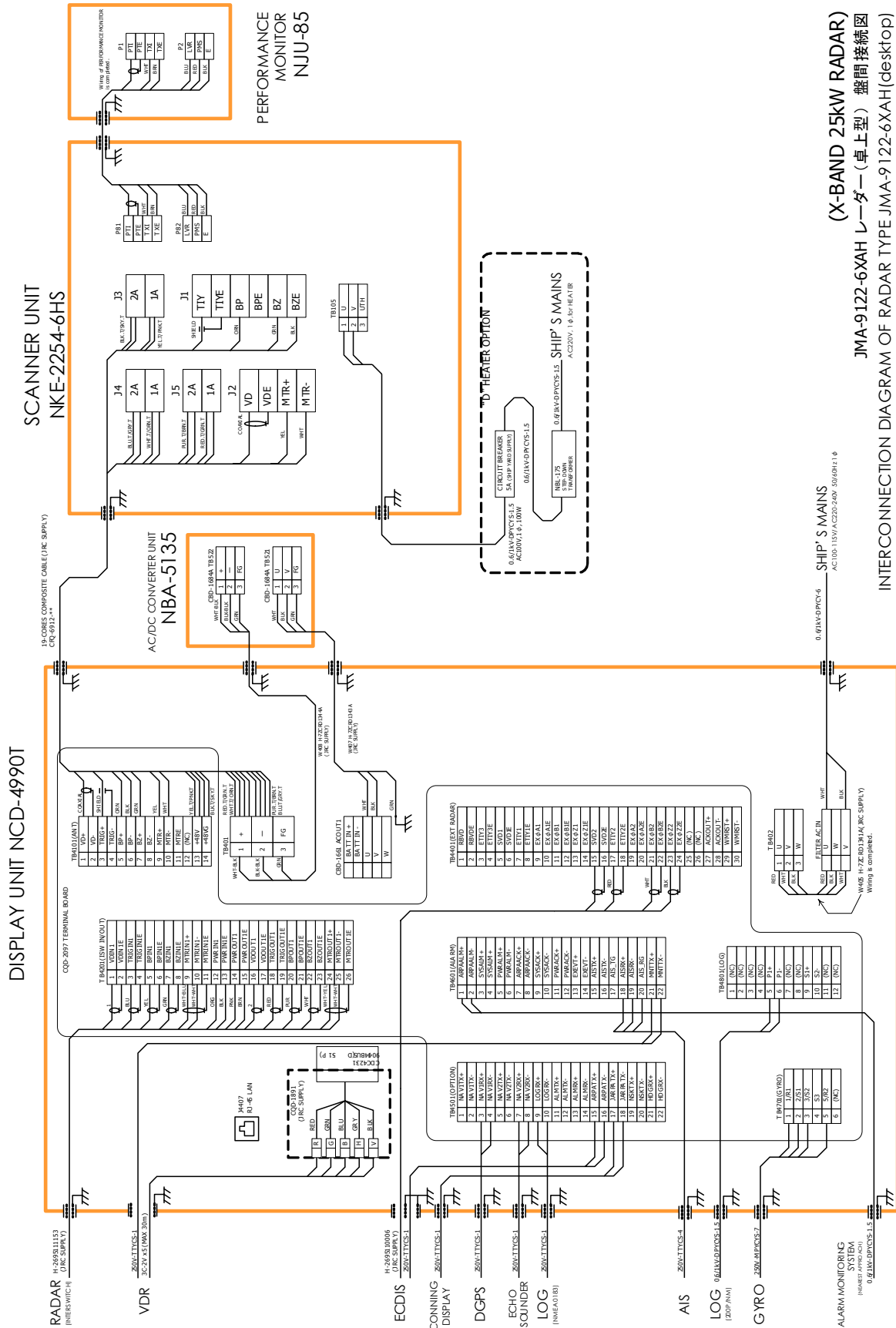
### 6.3.2.4 Inter-board connection diagram of JMA-9122-6XAH



(X-BAND 25kW RADAR)  
JMA-9122-6XAH レーダー 盤間接続図  
INTERCONNECTION DIAGRAM OF RADAR TYPE JMA-9122-6XAH

Fig 6-67: JMA-9122-6XAH

6.3.2.5 Inter-board connection diagram of JMA-9122-6XAH (Desktop)



(X-BAND 25kW RADAR)  
 JMA-9122-6XAH レーダー(卓上型) 盤間接続図  
 INTERCONNECTION DIAGRAM OF RADAR TYPE JMA-9122-6XAH(desktop)



Fig 6-68: JMA-9122-6XAH (desktop)



