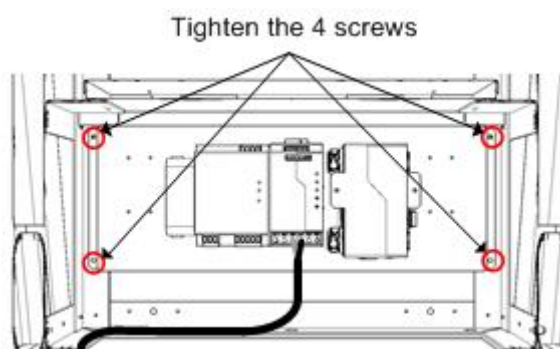


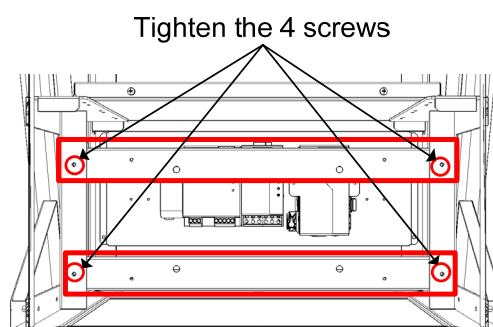
- 9) While maintaining the OFF state of the circuit breaker for the power supply of the display unit, turn ON the circuit breaker of the main power line and check that the LEDs of the UPS controller turn ON/OFF as follows.

LED	Color	ON/OFF Status
Alarm	Red	OFF
Bat.-Mode Bat.-Charge	Yellow	Flashing or OFF
Power In OK	Green	ON

- 10) Install the rear panel installed UPS to the frame. And wire the cable to pass through the cable tie base No.16.



- 11) Install the 2 frames for installing the JB.



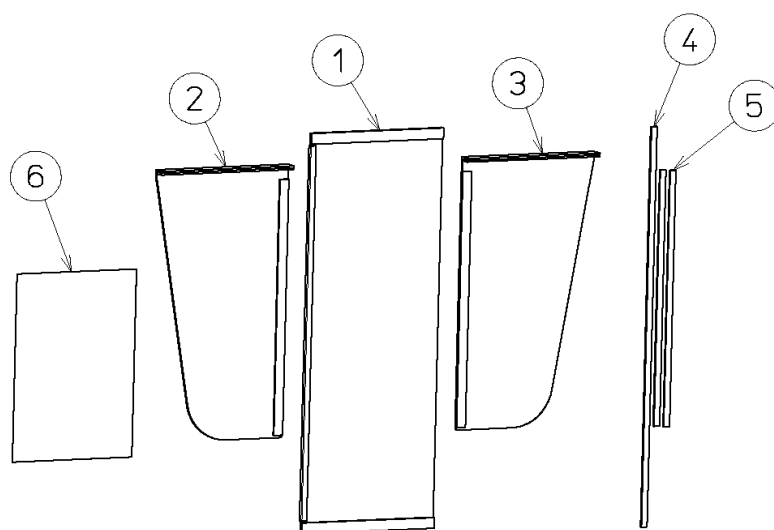
The installation of UPS ends above.

3.5.5 Installation of Hood

3.5.5.1 Installation of CWB-1620

HOOD ASSEMBLING PROCEDURE フード取付要領書

<PARTS LIST / 部品構成>



No.	PARTS NAME	THE NUMBER
1	TOP PLATE	1
2	SIDE PLATE (L)	1
3	SIDE PLATE (R)	1
4	LOCK FASTENER (LONG)	1
5	LOCK FASTENER (SHORT)	2
6	ASSEMBLING PROCEDURE	1

No.	部品名	数量
1	天板	1
2	側面板 (左)	1
3	側面板 (右)	1
4	ロックファスナー (長)	1
5	ロックファスナー (短)	2
6	取付要領書	1

1. Attach (4) to the top of the monitor as shown in fig1.
And attach (5) (2 pieces) to the both sides of the monitor as shown in fig1.

1. 図1のようにモニター上面に (4) を貼り付ける。
また、図1のようにモニター両側面に (5) を貼り付ける。

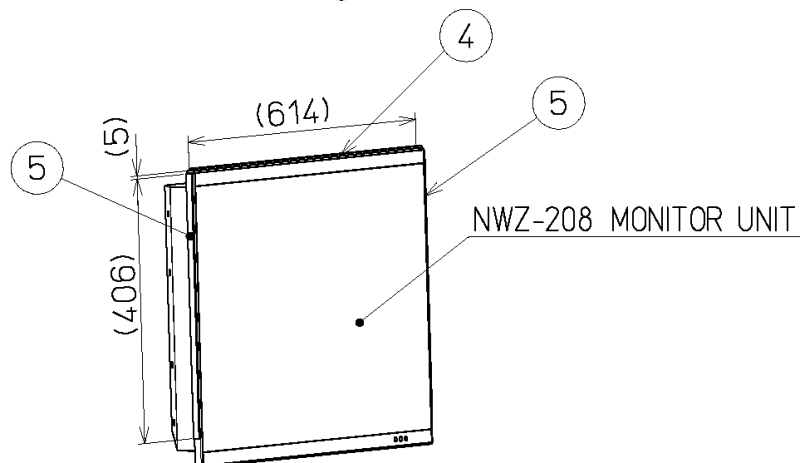


Fig.1 Attachment of the LOCK FASTENER(LONG/SHORT)

図1. ロックファスナーの取り付け

2. Assemble the HOOD as shown in fig2.

2. 図2のように、フードを組み立てる。

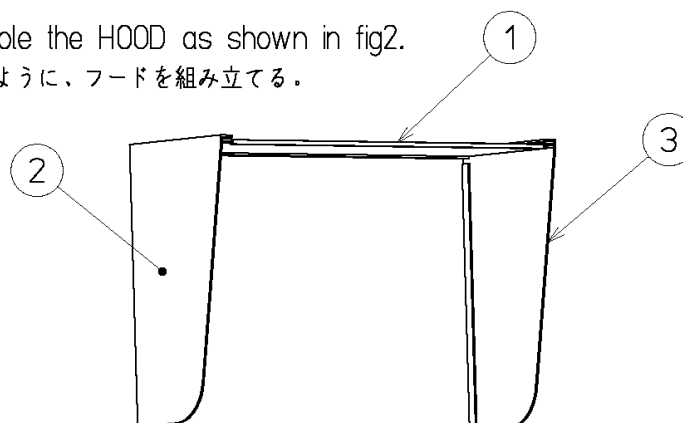


Fig.2 The hood assembly

図2. フードの組立て

3. Attach the hood to the monitor as shown in fig3.

3. 図3のように、フードをモニターに取り付ける。

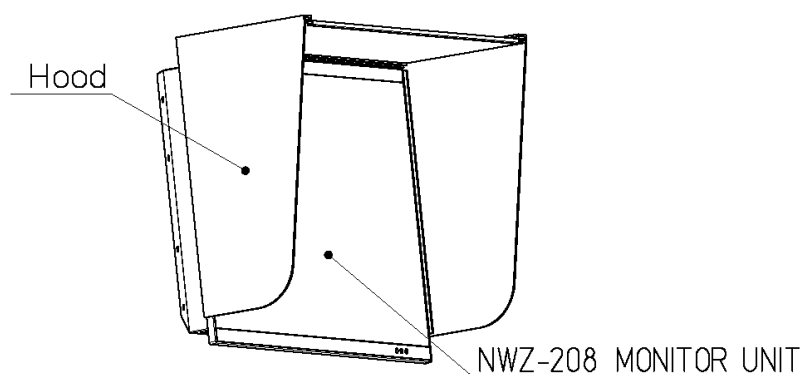


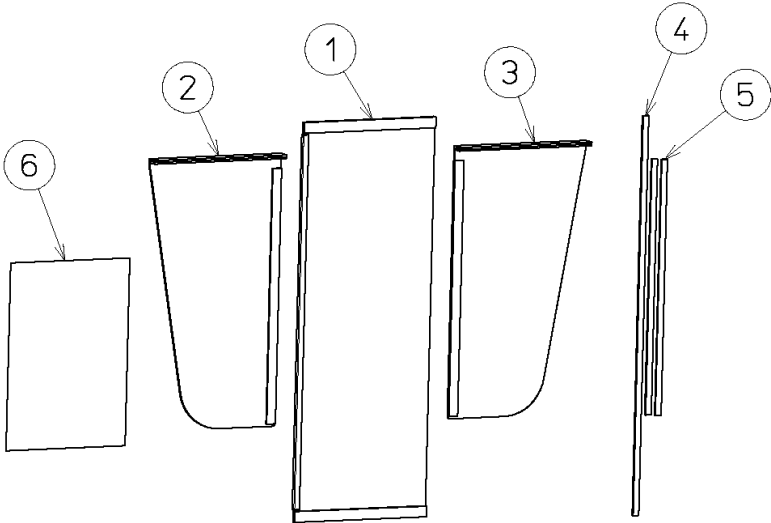
Fig.3 Attachment of the hood

図3. フードの取り付け

3.5.6 Installation of CWB-1618

HOOD ASSEMBLING PROCEDURE
フード取付要領書

<PARTS LIST / 部品構成>



No.	PARTS NAME	THE NUMBER
1	TOP PLATE	1
2	SIDE PLATE (L)	1
3	SIDE PLATE (R)	1
4	LOCK FASTENER (LONG)	1
5	LOCK FASTENER (SHORT)	2
6	ASSEMBLING PROCEDURE	1

No.	部品名	数量
1	天板	1
2	側面板（左）	1
3	側面板（右）	1
4	ロックファスナー（長）	1
5	ロックファスナー（短）	2
6	取付要領書	1

1. Attach ④ to the top of the monitor as shown in fig1.
And attach ⑤ (2 pieces) to the both sides of the monitor as shown in fig1.

1. 図1のようにモニター上面に ④ を貼り付ける。
また、図1のようにモニター両側面に ⑤ を貼り付ける。

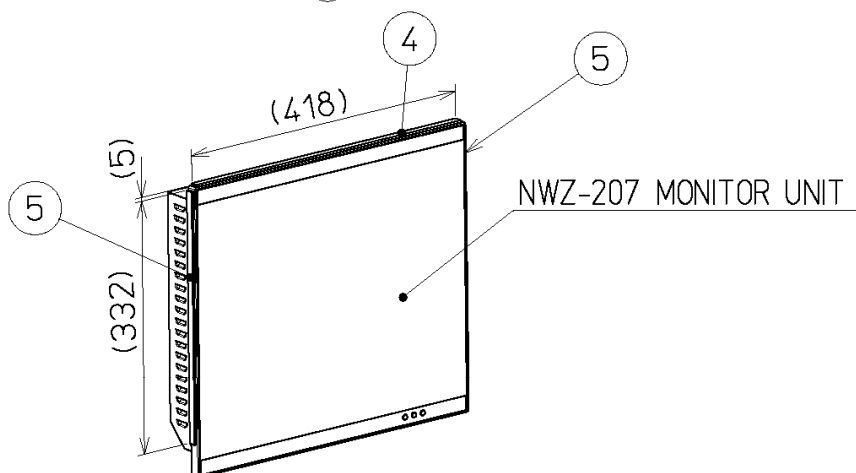


Fig.1 Attachment of the LOCK FASTENER(LONG/SHORT)

図1. ロックファスナーの取り付け

2. Assemble the HOOD as shown in fig2.

2. 図2のように、フードを組み立てる。

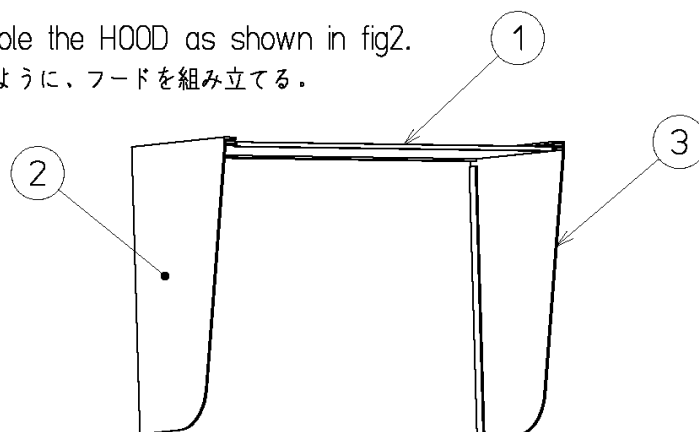


Fig.2 The hood assembly

図2. フードの組立て

3. Attach the hood to the monitor as shown in fig3.

3. 図3のように、フードをモニターに取り付ける。

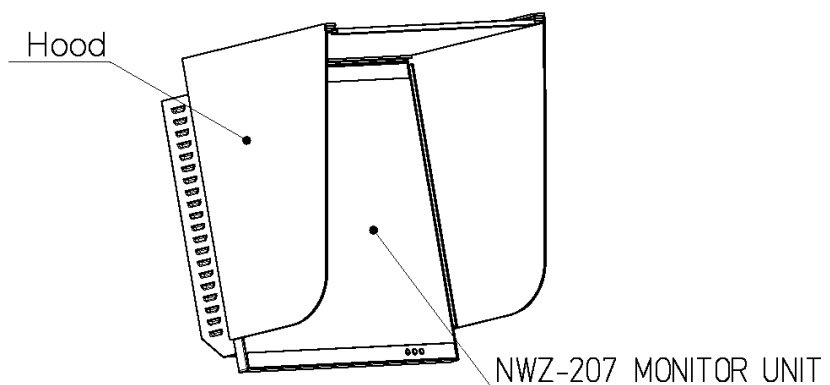


Fig.3 Attachment of the hood

図3. フードの取り付け

3.6 Connections with Scanner and Transceiver



Before conducting replacement work, turn OFF the circuit breaker for the power supply of the display unit.