### 6.3.2.7 Inter-board connection diagram of JMA-9110-6XA/6XAH

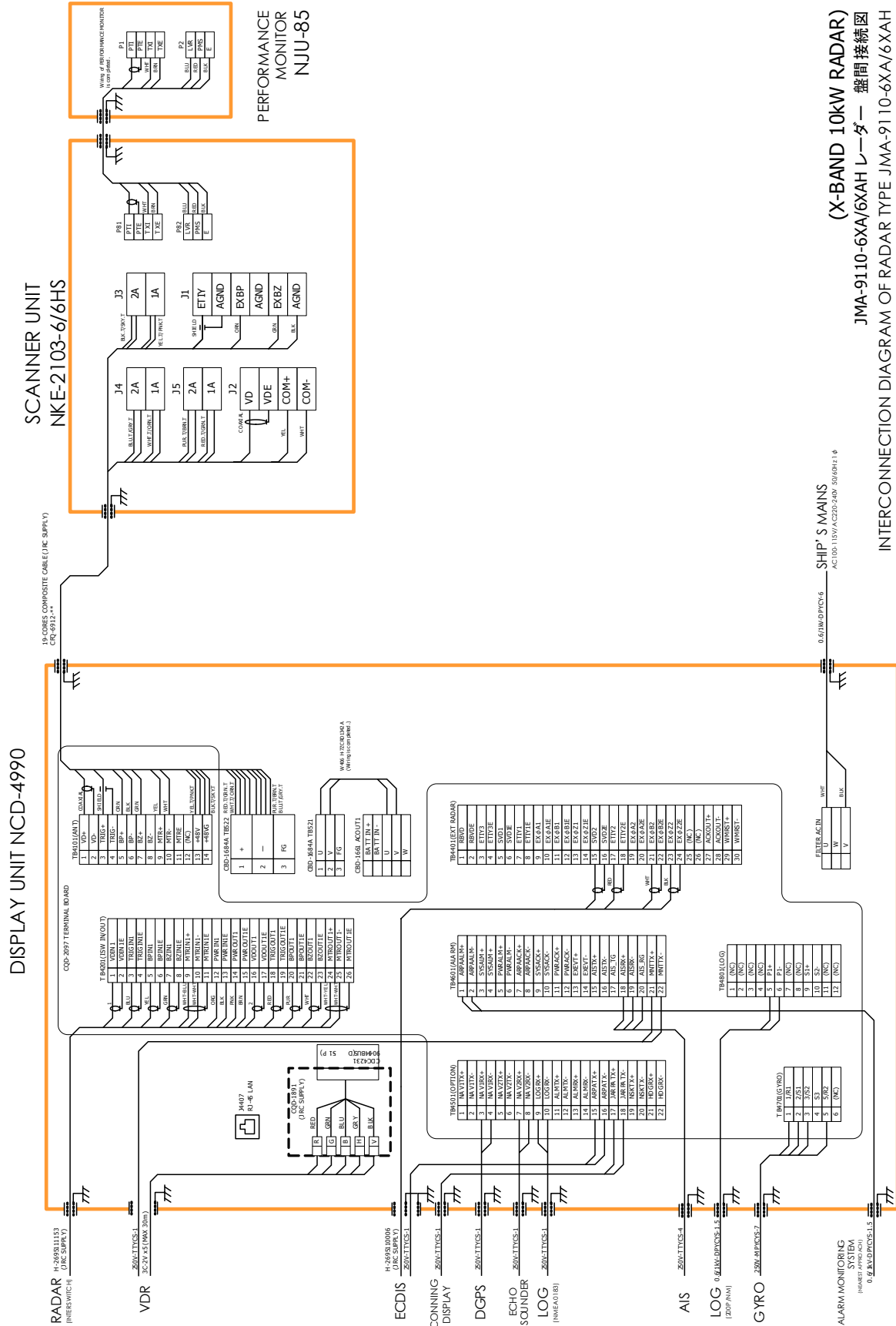


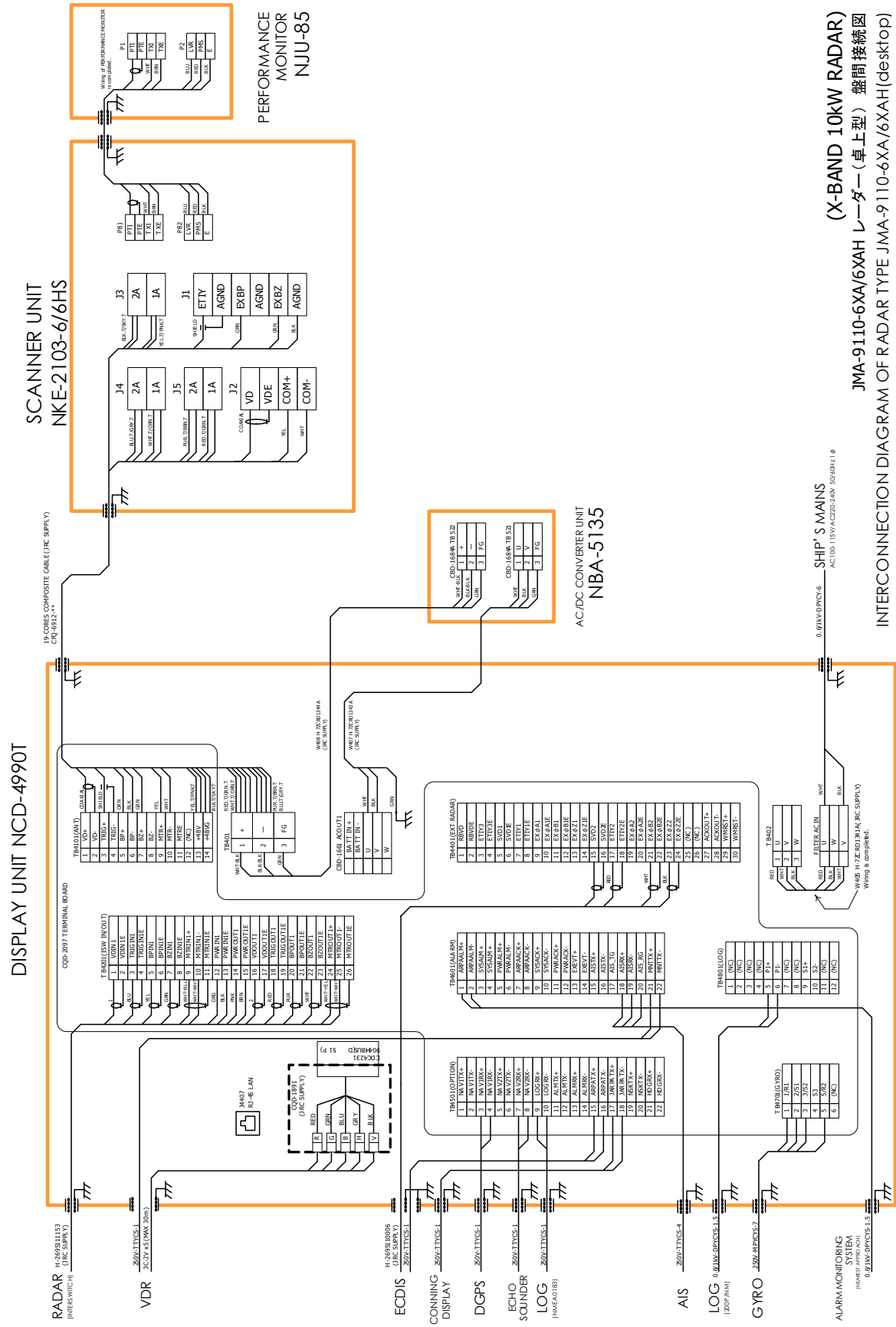
Fig 6-70: JMA-9110-6XA/6XAH

(X-BAND 10kW RADAR)  
 JMA-9110-6XA/6XAH レーダー 盤間接続図

INTERCONNECTION DIAGRAM OF RADAR TYPE JMA-9110-6XA/6XAH



### 6.3.2.8 Inter-board connection diagram of JMA-9110-6XA/6XAH (Desktop)

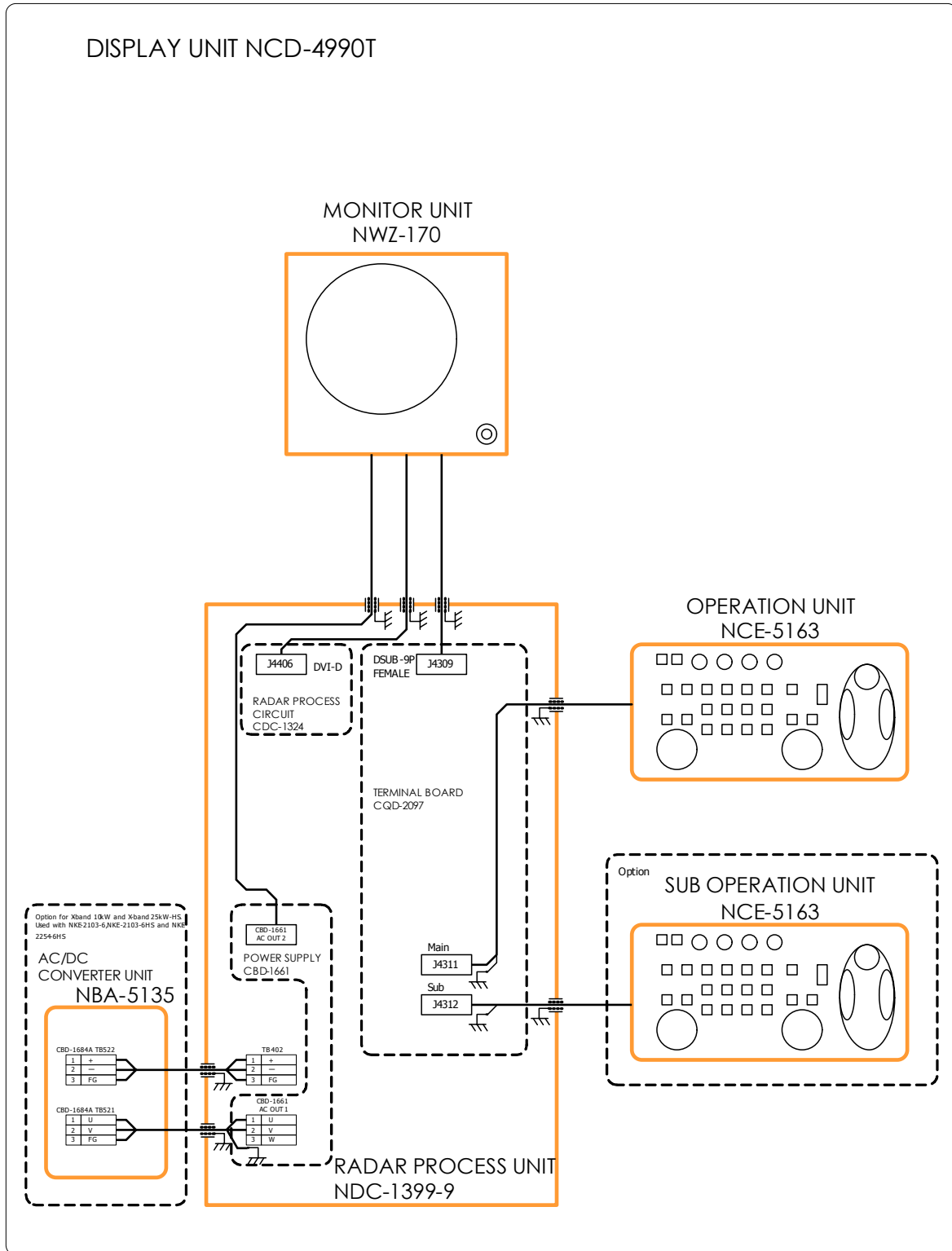


(X-BAND 10KW RADAR)  
 JMA-9110-6XA/6XAH レーダー(卓上型) 盤間接続図  
 INTERCONNECTION DIAGRAM OF RADAR TYPE JMA-9110-6XA/6XAH(desktop)

Fig 6-71: JMA-9110-6XA/6XAH (desktop)



### 6.3.2.9 Inter-unit connection diagram of NCD-4990T



JMA-9100 Series RADAR  
 NCD-4990T 卓上型レーダー指示機 ユニット間接続図  
 INTERCONNECTION DIAGRAM OF DISPLAY UNIT TYPE NCD4990T(desktop)