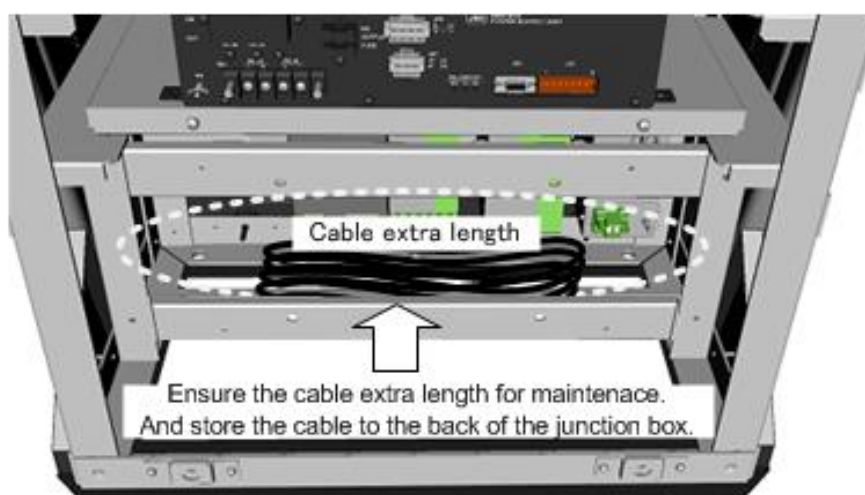
Before replacement work, be sure that all the LEDs on the front of the PSU NBD-913 are unlit. Charged electricity may still remain in the internal capacitor.



Do not lose the bolt and screws as they will be needed again.



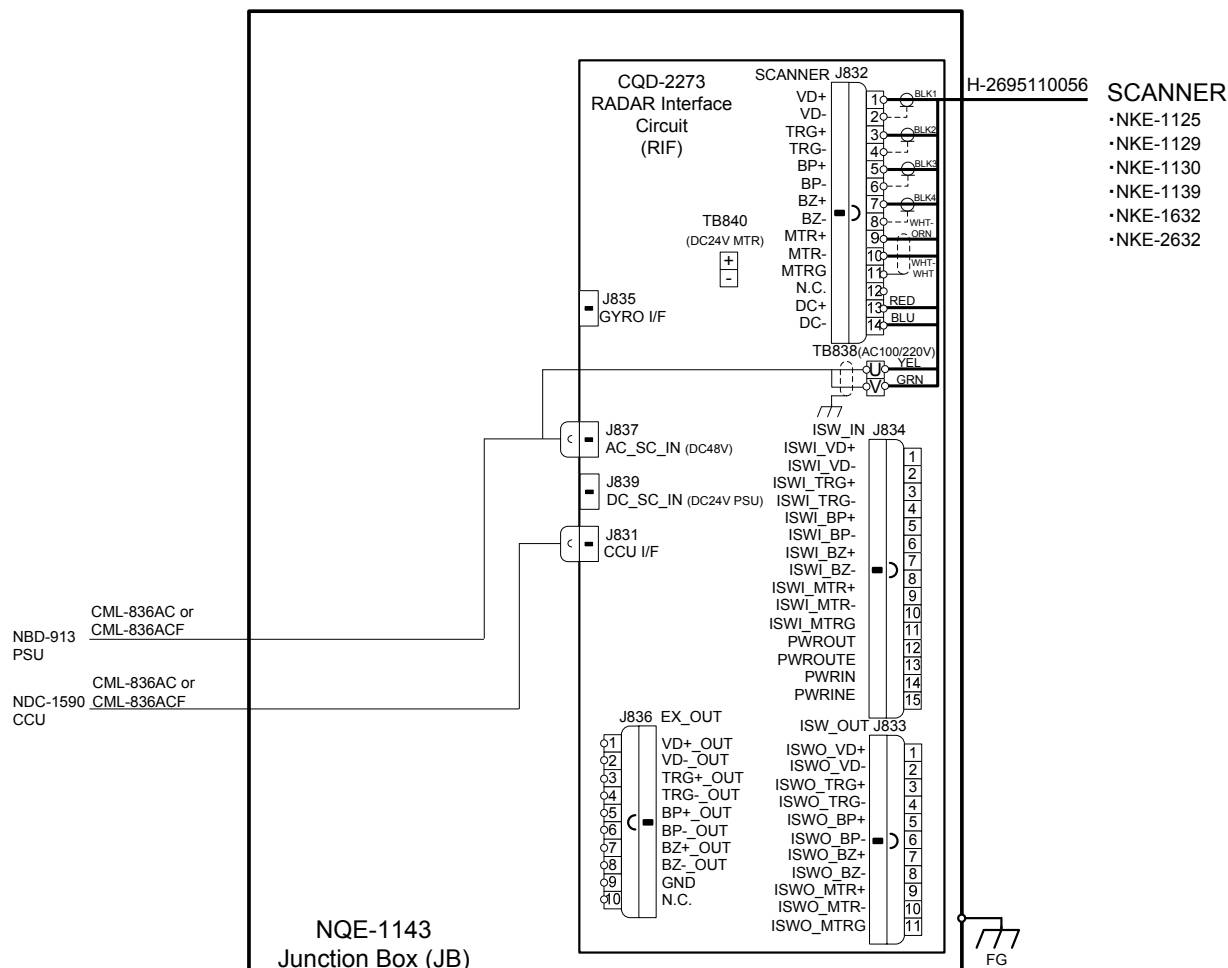
Ensure the cable extra length for maintenance. And store the cable to the back of the junction box.



3.6.1 NKE-1125, NKE-1129, NKE-1130, NKE-1139, NKE-1632, NKE-2632 SCANNERS

Connect the device to J832 and TB838 of RADAR INTERFACE CIRCUIT CQD-2273 located in display unit (processing unit).

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



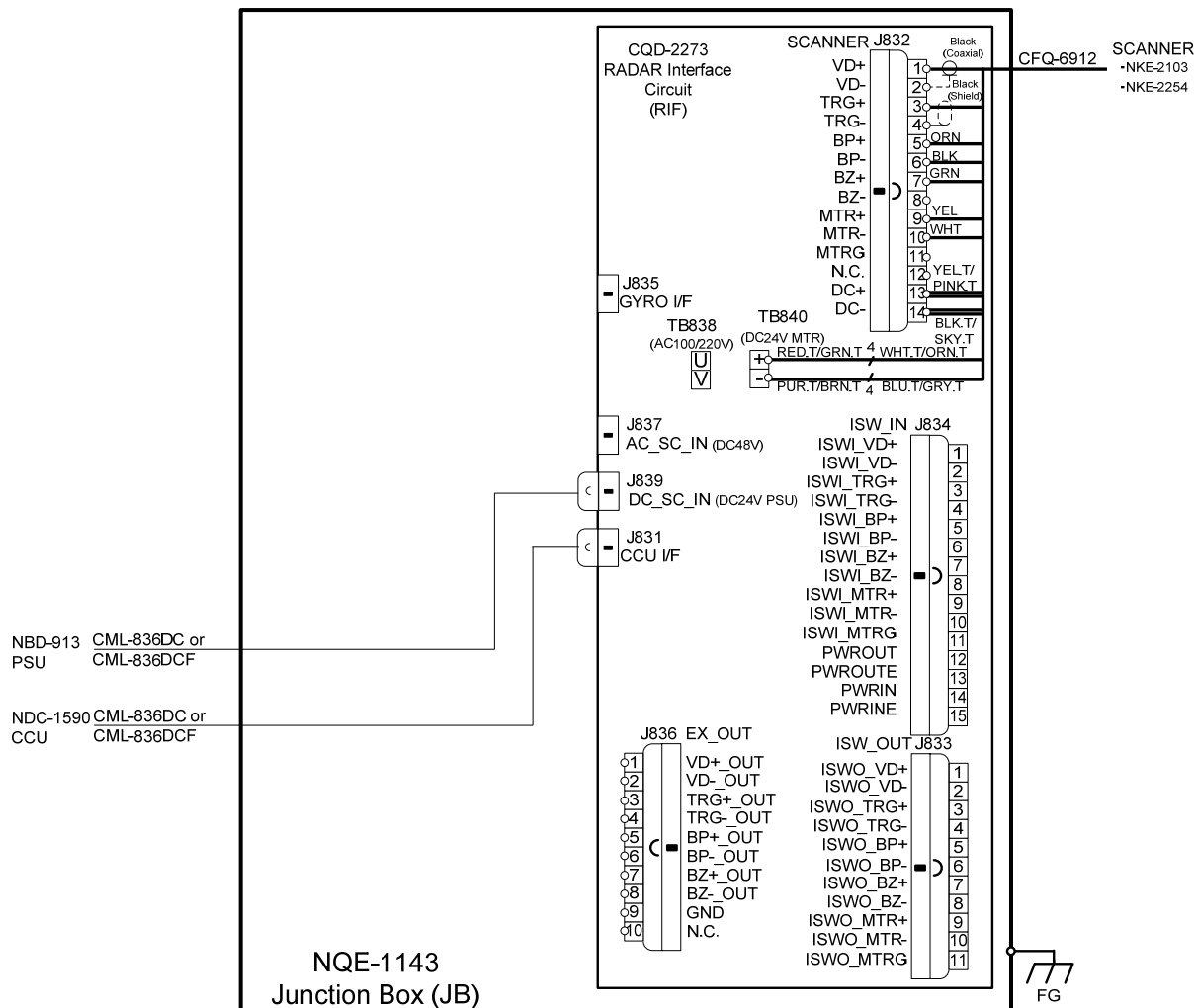
Confirm the Model of Scanner Unit and input power supply of Display Unit.

Radar Model	Scanner Unit Model of 100-115VAC	Scanner Unit Model of 220-240VAC
JMR-9230-S3	NKE-1139- <u>1</u>	NKE-1139- <u>2</u>
JMR-9230-S	NKE-1130- <u>1</u>	NKE-1130- <u>2</u>
JMR-9225-7X3	NKE-1129- <u>71</u>	NKE-1129- <u>72</u>
JMR-9225-9X3	NKE-1129- <u>91</u>	NKE-1129- <u>92</u>
JMR-9225-6X	NKE-1125- <u>61</u>	NKE-1125- <u>62</u>
JMR-9225-9X	NKE-1125- <u>91</u>	NKE-1125- <u>92</u>

3.6.2 NKE-2103, NKE-2254 SCANNERS

Connect the device to J832 and TB840 of RADAR INTERFACE CIRCUIT CQD-2273 located in display unit (processing unit).

For the procedure for processing the equipment cable terminal, see 2.1.1 CFQ-6912-**.



3.6.3 Settings for RADAR I/F Circuit

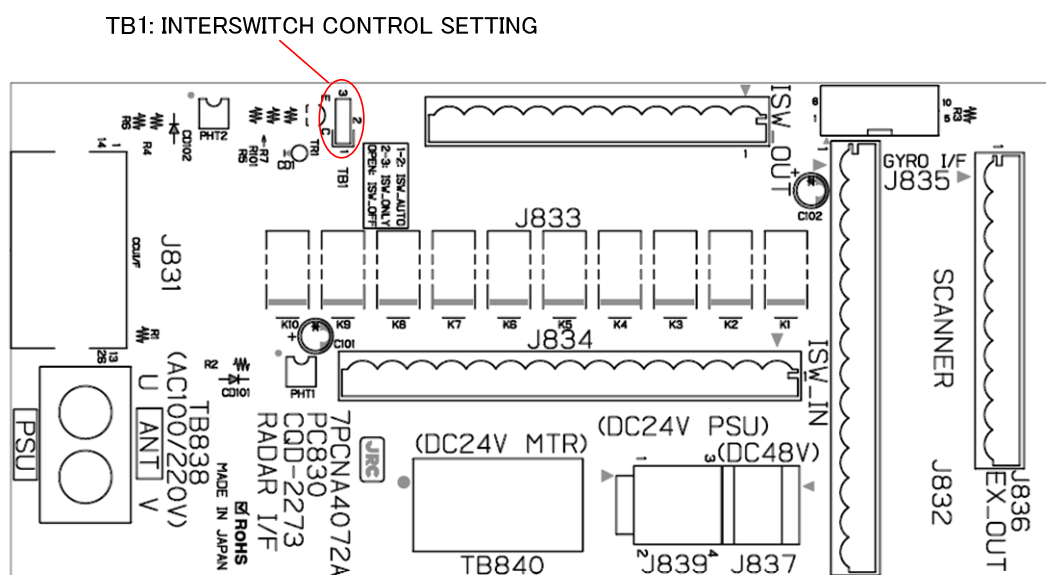


Fig 3-26 CQD-2273 Radar Interface Circuit TB1

Table 3-2 Radar Interface Circuit TB1 Settings

Radar Interface Circuit TB1 Settings		Description
1-2 SHORT CIRCUIT	ISW_AUTO (Factory default)	You can switch the scanner unit to be used on your Display unit via the Interswitch unit.
2-3 SHORT CIRCUIT	ISW_ONLY (Not allowed)	Scanner signals always come down to your Display unit via the Interswitch unit. You can switch them on your Display unit in service mode.
OPEN	ISW_OFF (Not allowed)	Scanner signals come down to your Display unit directly. Since they do not come through the Interswitch unit, you cannot switch them.