Fig 6-72: NCD-4990T

## **6.4** SCANNER UNIT INTERCONNECTION

### 6.4.1 NKE-2103

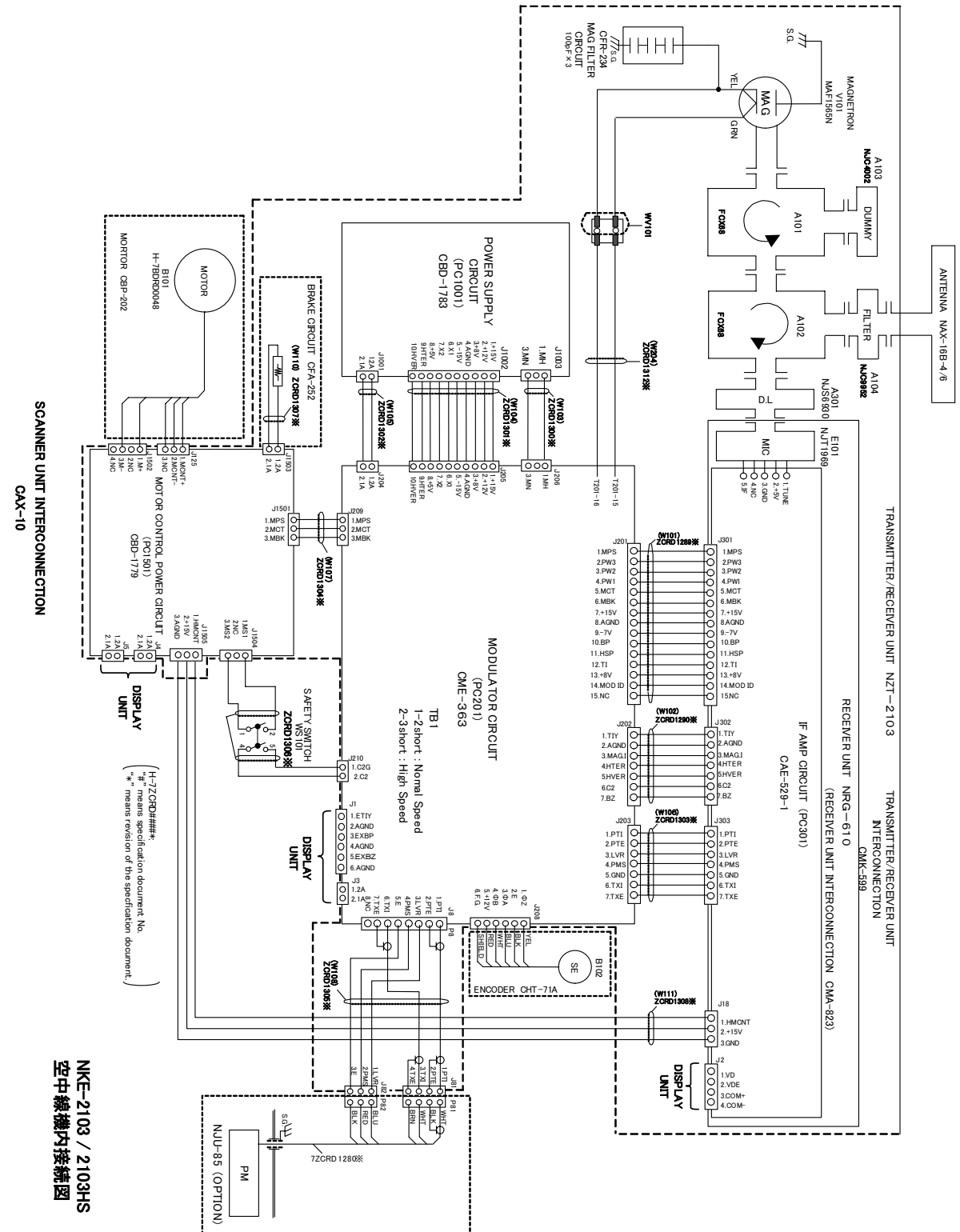


Fig 6-73: NKE-2103 INTERCONNECTION



### 6.4.2 NKE-2254

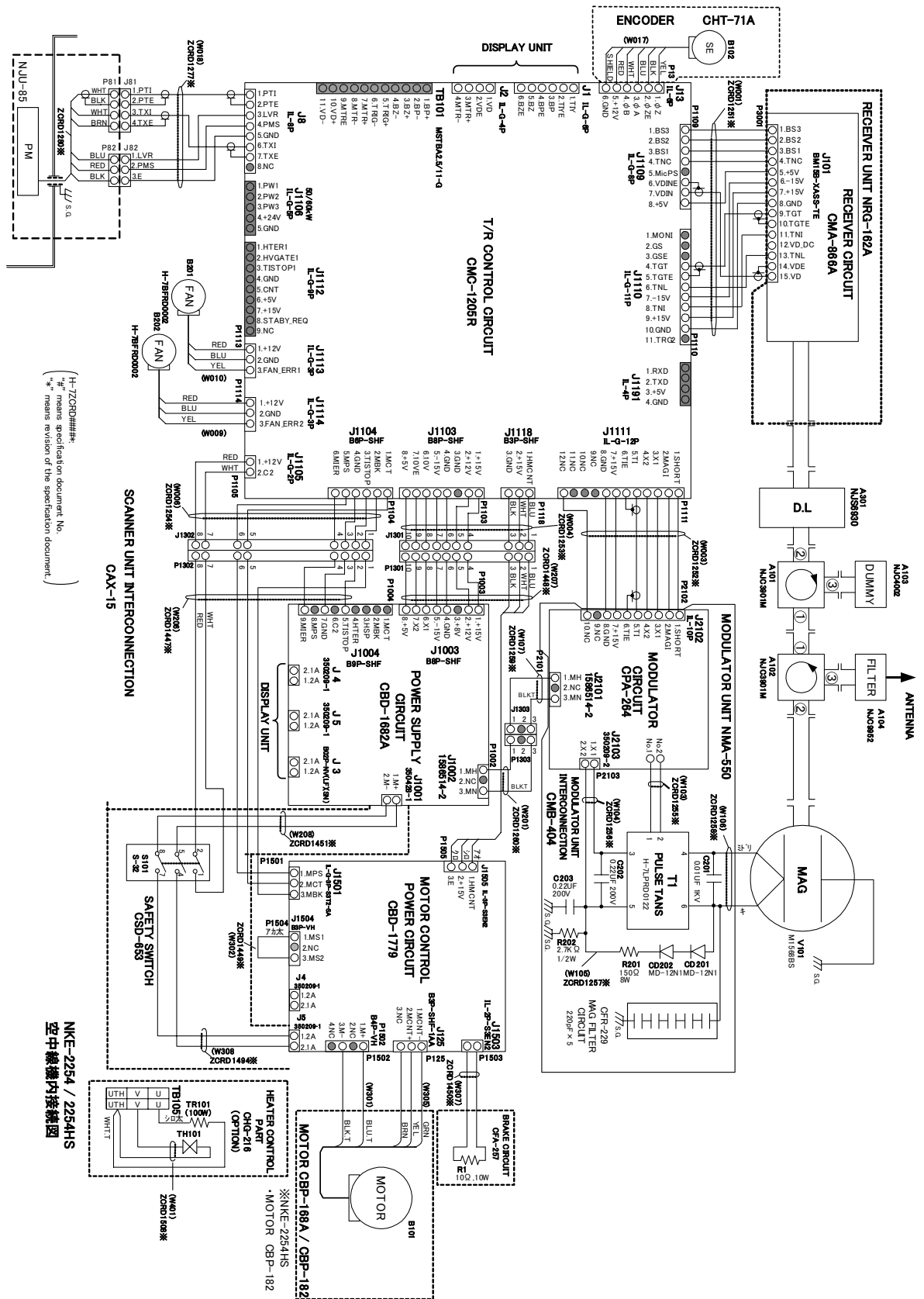


Fig 6-74: NKE-2254 INTERCONNECTION