If it is not suggested from JRC office, do not set “2-3 SHORT CIRCUIT” or “OPEN” the TB1 of Radar Interface Circuit. **It may cause a lower radar system performance.**

3.6.3.1 Connection procedure between Radar Interface Circuit and Scanner Unit

1. Connect as follows Radar Interface Circuit and Scanner Unit.

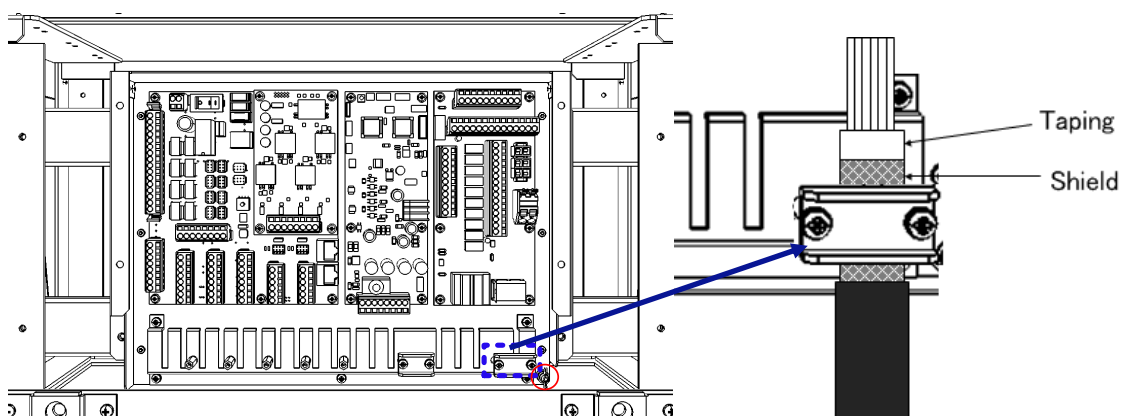
(J832: Signal TB838: AC Power TB840: DC Power)

AC Motor Scanner Unit: NKE-1139、NKE-1130、NKE-1632、NKE-2632、NKE-2632-H、 NKE-1129-7、NKE-1129-9、NKE-1125-6、NKE-1125-9	J832 と TB838
DC Motor Scanner Unit: NKE-2254-6HS、NKE-2103-6、NKE-2103-6HS	J832 と TB840

- For the procedures for processing the equipment cable end, see **2.1.4 Cable end processing method.**
- Fix the shield part of the equipment cable with pressing by metal fittings which is surrounded by a dotted line frame in the figure below..Connect the shield to the thumbscrew surrounded by the circle.(Recommended crimp terminals V5.5)



So that the braided shield is not shorted to the power supply terminal block, please insulate the cable and fix with cable tie. Please put the Extra length of the cable to the bottom of the display unit so that the not shorted to the UPS or SENSOR LAN switch unit.

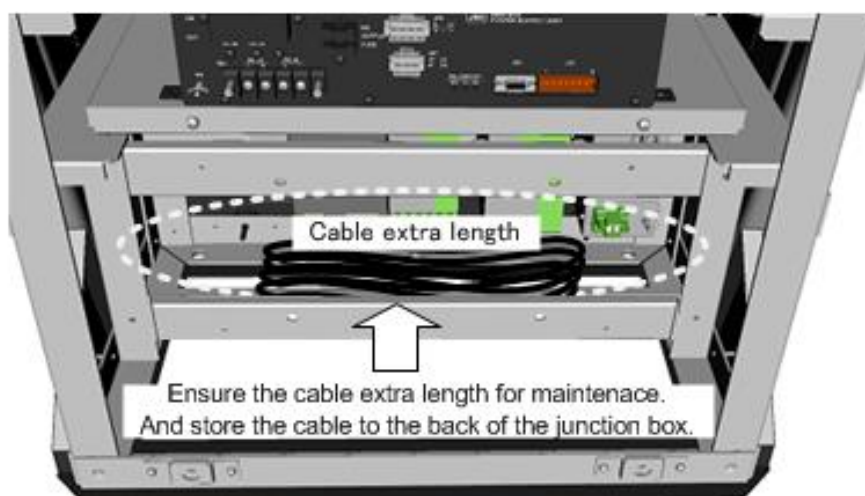


- When connecting the interswitch unit, see **5.1 Installation of Interswitch Unit.**
- When connecting the ECDIS, see **3.8 Connection with ECDIS.**

3.7 Connection with Sensors



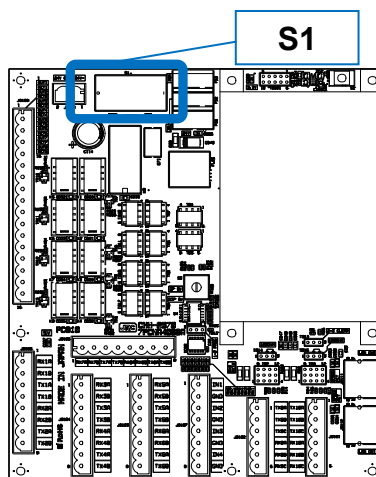
Ensure the cable extra length for maintenance. And store the cable to the back of the junction box.



When the CMH-2370 has been installed to the Junction Box, start up the CMH-2370 by turning on the switch S1. Refer to figure below for location of the S1.



If do not start up the CMH-2370, sensors what connected to the CMH-2370 does not take effect.

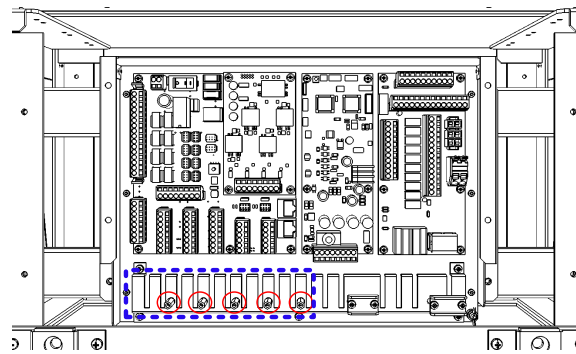


S1 location on CMH-2370

3.7.1 IEC61162-1 Connections

Connect the communication signals from sensors to the IEC61162-1 Port located on the CMH-2370 in JUNCTION BOX NQE-1143. Communication signals from sensors will be connected to terminals RX_A and RX_B which is IEC61162 standard. Communication signals to sensors will be connected to terminals TX_A and TX_B which is IEC61162 standard. The number of port for IEC61162-1 on CMH-2370 is 8 ports including each receiver and transmitter allocated at J8103-J8106 on CMH-2370.

- See **Fig 3-32:Connector location on CMH-2370** about location of J8103-J8106 on CMH-2370.
- To configure the port, refer to **4.6 Setting Up a Serial Port**.
- Fix the signal cable with the clamp surrounded by the dotted line in the figure below.
- Connect the cable shield to the hex spacer surrounded by the circle in the figure below.
(Recommended crimp terminals V5.5)



 So that the braided shield is not shorted to the power supply terminal block, please insulate the cable and fix with cable tie. Please put the Extra length of the cable to the bottom of the display unit so that the not shorted to the UPS or SENSOR LAN switch unit.

Table 3-3:Terminal Assign of J8103-J8106

Terminal Number	J8105	J8104	J8103	J8106
1	RX1A	RX3A	RX5A	RX7A
2	RX1B	RX3B	RX5B	RX7B
3	TX1A	TX3A	TX5A	TX7A
4	TX1B	TX3B	TX5B	TX7B
5	RX2A	RX4A	RX6A	RX8A
6	RX2B	RX4B	RX6B	RX8B
7	TX2A	TX4A	TX6A	TX8A
8	TX2B	TX4B	TX6B	TX8B

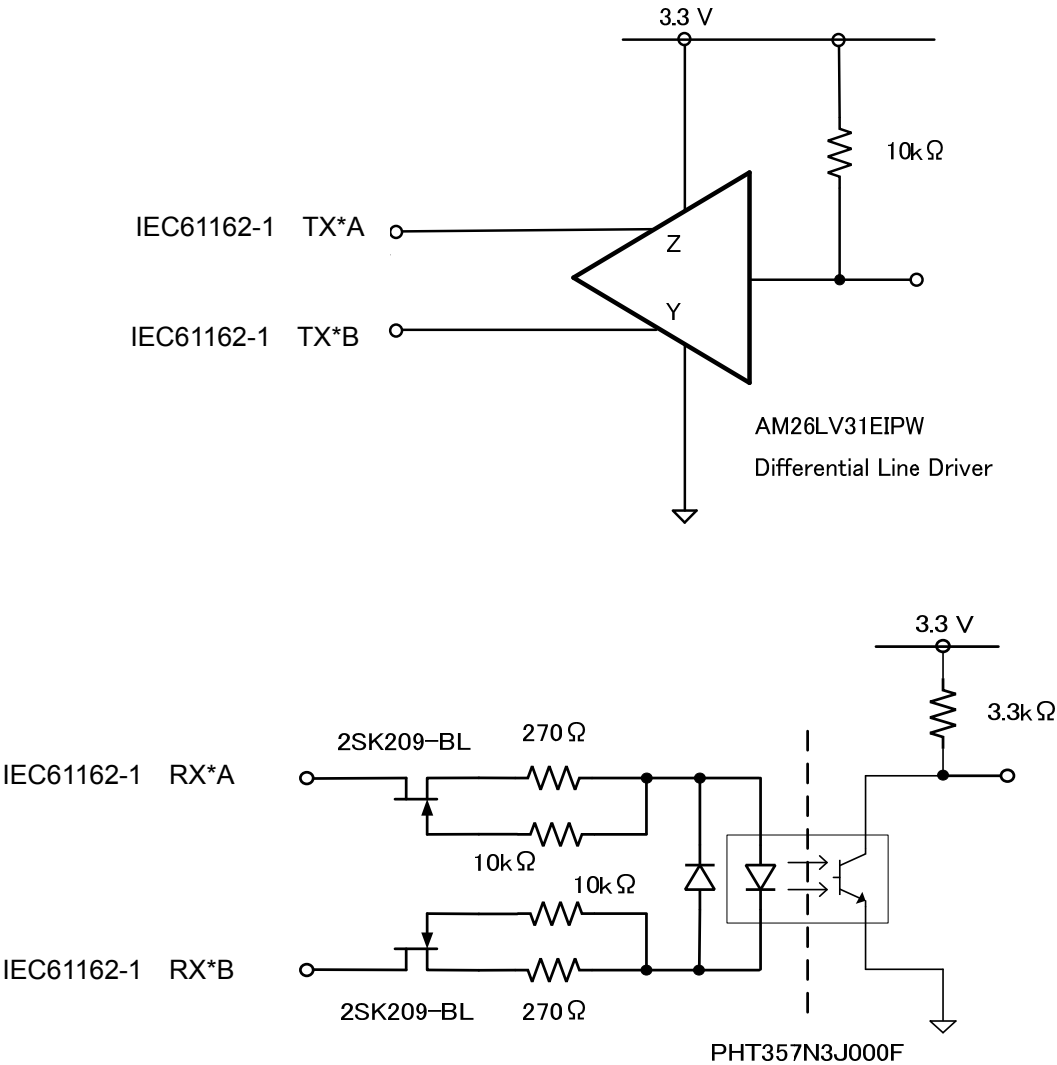


Fig 3-27 IEC61162-1 transmitter-receiver circuit

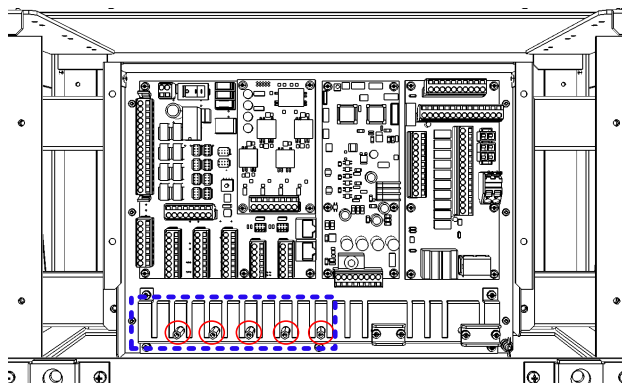
3.7.2 IEC61162-2 Connections

Connect the communication signals from sensors to the IEC61162-2 Port located on the CMH-2370 in JUNCTION BOX NQE-1143. Communication signals from sensors will be connected to terminals RX_A, RX_B and RX_C which is IEC61162 standard. Communication signals to sensors will be connected to terminals TX_A, TX_B and TX_C which is IEC61162 standard.

The number of port for IEC-61162-2 on CMH-2370 is two ports including each receiver and transmitter allocated at J8101 and J8102 on CMH-2370.

- See **Fig 3-32:Connector location on CMH-2370** about location of J8101-J8102 on CMH-2370.
- To configure the port, refer to **4.6 Setting Up a Serial Port**.
- Fix the signal cable with the clamp surrounded by the dotted line in the figure below.
- Connect the cable shield to the hex spacer surrounded by the circle in the figure below.

(Recommended crimp terminals V5.5)



So that the braided shield is not shorted to the power supply terminal block, please insulate the cable and fix with cable tie. Please put the Extra length of the cable to the bottom of the display unit so that the not shorted to the UPS or SENSOR LAN switch unit.