### 6.4.3 NKE-1125 (AC110V)

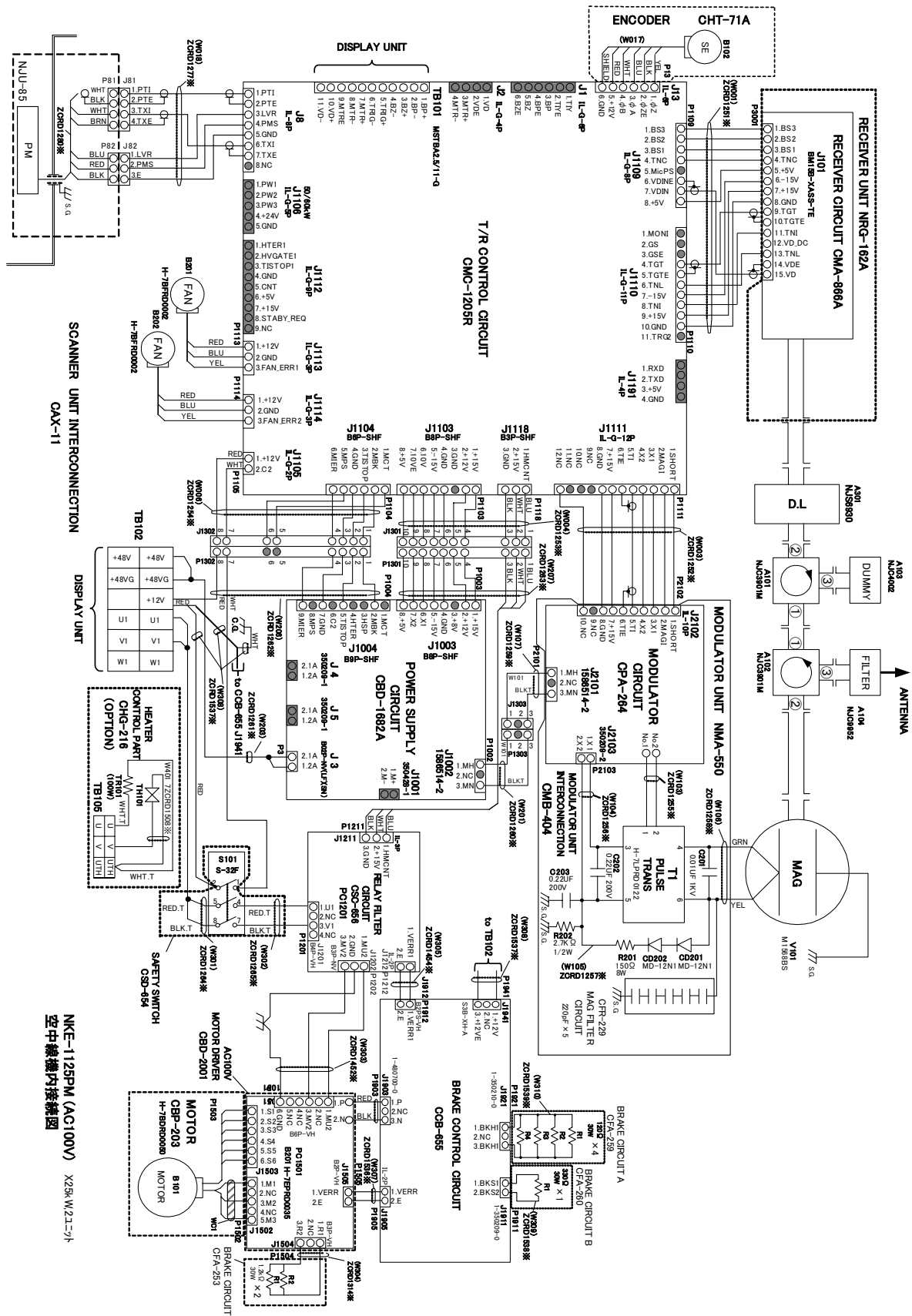


Fig 6-75: NKE-1125 (AC110V) INTERCONNECTION

NKE-1125PM (AC100V) X25R/W212-2  
 空中線機内接続図



### 6.4.4 NKE-1125 (AC220V)

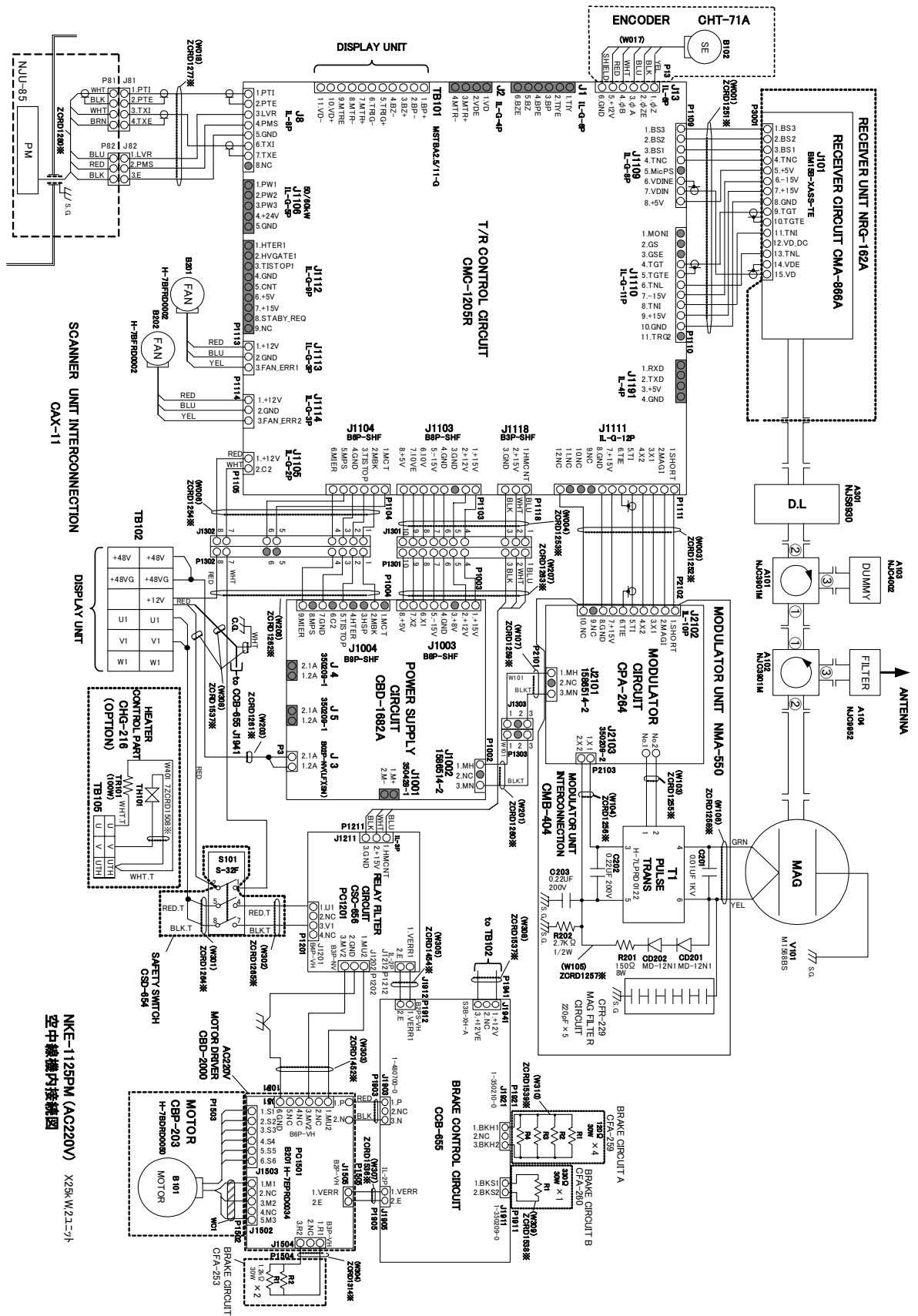


Fig 6-76: NKE-1125 (AC220V) INTERCONNECTION

### 6.4.5 NKE-1129 (AC110V)

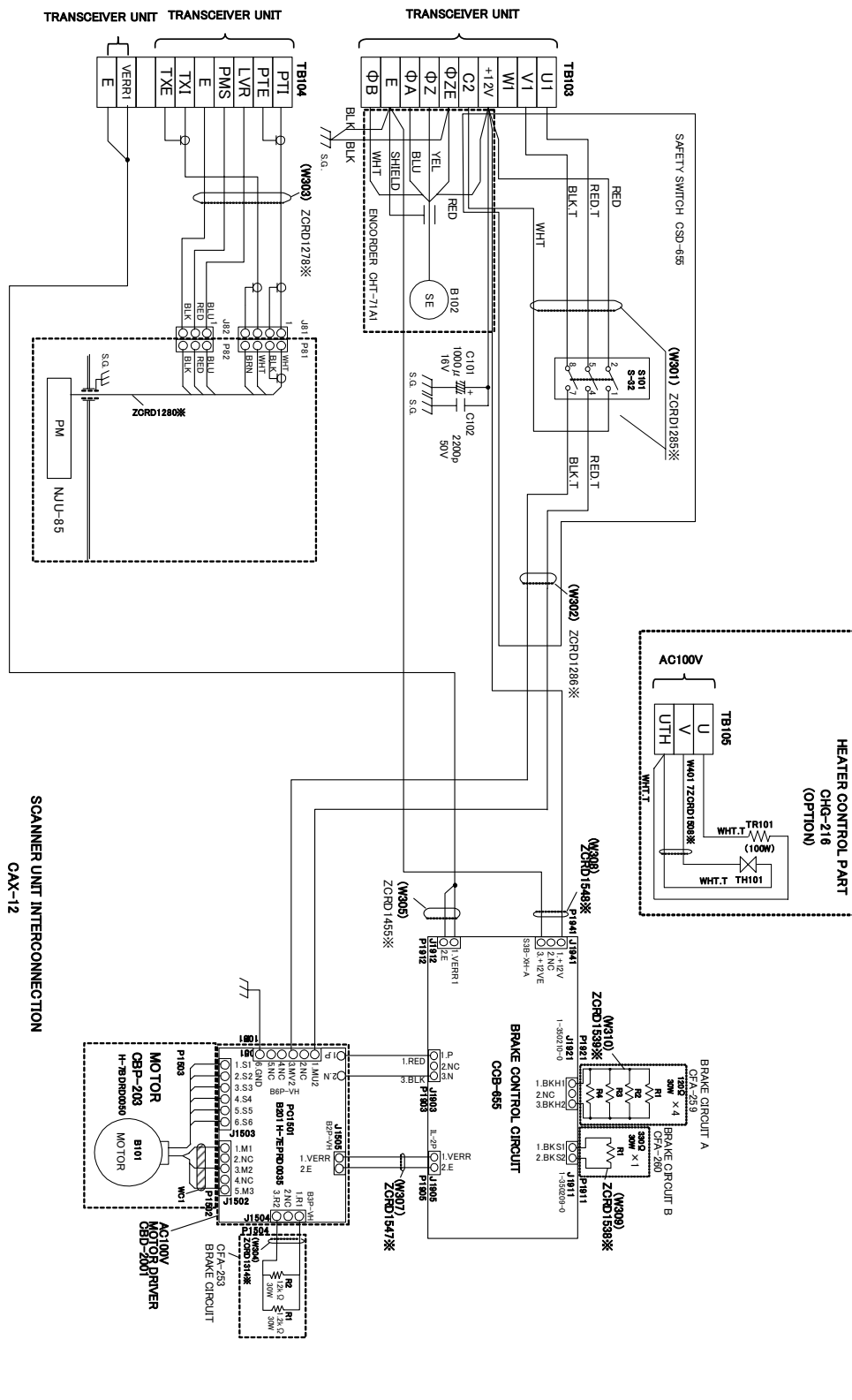


Fig 6-77: NKE-1129 (AC110V) INTERCONNECTION

NKE-1129PM (AC110V) 空中線機内接続図

### 6.4.6 NKE-1129 (AC220V)

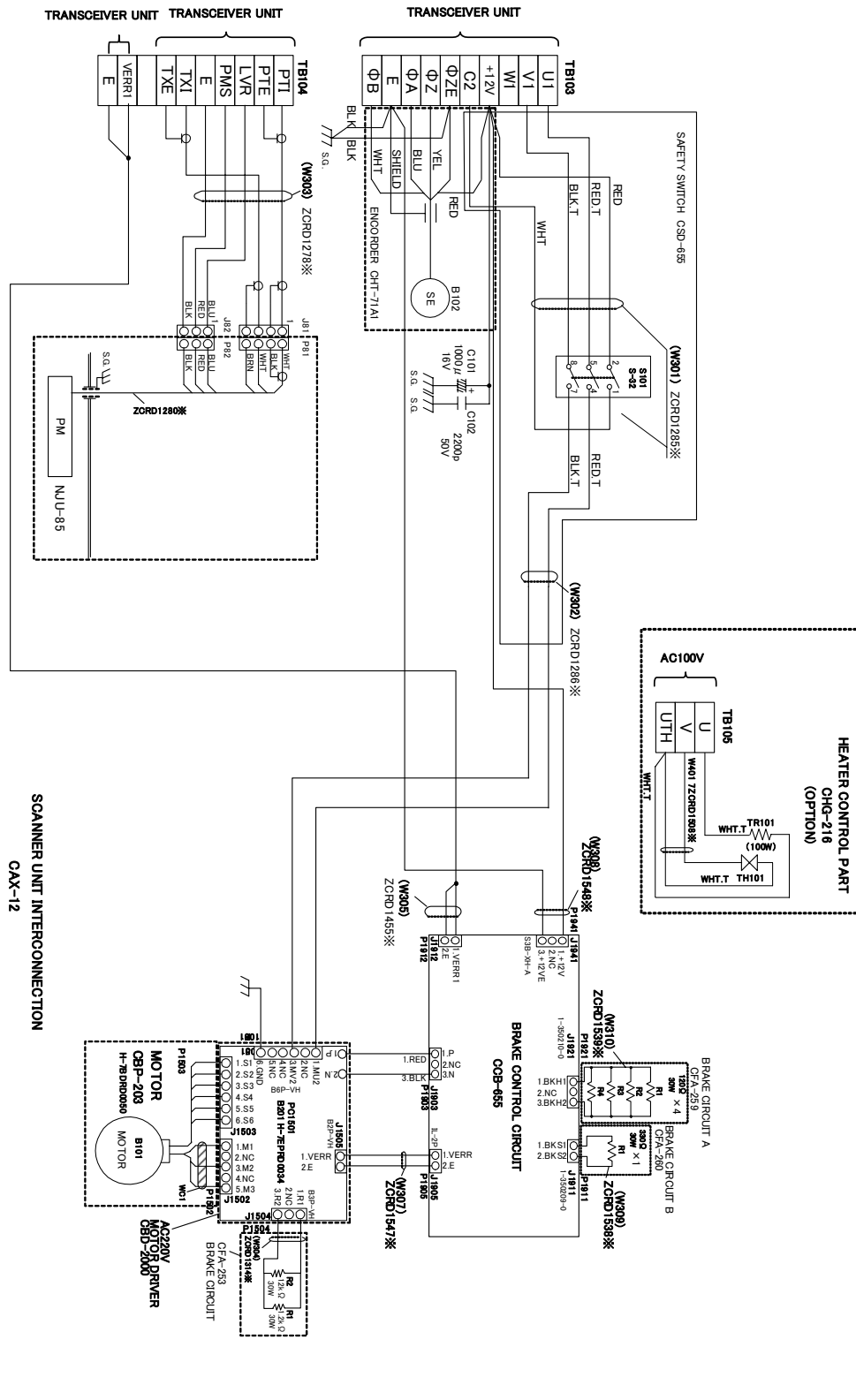