Table 3-4:Terminal Assign of J8101 and J8102

Terminal Number	J8102	J8101
1	TX9A	TX10A
2	TX9B	TX10B
3	TX9C	TX10C
4	RX9A	RX10A
5	RX9B	RX10B
6	RX9C	RX10C

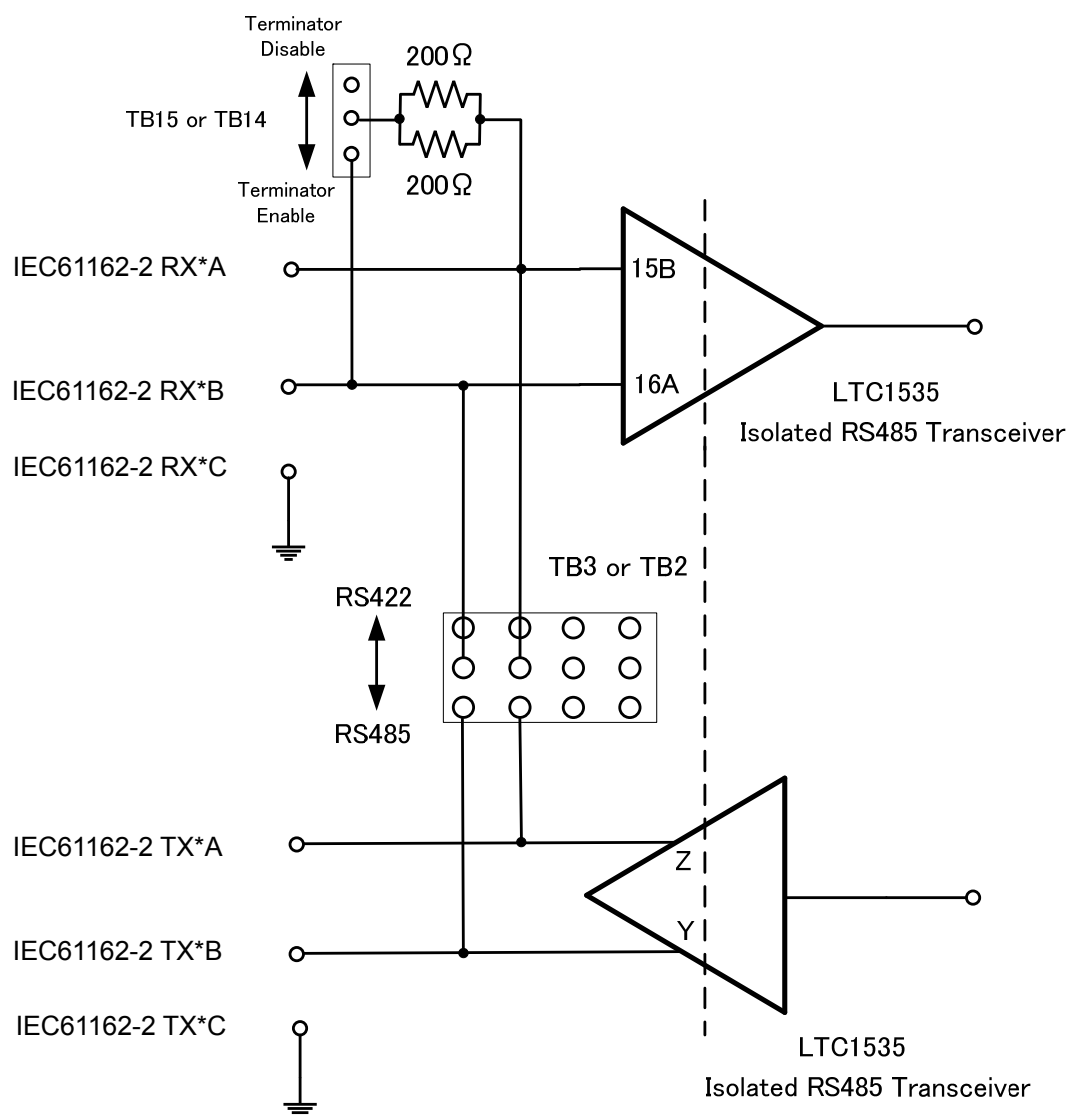


Fig 3-28 IEC61162-2 transmitter-receiver circuit

3.7.2.1 Communication Type and termination

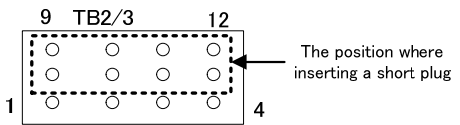
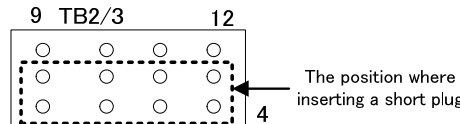
Communication type of IEC61162-2 can be selected full duplex (IEC61162-2) mode or half duplex (RS-485) mode by TB2 and TB3 setting on CMH-2370.

To select communication type for channel9, TB2 will be set by Short Plug.

To select communication type for channel10, TB3 will be set by Short Plug.

To set TB2 and TB3, refer to Table 3-5 and Fig 3-29 below.

Table 3-5: Setting of communication type

Mode	Setting of TB2 /TB3
Duplex (RS-422)	Short circuit :5-9, 6-10, 7-11, 8-12 
Half duplex (RS-485)	Short circuit :5-1, 6-2, 7-3, 8-4 

And the termination resistor of receiver can be removable for multi connections by TB14 and TB15 setting on CMH-2370.

To set the termination for channel9, terminal of TB14 will be set by Short Plugs.

To set the termination for channel10, terminal of TB15 will be set by Short Plugs.

To set TB14 and TB15, refer to and Table 3-6 below.

Table 3-6: Setting of termination resistor

Termination	Terminal No. of TB14 and TB15
w Termination	2-3(Factory setting)
w/o Termination	1-2

Note : The location of TB2, TB3, TB14, TB15, Refer to **Fig 3-32:Connector location on CMH-2370.**

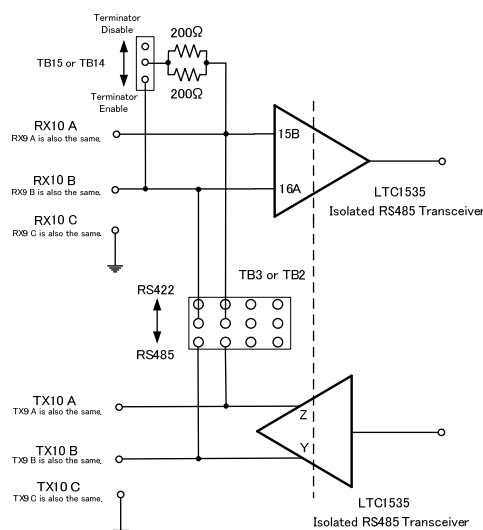


Fig 3-29: Communication Type and termination Circuit Diagram

3.7.3 LAN Connection

CMH-2370 converts the sensor data which is IEC61162 into LAN protocol. And, the data converted by CMH-2370 transfer to Display Unit via NQA-2443 Sensor LAN Switch Unit. It can transfer the data not only receive from sensor to Display Unit but transmit to sensor from Display Unit. CMH-2370 will be connected to NQA-2443 each RJ-45 by an Ethernet cable.



If it is not suggested from JRC, do not connect PC or other maker's system to JRC-LAN.

- Connecting PC or other maker's system may cause a lower radar system performance.
- Connecting PC or other maker's system may cause a lower that performance.

Either J8111 or J8112 selected by S4 will be used as an active LAN port.

And, you can select the data format either IEC61162-450 or JRC Formant by S4.

To set S4, refer to Table 3-7 below.

The location of J8111, J8112 and S4, refer to **Fig 3-32:Connector location on CMH-2370**

Fix the signal cable with the clamp surrounded by the dotted line in the figure below.

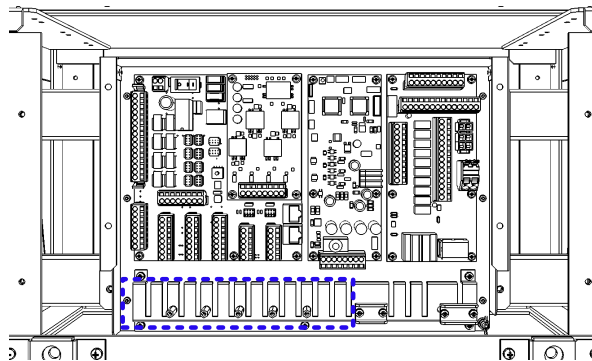


Table 3-7:S4 setting table

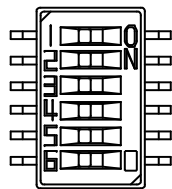


Fig 3-30:Outline of S4

SW1	LAN Setting	OFF	Main Channel	Use J8111
		ON	Sub Channel	Use J8112
SW2	LAN Type	OFF	Standard	IEC61162-450
		ON	JRC	JRC Format
SW3	Set Always OFF			
SW4	Set Always OFF			
SW4	Set Always OFF			
SW6	Set Always OFF			

To apply the setting, please restart CMH-2370 with the S1, because setting will be reflected in the startup.

If some number of CMH-2370s are installed and connected to the same NQA-2443 Sensor LAN Unit, you should change IP address of each CMH-2370 by S3 setting.

(Refer to **Table 3-8:IP Address setting table**)

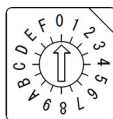


Fig 3-31:Outline of S3

CMH-2370 to be connected to the IAS(Integrated Automation System) or AMS(Alert Management System) is set the operation mode:ALC(Alert LAN Converter). Also in this case, set the IP address in refer to **Table 3-8:IP Address setting table**.

The location of S3, refer to **Fig 3-32:Connector location on CMH-2370**.

Table 3-8:IP Address setting table

S3 Position	Mode	No.	IEC61162-450		JRC Format	
			Main LAN	Sub LAN	Main LAN	Sub LAN
0	SLC	SLC1	172. 16 .60.107	172. 17 .60.107	192.168. 60 .107	192.168. 61 .107
1		SLC2	172. 16 .60.108	172. 17 .60.108	192.168. 60 .108	192.168. 61 .108
2		SLC3	172. 16 .60.109	172. 17 .60.109	192.168. 60 .109	192.168. 61 .109
3		SLC4	172. 16 .60.110	172. 17 .60.110	192.168. 60 .110	192.168. 61 .110
4		SLC5	172. 16 .60.111	172. 17 .60.111	192.168. 60 .111	192.168. 61 .111
5		SLC6	172. 16 .60.112	172. 17 .60.112	192.168. 60 .112	192.168. 61 .112
6		SLC7	172. 16 .60.113	172. 17 .60.113	192.168. 60 .113	192.168. 61 .113
7		SLC8	172. 16 .60.114	172. 17 .60.114	192.168. 60 .114	192.168. 61 .114
8		SLC9	172. 16 .60.115	172. 17 .60.115	192.168. 60 .115	192.168. 61 .115
9		SLC10	172. 16 .60.116	172. 17 .60.116	192.168. 60 .116	192.168. 61 .116
A		SLC11	172. 16 .60.117	172. 17 .60.117	192.168. 60 .117	192.168. 61 .117
B		SLC12	172. 16 .60.118	172. 17 .60.118	192.168. 60 .118	192.168. 61 .118
C	ALC	ALC1	172. 16 .60.119	172. 17 .60.119	192.168. 60 .119	192.168. 61 .119
D		ALC2	172. 16 .60.120	172. 17 .60.120	192.168. 60 .120	192.168. 61 .120
E		ALC3	172. 16 .60.121	172. 17 .60.121	192.168. 60 .121	192.168. 61 .121
F		ALC4	172. 16 .60.122	172. 17 .60.122	192.168. 60 .122	192.168. 61 .122