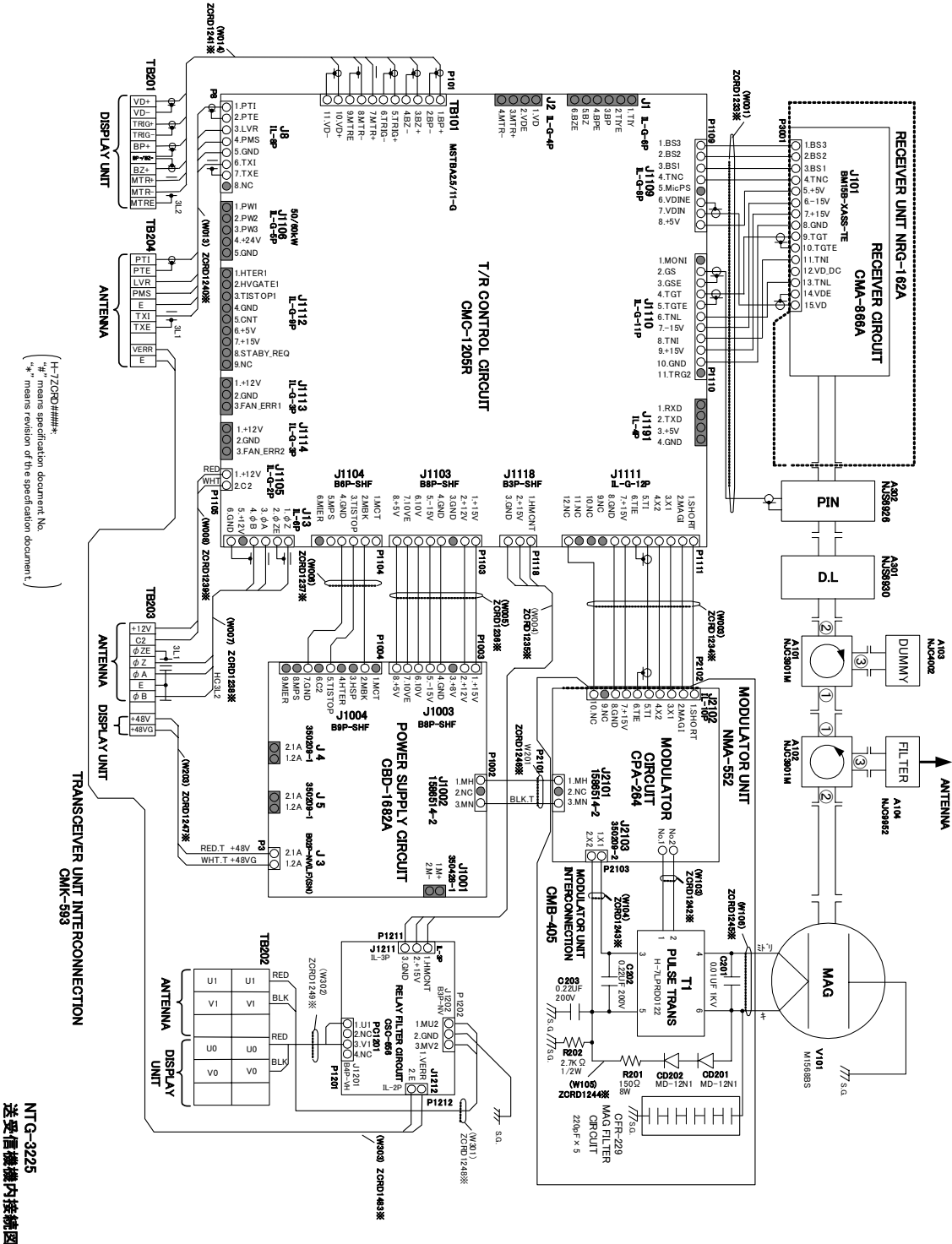


Fig 6-78: NKE-1129 (AC220V) INTERCONNECTION

NKE-1129PM (AC220V) 空中線機内接続図



6.4.7 NTG-3225



(H-7ZGRD###\*)  
 (\*, #) means specification document No.  
 (\*, #) means revision of the specification document.)