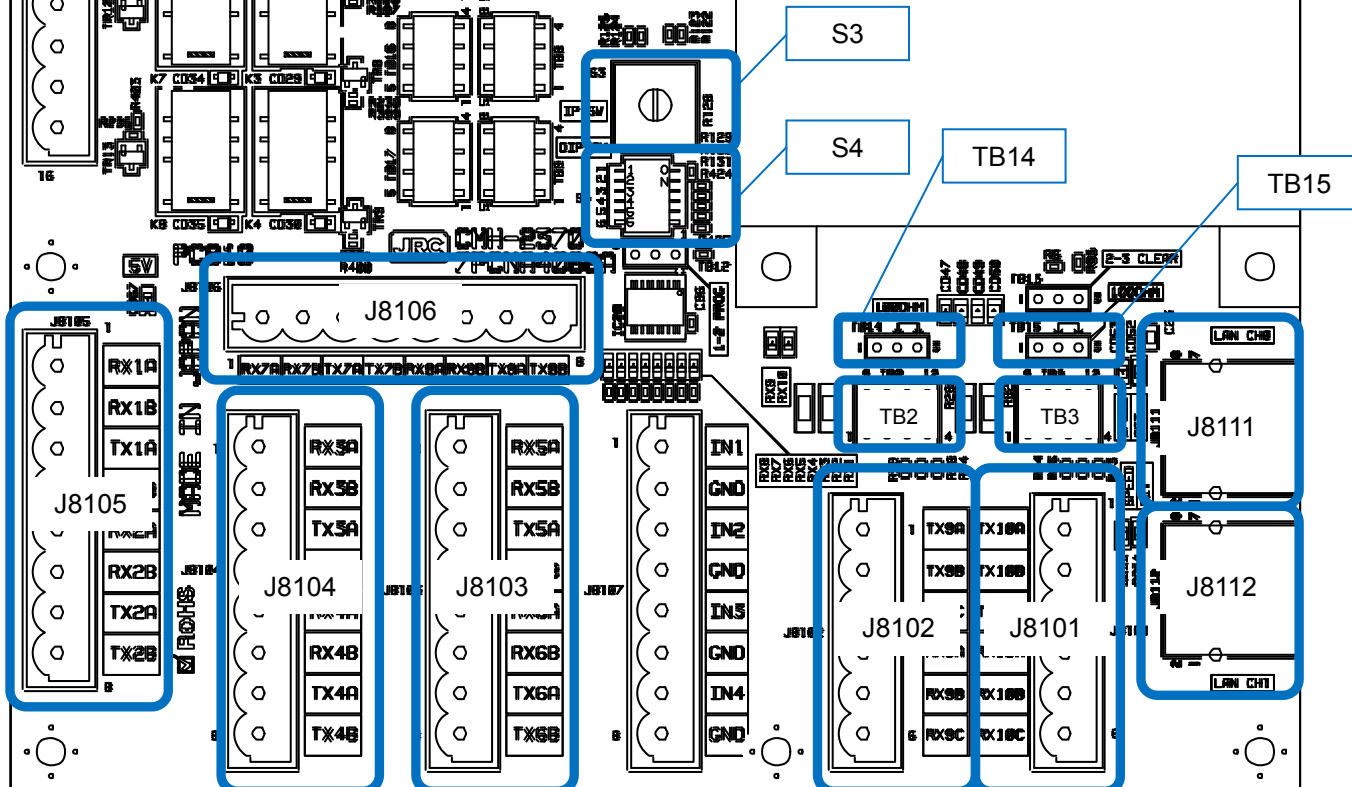


Fig 3-32:Connector location on CMH-2370

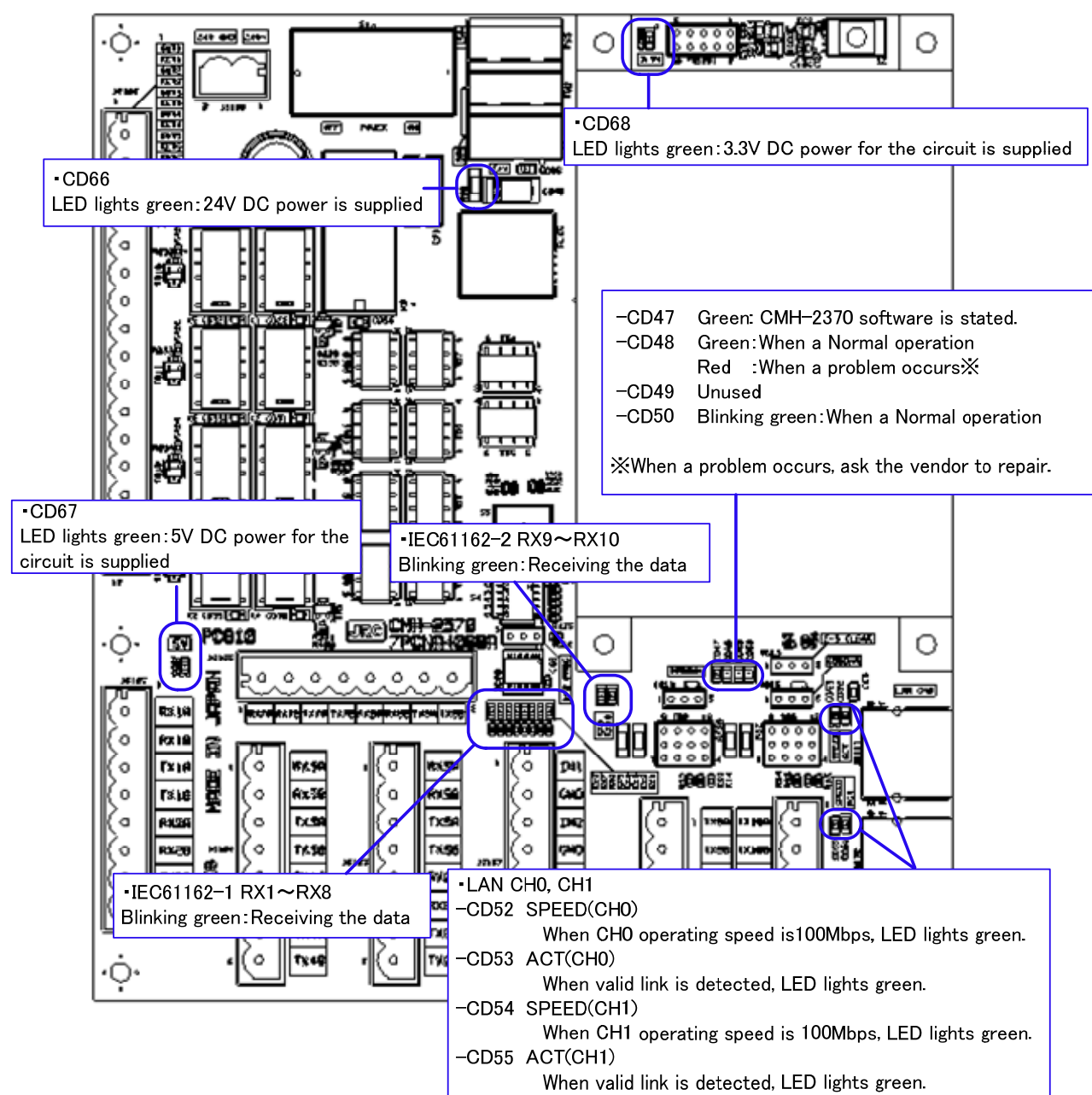


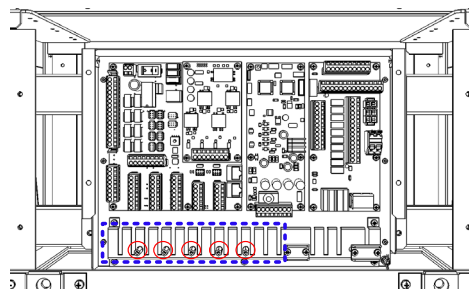
Fig 3-33 CMH-2370 LED

3.7.4 Contact Input

Connect the dry contact of other equipment to the Input port which is on CMH-2370 in JUNCTION BOX NQE-1143. The number of Input port on CMH-2370 is 4 ports allocated at J8107. Terminal assign of J8107, refer to **Table 3-9:Terminal Assign of J8107**.

Dry contact of other equipment will be connected to terminals IN and GND.

- See **Fig 3-37: Connector and TB location on CMH-2370** about location of J8107 on CMH-2370.
- To configure the port, refer to **4.7 Setting Contacts (Contact Input/Output)**.
- Fix the signal cable with the clamp surrounded by the dotted line in the figure below.
- Connect the cable shield to the hex spacer surrounded by the circle in the figure below.
(Recommended crimp terminals V5.5)



So that the braided shield is not shorted to the power supply terminal block, please insulate the cable and fix with cable tie. Please put the Extra length of the cable to the bottom of the display unit so that the not shorted to the UPS or SENSOR LAN switch unit.



Do not apply a voltage signal to contact input ports. Because they have pulled up to 5V with 1k ohm internally, connecting a voltage signal may cause malfunction. See Fig. 3-34

Table 3-9:Terminal Assign of J8107

Terminal Number	J8107
1	IN1
2	GND1
3	IN2
4	GND2
5	IN3
6	GND3
7	IN4
8	GND4

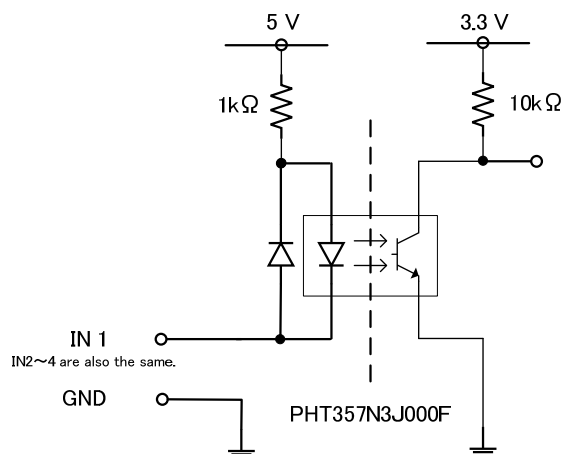


Fig 3-34:Input port circuit diagram

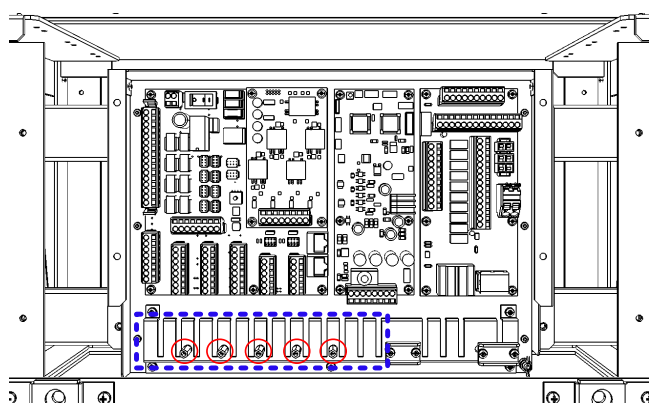
3.7.5 Contact Output

Connect the input of other equipment to the output port which is located on CMH-2370 Serial LAN interface circuit in JUNCTION BOX NQE-1143. The number of output ports on CMH-2370 is 8 ports allocated at J8108. Terminal assign of J8108, refer to

Table 3-10:Terminal Assign of J8108.

- See **Fig 3-37: Connector and TB location on CMH-2370** about location of J8108 on CMH-2370.
- To configure the port, refer to **4.7 Setting Contacts (Contact Input/Output)**.
- Connect the cable shield to the hex spacer surrounded by the circle in the figure below.

(Recommended crimp terminals V5.5)



So that the braided shield is not shorted to the power supply terminal block, please insulate the cable and fix with cable tie. Please put the Extra length of the cable to the bottom of the display unit so that the not shorted to the UPS or SENSOR LAN switch unit.

Table 3-10:Terminal Assign of J8108

Terminal Number	J8108
1	OUT1
2	RET1
3	OUT2
4	RET2
5	OUT3
6	RET3
7	OUT4
8	RET4
9	OUT5
10	RET5
11	OUT6
12	RET6
13	OUT7
14	RET7
15	OUT8
16	RET8

Each output port can be selected matched interface for your input device as below by setting TB4-TB11, TB16 and TB17 shown in.

- Dry contact: Normally Open
- Dry contact: Normally Close
- 24V dc for Buzzer: Normally no Supply
- 24V dc for Buzzer: Normally Supply



24V dc for buzzer will be supplied from main power supply of CMH-2370 via 15A fuse. If you set OUT as dry contact, do not set the terminal to GND on TB4 or TB5 which is matched to OUT you want.

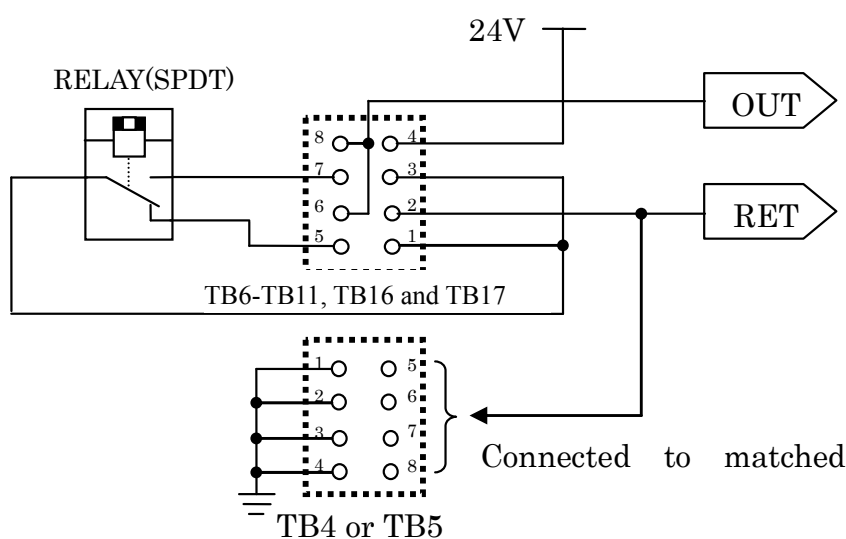


Fig 3-35 Contact output circuit diagram

Matched TB for each OUT and RET is shown in **Table 3-11 Output port and setting jumper**.

And to select Output, the terminals of each TB will be set by Short plugs shown in Fig 3-36: Output port setting by TB.

Table 3-11 Output port and setting jumper

Port	Jumper No.	24VDC Power GND
OUT1/RET1	TB6	TB4: short circuit 1 and 5
OUT2/RET2	TB7	TB4: short circuit 2 and 6
OUT3/RET3	TB8	TB4: short circuit 3 and 7
OUT4/RET4	TB9	TB4: short circuit 4 and 8
OUT5/RET5	TB17	TB5: short circuit 1 and 5
OUT6/RET6	TB16	TB5: short circuit 2 and 6
OUT7/RET7	TB11	TB5: short circuit 3 and 7
OUT8/RET8	TB10	TB5: short circuit 4 and 8