NTG-3225  
 送受信機機内接続図

Fig 6-79: NTG-3225 INTERCONNECTION



## 6.4.8 NKE-1130 (AC110V)

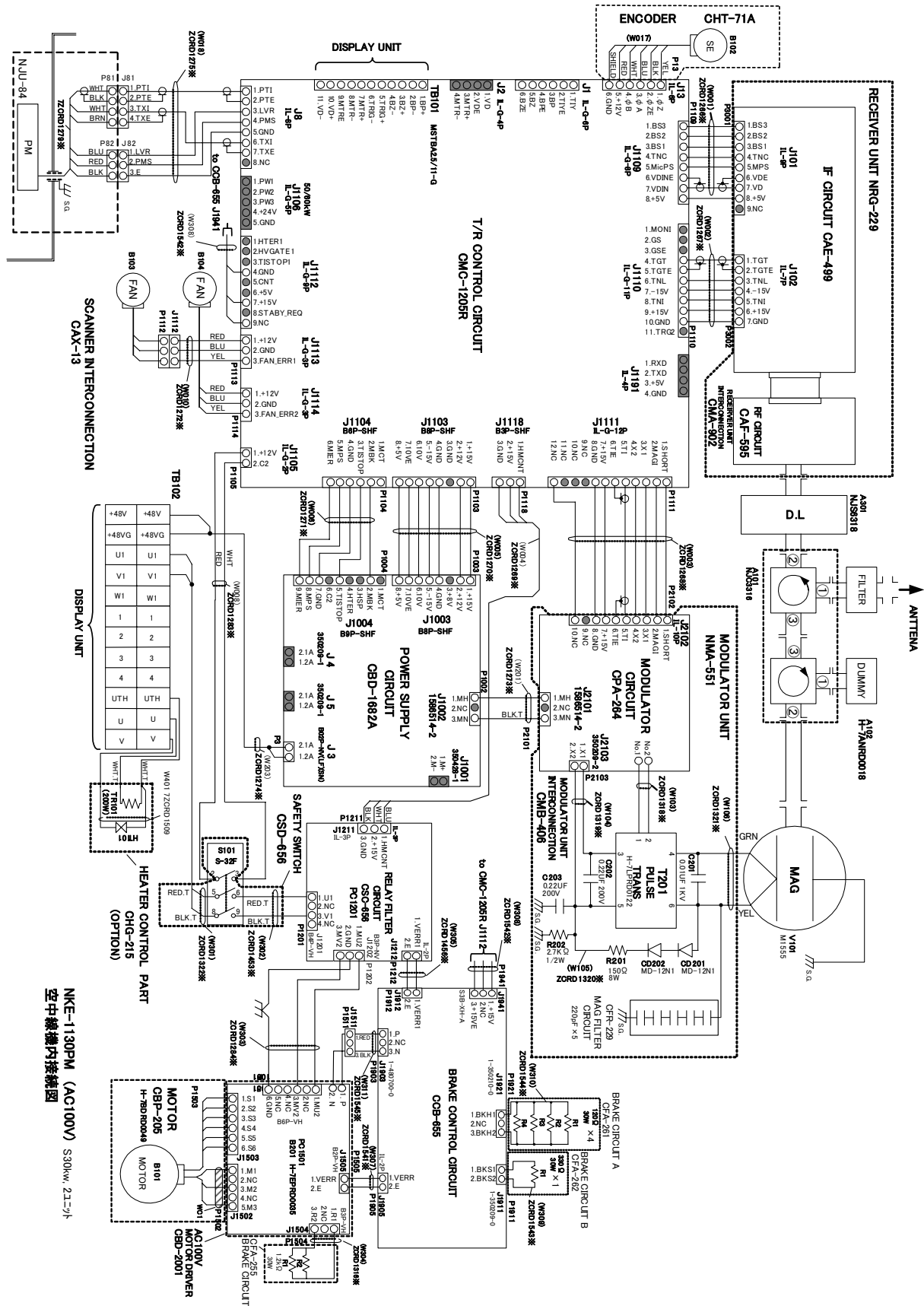


Fig 6-80: NKE-1130 (AC110V) INTERCONNECTION

### 6.4.9 NKE-1130 (AC220V)

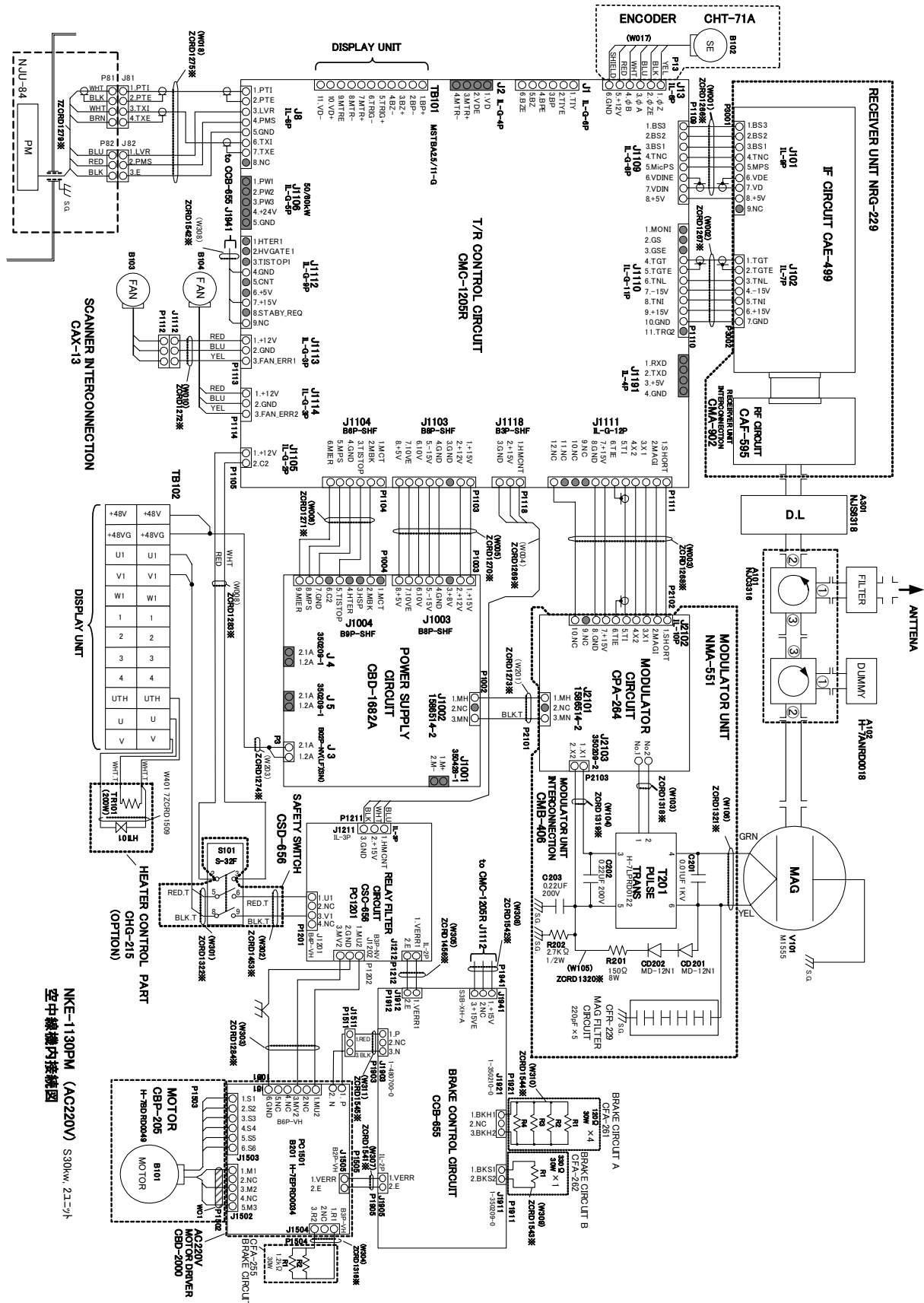
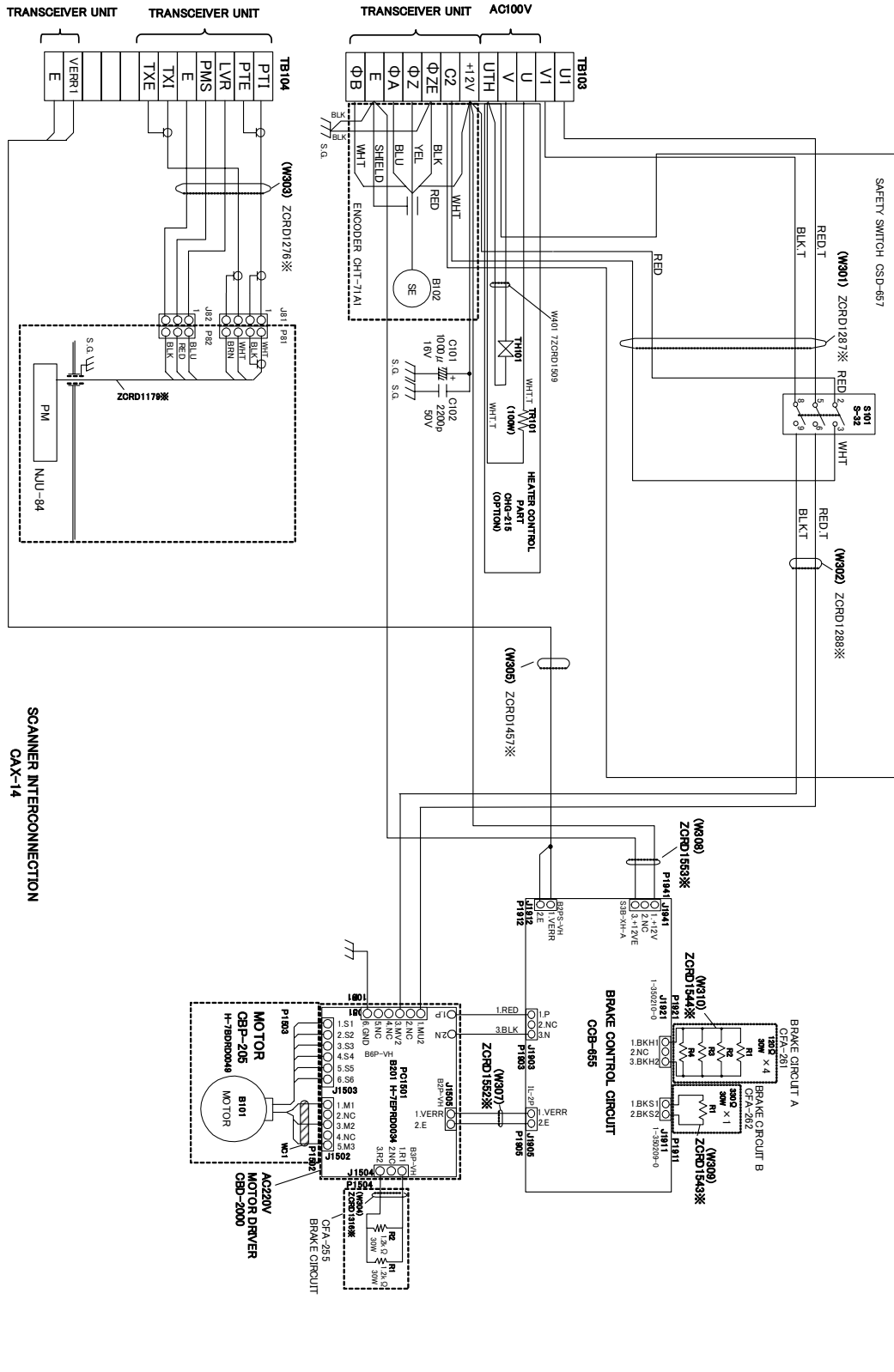