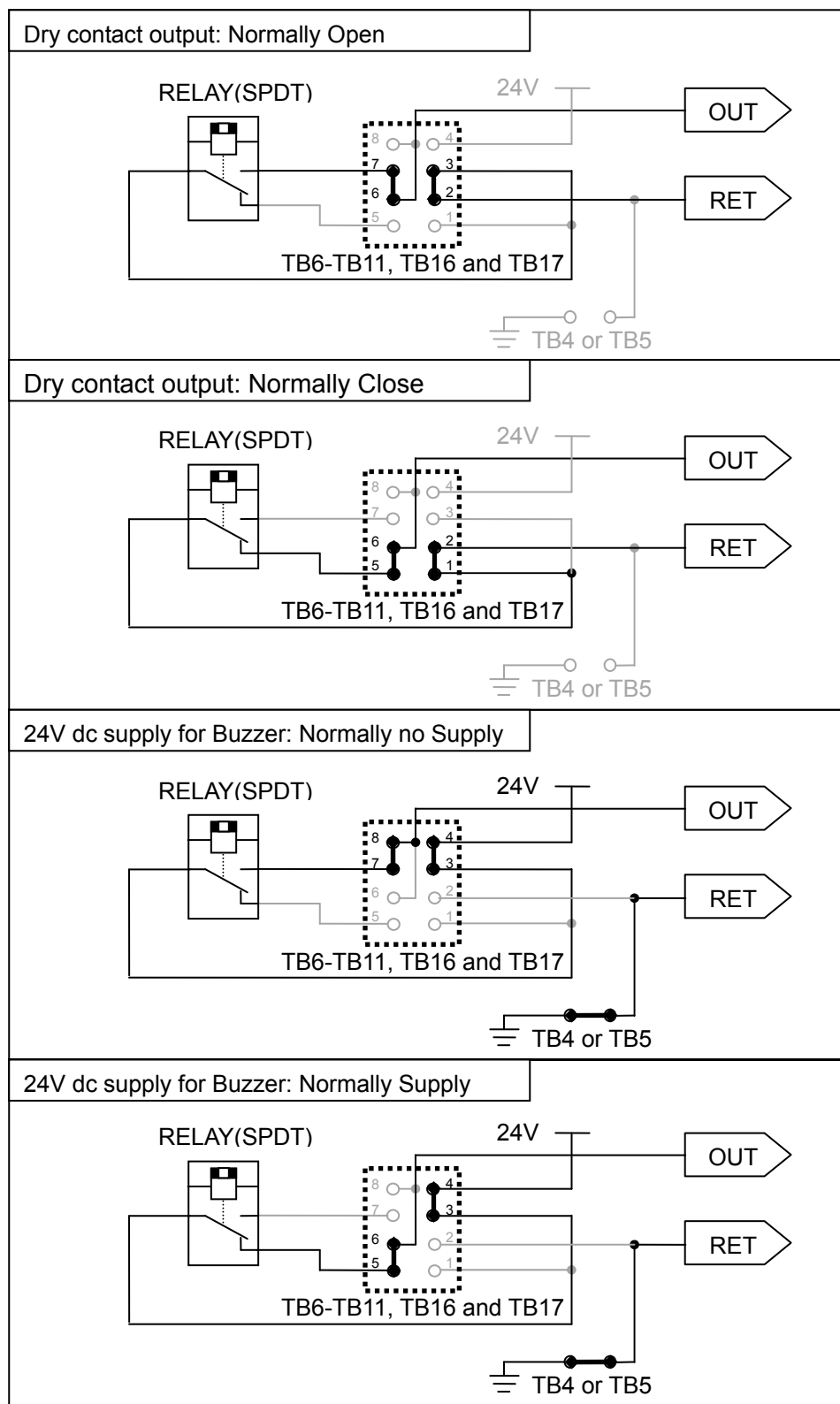


Fig 3-36: Output port setting by TB



Maximum current of RELAY is 2A.

Do not connect the load including inrush current which exceed maximum current.



3.7.6 Connections with Gyro Compasses and Electromagnetic Speed Logs

Signals from Gyro compass should be connected to J823 (1/R1, 2/S1, 3/S2, S3 and 5/R2) of CMJ-554 Gyro Interface Circuit in the Display Unit.

Connect each Gyro Signals as follows.

Synchro-type GYROs:	R1, S1, S2, S3 and R2.
Step-type GYROs:	1, 2, 3 and 5 (5 for Common)

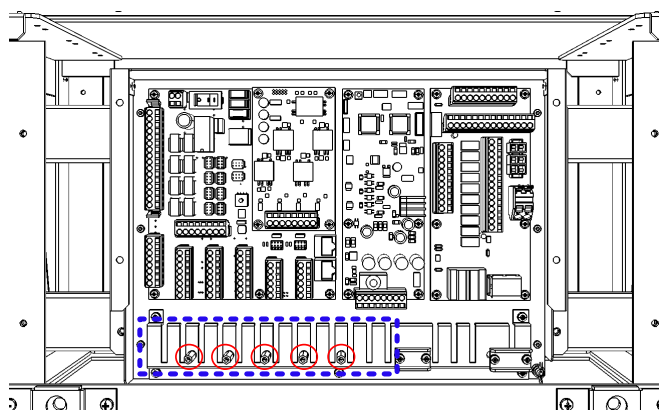
Connect a Gyro equipment or equivalent that provided a below turn rate and an above update rate, otherwise the performance of signal process and target tracking decrease.

	turn rate	update rate
Standard craft	12°/sec	40Hz
High speed craft	20°/sec	40Hz

A Signal from LOG should be connected to J823 (P+, P-) of CMJ-554 Gyro Interface Circuit in the Display Unit. Connect a LOG Signal as follows.

Pulse-type LOGs : P+, P-

- Connect the cable shield to the hex spacer surrounded by the circle in the figure below.
(Recommended crimp terminals V5.5)



So that the braided shield is not shorted to the power supply terminal block, please insulate the cable and fix with cable tie. Please put the Extra length of the cable to the bottom of the display unit so that the not shorted to the UPS or SENSOR LAN switch unit.

After connecting, refer to the **3.7.7 Settings for CMJ-554 GYRO I/F Circuit** for setting.

3.7.7 Settings for CMJ-554 GYRO I/F Circuit

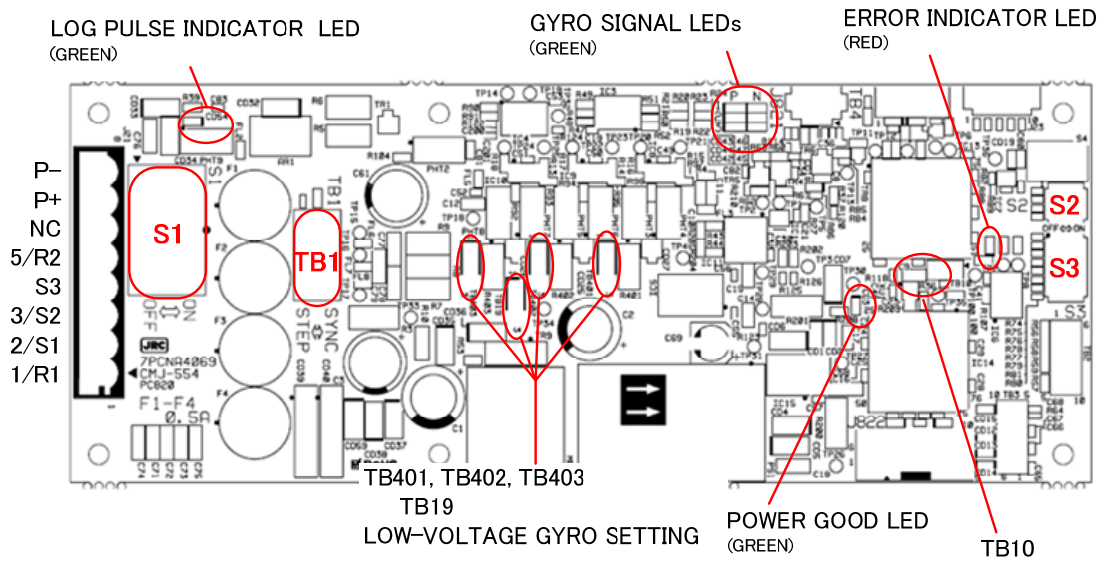


Fig 3-38: CMJ-554 Gyro Interface Circuit

Table 3-12 Setting table of Gyro Interface Circuit

TB1 Settings	Description
SYNC	Synchro type Gyro compass
STEP	Step type Gyro compass

Table 3-13 Setting table of Gyro Interface Circuit TB401, TB402, TB403, TB19

TB401, TB402, TB403, TB19 Settings	Description
1-2 SHORT CIRCUIT	Factory default
2-3 SHORT CIRCUIT	Low voltage settings

Table 3-14 Setting table of Gyro Interface Circuit TB10

TB10 Settings	Description
SHORT CIRCUIT	Factory default
OPEN	Not allowed

NOTE: If it is not suggested from JRC office, do not set "OPEN" the TB10 of Gyro Interface Circuit.

•It may cause a lower radar system performance.

Table 3-15 Setting table of Gyro Interface Circuit S1

S1 Settings	Description
OFF	Gyro signals will be disconnected.
ON	Gyro signals will be connected.

Table 3-16 Setting table of Gyro Interface Circuit S2

S2 SETTINGS		1	2	3	4
GYRO SIM	Simulator ON	ON			
	Simulator OFF	OFF			
LOG SIM	Simulator ON		ON		
	Simulator OFF		ON		
	NC				

Table 3-17 Setting table of Gyro Interface Circuit S3

S3 SETTINGS		1	2	3	4	5	6	7	8
GYRO SETTING	GYRO TYPE "STEP"	ON							
	GYRO TYPE "SYNC"	OFF							
GYRO RATIO	RATIO 36x	ON	ON						
	RATIO 90x	ON	OFF						
	RATIO 180x	OFF	ON						
	RATIO 360x	OFF	OFF						
GYRO DIRECTION	Direction 'REVERSE'				ON				
	Direction 'NORMAL'				OFF				
GYRO ALARM TIME	LONG					ON			
	SHORT					OFF			
LOG ALARM	LOG ALARM						ON		
							OFF		
LOG SETTING	RATIO 100P							ON	ON
	RATIO 200P							ON	OFF
	RATIO 400P							OFF	ON
	RATIO 800P							OFF	OFF

Connection procedure with Gyro compass

- 1) Turn S1 off.

Gyro Compass and Gyro Interface Circuit will be disconnected.

- 2) Switch the TB1 for the type of your Gyro compass.

Synchro-type Gyro Compass: Set TB1 to "SYNC"

Step-type Gyro Compass: Set TB1 to "STEP"

- 3) Set S3 for your Gyro compass and Speed log according to S3 **Table 3-17 Setting table of Gyro Interface Circuit S3.**

S3-1	:	Gyro Setting (STEP / SYNC)
S3-2/3	:	Gyro Ratio
S3-4	:	The direction of rotation
S3-5	:	Gyro alarm time (LONG / SHORT)
S3-6	:	Log alarm (ON / OFF)
S3-7/8	:	Log setting

- 4) Set TB401, TB402, TB403 and TB19 as follows if your Gyro compass signals are less than 22V. .

1-2 SHORT CIRCUIT: Factory default.

2-3 SHORT CIRCUIT: Set this if voltages of Gyro signals are less than 22V.

- 5) Connect your Gyro compass and Speed log to J823 of CMJ-554 Gyro interface circuit as follows.

Table 3-18 Output Port of Gyro Interface Circuit

Gyro and Log	J823	Description
Synchro Gyro	R1, S1, S2, S3 and R2.	24 - 115Vac (50 / 60 / 400Hz)
Step Gyro	1, 2, 3 and 5 (5 for common)	21.6 - 70V
Pulse Log	P+, P-	0-50V, Vth = 2V. (5V, 1k ohm Internal Pull-up)

- 6) Turn S1 on.

Your Gyro Compass will be connected to Gyro Interface Circuit.

- 7) Check your radar echo and true bearing value to make sure that your gyro compass is working correctly.

- 8) Set S3-4 "Reverse" if your radar echo and true bearing have reverse rotation.

Setting Examples for some Gyro Compasses

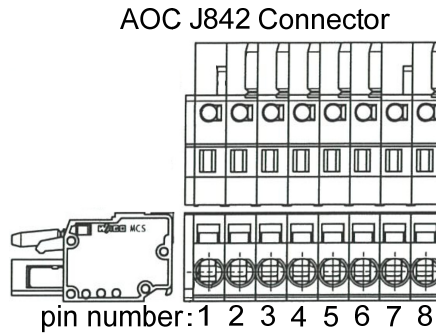
item Manufacture	Gyro Compasses	Repeater Motors (For reference only)	Excitation Voltage	Gyro Select Swiches (S3, TB1 located on the CMJ-554)									
				S3 settings								TB1 setting	
				1	2	3	4	5	6	7	8		
東京計器 TOKYO KEIKI (JAPAN) スペリー Sperry (U.S.A)	ES-2/11 GLT-100〜103/105/106K/107/1104, NJZ-501(R501)	Synchro Motor INMS (TS63N7E13) (36X)	115V AC 60Hz	OFF	ON	ON	OFF					SYNC	
	ES-11A, GM-11/11A/21/110/120, MS-2000/3000 PR-222R/226/237/237-L /1*8*/2022/2023/22**, TG-200	Synchro Motor TSAN60E11 (90X)	110V AC 60Hz	OFF	OFF	ON						SYNC	
	GLT-201/202/203, MK-14/14T, MKE-1/14T, MOD-1/2/T, PR-500/2502/2503/2507/2507L /3507/4507/5507, SR-130/140, TG-100/5000	Step Motor GA-2001G Drawing# 103590810 600 excitation (180X)	70V DC	ON	ON	OFF						STEP	
	ES-16 SR-120/220 CMZ-700D	Step Motor GA-2001G Drawing# 103590820 150 excitation (180X)	35V DC	ON	ON	OFF						STEP	
	ES140/160 PR-26**/6*6*/6*7*, SR-140/160 TG-6000/8000		24V DC										
横河電機 YOKOGAWA (JAPAN)	C-1A/2/3/E, HOKUSHIN PLATH-55/C, PLATH HKRK-C3	Synchro Motor YM-14 TS-19 (360X)	60V AC 60Hz	OFF	OFF	OFF	OFF					SYNC	
	C1JR, C-1JUNIOR, CMZ-200A/300, D-1, IPS, IPS-2-H2/2B/2B-H2C/5, KM008, KR-053, PLATH NAVIGAT-1, PT11-H2/21/21-H2	Synchro Motor PY76-N2 (360X)	100V AC 50/60Hz	OFF	OFF	OFF						SYNC	
アーマーブラウン ARMA BROWN (France)	1351, MK-1〜7/10/20, MKL-1, NOD-4, NB-23-88, SERIE, SGB-1000	Step Motor BZ-2191 (180X)	50V DC	ON	ON	OFF						STEP	
アンシッツ ANSCHUTZ (Germany)	110-301, 139-31, ANSCHUTZ-1〜6/12/14/Z, GM-BH, K8051, NB23-126, Z0658U	Synchro Motor NB23-91 (360X)	50V AC 50Hz	OFF	OFF	OFF						SYNC	
プラート社 C. PLATH (Germany)	NAVIGAT 763-331E, PLATH NAVIGAT-II/III	Synchro Motor YM14A (360X)	50V AC 50Hz	OFF	OFF	OFF						SYNC	

*:Numeric Number

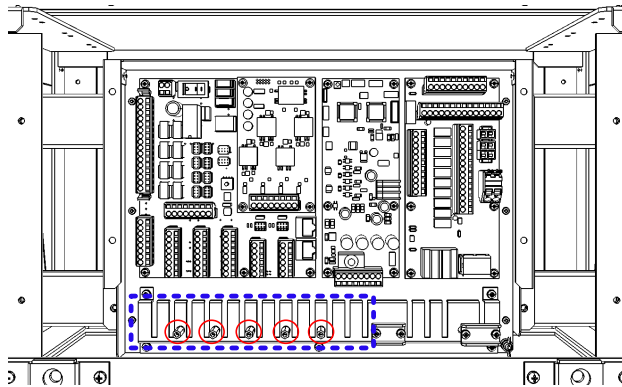
3.7.8 Connection with Analog Sensors

CMJ-560(AOC) should be connected to TB801 of CMH-2370(SLC) when connecting the Analog Sensors. CMJ-560 can connect to 4 Analog Sensors.

Analog Sensors should be connected to J842 (Ch1:1-2pins, Ch2:3-4pins, Ch3:5-6pins, Ch4:7-8pins).



- Wiring to AOC J842
 - 1 : channel 1 sensor input+
 - 2 : channel 1 sensor input-
 - 3 : channel 2 sensor input+
 - 4 : channel 2 sensor input-
 - 5 : channel 3 sensor input+
 - 6 : channel 3 sensor input-
 - 7 : channel 4 sensor input+
 - 8 : channel 4 sensor input-
- Connect the cable shield to the hex spacer surrounded by the circle in the figure below.
(Recommended crimp terminals V5.5)



So that the braided shield is not shorted to the power supply terminal block, please insulate the cable and fix with cable tie. Please put the Extra length of the cable to the bottom of the display unit so that the not shorted to the UPS or SENSOR LAN switch unit.

Set the TB2-TB7, refer to the description from the next page.

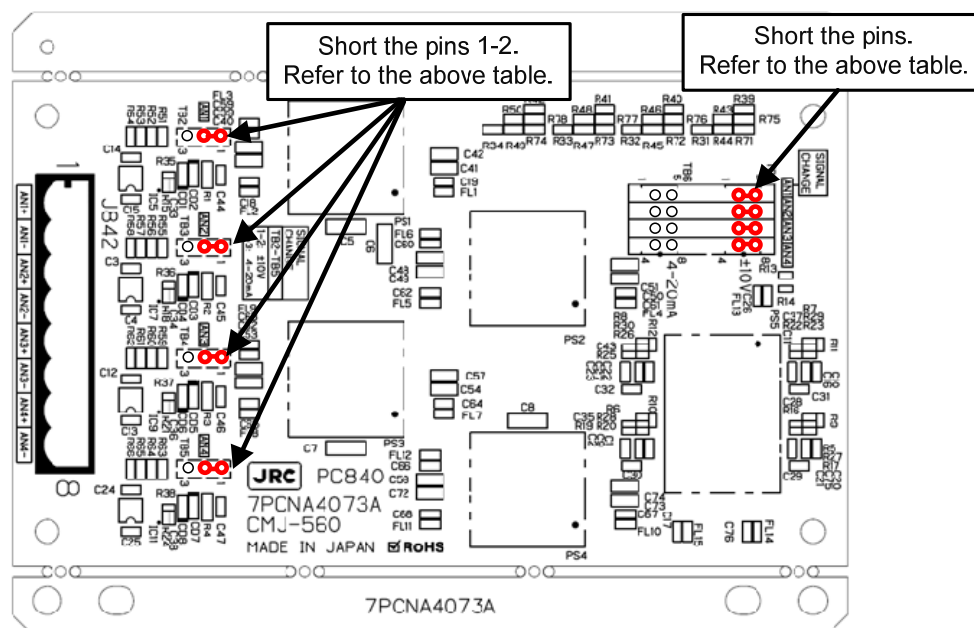
According to the output specifications of Analog Sensors, set as follows.

【Setting for Voltage Signal Input】

When Analog Sensors output specifications is Voltage, set as follows.

• Input Signal Range : -10V~+10V

Setting Table of Voltage Signal Input		
Channel	Reference	Setting
1	TB2	Short-circuit the pins 1-2 or Open all pins
	TB7	Short-circuit the pins 1-5
2	TB3	Short-circuit the pins 1-2 or Open all pins
	TB7	Short-circuit the pins 2-6
3	TB4	Short-circuit the pins 1-2 or Open all pins
	TB7	Short-circuit the pins 3-7
4	TB5	Short-circuit the pins 1-2 or Open all pins
	TB7	Short-circuit the pins 4-8

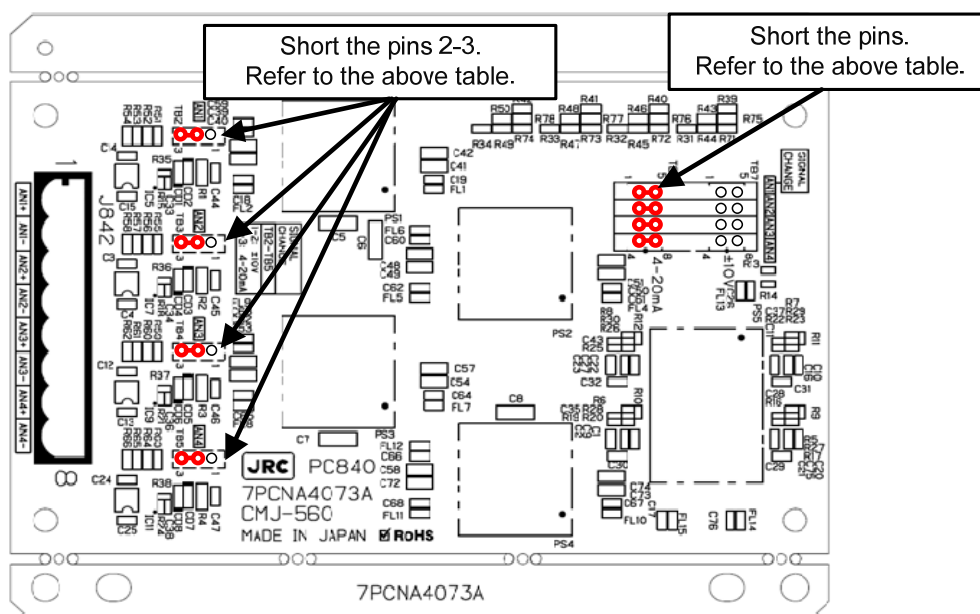


【Setting for Current Signal Input】

When Analog Sensors output specifications is Current, set as follows.

• Input Signal Range : 4mA~20mA

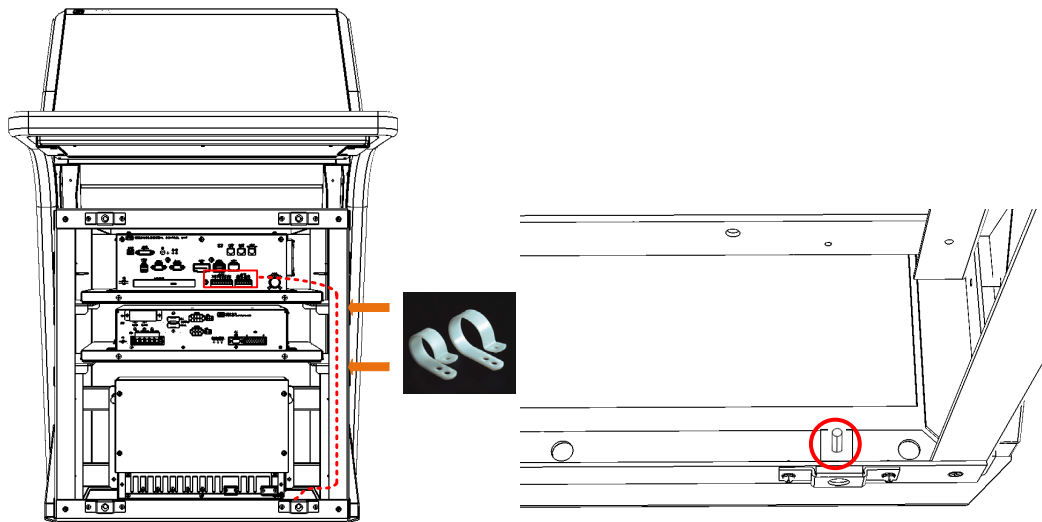
Setting Table of Current Signal Input		
Channel	Reference	Setting
1	TB2	Short-circuit the pins 2-3
	TB6	Short-circuit the pins 1-5
2	TB3	Short-circuit the pins 2-3
	TB6	Short-circuit the pins 2-6
3	TB4	Short-circuit the pins 2-3
	TB6	Short-circuit the pins 3-7
4	TB5	Short-circuit the pins 2-3
	TB6	Short-circuit the pins 4-8



3.7.9 Backup of sensor signal

There is a receiving port (J4302, J4303) for sensor signal backup on the NDC-1590 Center Control Unit. Wire as follows if necessary.

- 1)Strip the signal cable exterior about 80cm. And wire as shown in the figure below.
- 2)Fix the cable to the cable tie clip by the two point refer to shown below.(Refer to figure below)
- 3)Crimp a round terminal to the cable shield. (Recommended crimp terminals V5.5) And fix it to the bolt on the bottom of the frame.



 So that the braided shield is not shorted to the power supply terminal block, please insulate the cable and fix with cable tie. Please put the Extra length of the cable to the bottom of the display unit so that the not shorted to the UPS or SENSOR LAN switch unit.

Please connect the sensor to refer to the table on the next page.

Table 3-19 Terminal assign of J4303

Signal Name		I/O	Specification	Detail
GPS-RX	A	IN	IEC61162-1 A	GPS backup signal
	B	IN	IEC61162-1 B	
SDME-RX	A	IN	IEC61162-1 A	SDME backup signal
	B	IN	IEC61162-1 B	
PWR FAIL	+	—	Contact out Normal-Close	Refer to 3.10 Connection with BNWAS
	-	—		
WMRST	+	—	Contact out Normal-Open	
	-	—		

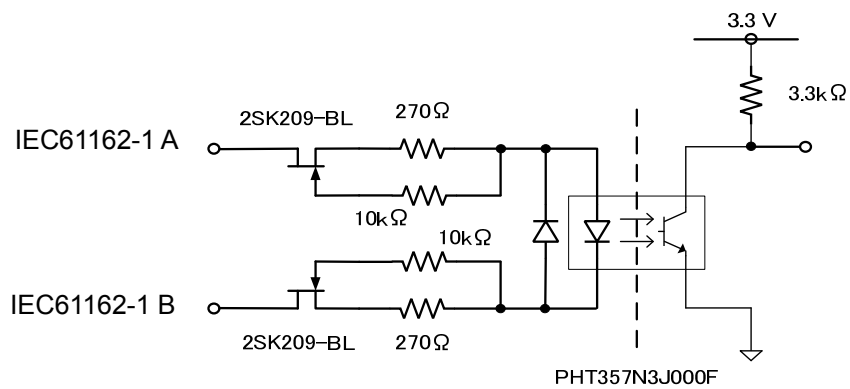


Fig 3-39 IEC61162-1 Input circuit diagram

Table 3-20 Terminal assign of J4302

Signal Name		I/O	Specification	Detail
AIS-RX	A	IN	IEC61162-2 A	AIS backup signal
	B	IN	IEC61162-2 B	
	C	—	IEC61162-2 C	
GYRO-RX	A	IN	IEC61162-2 A	GYRO backup signal
	B	IN	IEC61162-2 B	
	C	—	IEC61162-2 C	