Fig 6-81: NKE-1130 (AC220V) INTERCONNECTION





### 6.4.11 NKE-1139 (AC220V)



SCANNER INTERCONNECTION  
CAX-14

NKE-1139PM (AC220V) 空中線機内接続図  
S/N: 31127

Fig 6-83: NKE-1139 (AC220V) INTERCONNECTION

### 6.4.12 NTG-3230

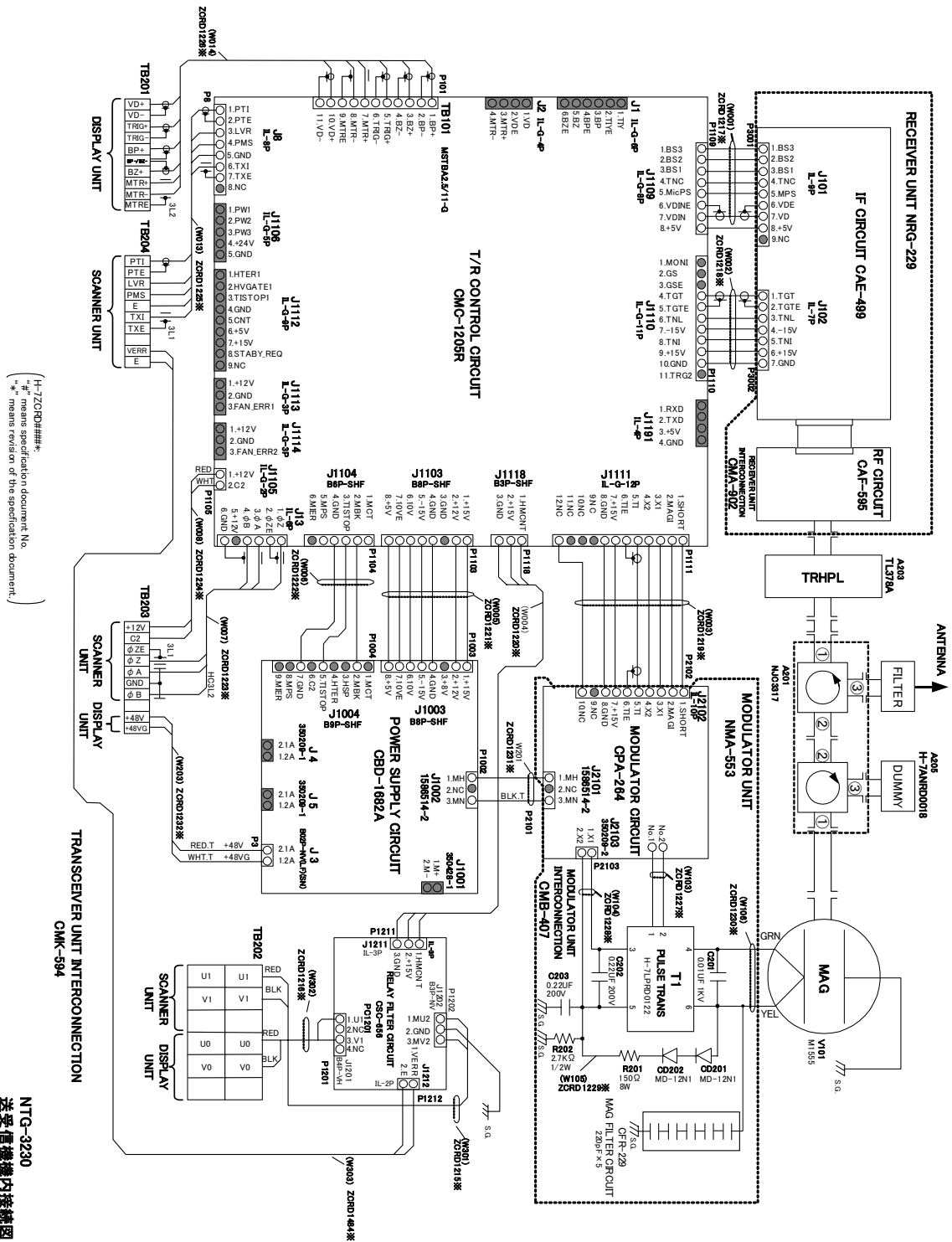


Fig 6-84: NTG-3230 INTERCONNECTION



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For further information, contact:

**JRC** *Japan Radio Co., Ltd.*  
Since 1915

URL <http://www.jrc.co.jp>

Marine Service Department

Telephone : +81-3-3492-1305

Facsimile : +81-3-3779-1420

e-mail : [tmisc@jrc.co.jp](mailto:tmisc@jrc.co.jp)

AMSTERDAM Branch

Telephone : +31-20-658-0750

Facsimile : +31-20-658-0755

e-mail : [service@jrcams.nl](mailto:service@jrcams.nl)

SEATTLE Branch

Telephone : +1-206-654-5644

Facsimile : +1-206-654-7030

e-mail : [service@jrcamerica.com](mailto:service@jrcamerica.com)

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