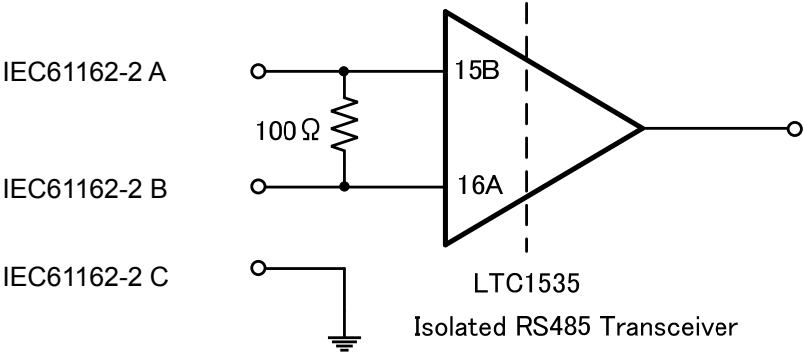


Fig 3-40 IEC61162-2 Input circuit diagram

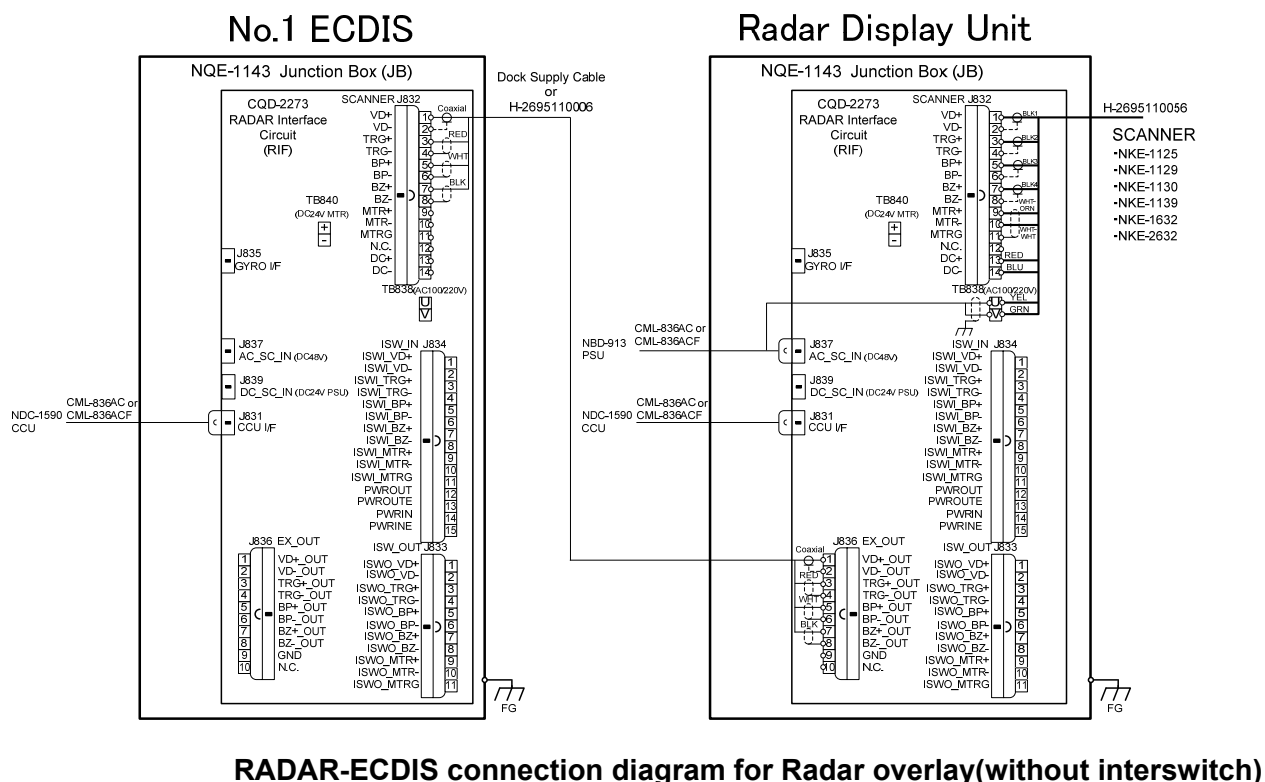
3.8 Connection with ECDIS

3.8.1 Radar Overlay

Connection for the radar overlay is different depending on the presence or absence of NQE-3141 inter-switch.

Interswitch	Connection of JMR-9200/7200 Series and JAN-9201,JAN-7201	Connection of JMR-9200/7200Series and JAN-901/901M/701, JAN-2000 or third party ECDIS.
When there is no interswitch (Can connect only one ECDIS)	Connect the CQD-2273 Radar I/F Circuit J836 EX_OUT (RADAR side) and J832 SCANNER (ECDIS side). Refer to the below figure.	Connect the CQD-2273 Radar I/F circuit J836 EX_OUT (RADAR side) VD+_OUT, VD-_OUT, TRG+_OUT, TRG-_OUT, BP+_OUT, BP-_OUT, BZ+_OUT, BZ-_OUT and VD,TRG,BP,BZ signal input terminal (ECDIS side).
When there is a interswitch (Can connect two or more ECDIS)	Connect via the NQE-3141-4A/8A Interswitch. Refer to the 5.1 Installation of Interswitch Unit and 5.1.3 NQE-3141-4A Inter-board connection diagram.	

When do the radar overlay without interswitch, connect the VD, TRG, BP, BZ terminal as follow.



When need to connect the two or more ECDIS, use the interswitch.

3.8.2 Target Tracking

Connection for the target tracking is different depending on the ECDIS model. Refer to the below table.

Receiver of the target tracking information	Output Specification	Connection
JAN-9201, JAN-7201	LAN	Connect the RADAR output the target tracking information and ECDIS via the NQA-2443 SENSOR LAN SW.
JAN-901B/701B, JAN-901/901M/701, JAN-2000 or third party ECDIS	Serial	Target tracking information is output from CMH-2370 Serial LAN interface circuit(RADAR side). Connect the CMH-2370 and ECDIS with the Serial.

On both the LAN and Serial, need to set the software. Refer to **Chapter4 Initial Setting**.

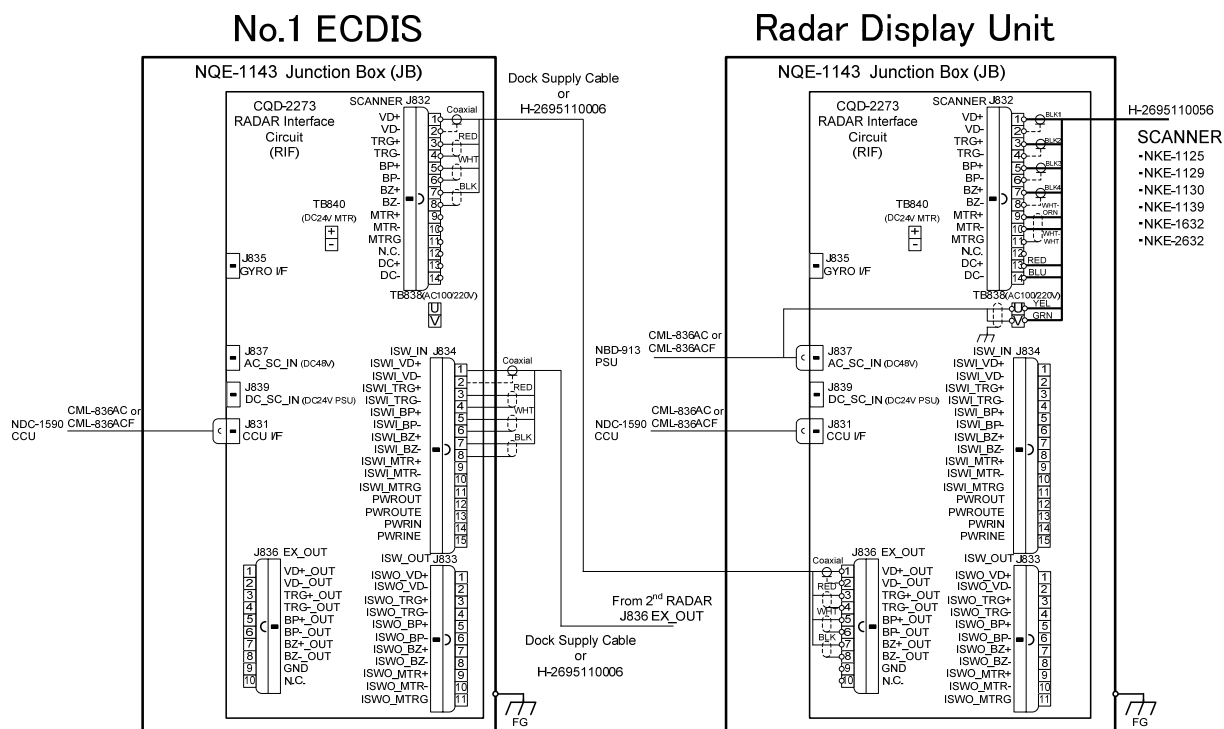
3.9 Connection with RADAR

3.9.1 Radar Overlay

When the JMA-9100/7100, JMA-5300MK2, JMA-900B or third party RADAR overlay the echo to the JAN-9201.7201, connection for the radar overlay is different depending on the presence or absence of NQE-3141 inter-switch. Refer to the below table.

Interswitch	Connection of JAN-9201/7201 and JMR-9200/7200Series	Connection of JAN-9201/7201 and JMA-9100/7100, JMA5300MK2, JMA-900B or third party RADAR
When there is no interswitch (Can connect Maximum two ECDIS)	Connect the CQD-2273 Radar I/F circuit J836 EX_OUT (RADAR side) and J832 SCANNER (ECDIS side) Second ECDIS: Connect to the J834 ISW_IN (ECDIS side) (Refer to figure below)	Connect the CQD-2273 Radar I/F circuit VD, TRG, BP, BZ output terminal and J832 SCANNER (ECDIS side) VD+,VD-,TRG+,TRG-,BP+,BP-,BZ+,BZ- . Second ECDIS: Connect to the J832 ISW_IN (ECDIS side) ISWI_VD+, ISWI_VD-, ISWI_TRG+, ISWI_TRG-, ISWI_BP+, ISWI_BP-, ISWI_BZ+, ISWI_BZ- .
When there is a interswitch (Can connect two or more RADAR)	Connect via the NQE-3141-4A/8A Interswitch. Refer to the 5.1 Installation of Interswitch Unit and 5.1.3 NQE-3141-4A Inter-board connection diagram. Third party RADAR cannot connect to the Interswitch.	

When do the radar overlay without interswitch, connect the VD, TRG, BP, BZ terminal as follow.



When need to connect the three or more RADAR, use the interswitch.

3.9.2 Target Tracking

Connection for the target tracking is different depending on the RADAR model. Refer to the below table.

Receiver of the target tracking information	Output Specification	Connection
JMR-9200/7200 Series	LAN	Connect the RADAR output the target tracking information and ECDIS via the NQA-2443 SENSOR LAN SW.
JMA-9100/7100, JMA-5300MK2, JMA-900B or Third party RADAR	Serial	Connect the target tracking information from JMA-9100/7100, JMA-5300MK2, JMA-900B or third party RADAR to the IEC61162-1 RX terminal on the SLC(ECDIS side).

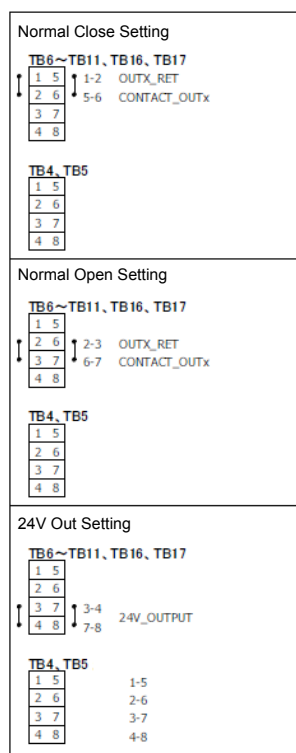
On both the LAN and Serial, need to set the software. Refer to **Chapter4 Initial Setting**.

3.10 Connection with BNWAS

The display unit of this product has the function to input/output the various contact signals for the Bridge Navigational Watch Alarm System (BNWAS*). Connect necessary signals by referring to the table below.

Terminal block	Signal name	Direction	Description	Notes
CMH-2370 SLC J8108	SYS ALM	OUT	System alarm status is outputted.	Set to jumper normal open or Close *1
CMH-2370 SLC J8108	ARPA ALM	OUT	Dangerous ship alarm status is outputted.	Set to jumper normal open or Close *1
NDC-1590 J4303	PWR FAIL	OUT	AC Low Voltage is detected. DC24V must be connected to NBD-913 for system backup.	Normal-Close
CMH-2370 SLC J8107	SYS ACK	IN	Acknowledge input of system alarm.	"False" indicates Open or Disconnection and "True" indicates Closed.
CMH-2370 SLC J8107	ARPA ACK	IN	Acknowledge input of Dangerous ship alarm.	"False" indicates Open or Disconnection and "True" indicates Closed.
CMH-2370 SLC J8108	ACK OUT	OUT	Acknowledge output of alarms.	Set to jumper normal open or Close *1
NDC-1590 J4303	WMRST	OUT	Watch Man alarm reset signal.	Normal-Open

*1 Serial LAN interface circuit jumper setting



(*) BNWAS

Bridge Navigation Watch Alarm System

3.11 Ground Connection

All sorts of pulse circuits are built in this equipment. They radiate a high-frequency component of Pulse wave as an electromagnetic wave from their circuit itself or cables between the equipment And might interfere as receiver noise by connecting with a receiving antenna or cable of radio Communication equipment. A general effective method is shown as follows as a measure to counter interference for this kind of case.

3.11.1 Shield for Equipment

Covers for the purpose of shielding are installed where they are necessary on each component of this equipment. Tighten up screws on the equipment thoroughly not to reduce their effect.

3.11.2 Cables for Equipment

Always use specified cables for the connection between components.

Pay enough attention to the connection of cables and processing their end portion.

So that the braided shield is not shorted to the power supply terminal block, please insulate the cable and fix with cable tie. Please put the Extra length of the cable to the bottom of the display unit so that the not shorted to the UPS or SENSOR LAN switch unit.

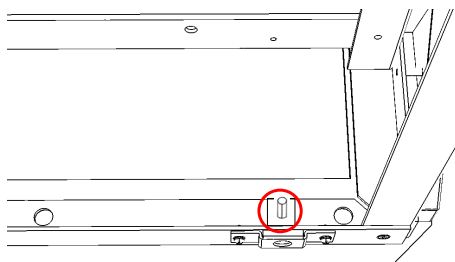
3.11.3 Mounting Location

The equipment is shielded sufficiently, but not completely. Set up very carefully a surrounding cable etc. when you set up the equipment.

3.11.4 Grounding

Ground the equipment to the nearest hull earth terminal though it might not be an effective method because the state changes considerably by the structure of the hull and the position of radio equipment in relation to this equipment. At the same time, ground the problematic radio equipment by the shortest distance, too

When installing the stand alone type, copper plate have been attached to the Display Unit Mount Kit. Fasten the copper plate to the unpainted position surrounded by the circle in the figure below and ground the copper plate to the hull earth.



Display Unit Mount Kit grounding position

3.12 Installation of Power Cable

WARNING



Before installing power cable, always make sure to turn off the circuit breaker of main power line. Otherwise, it may cause an electric shock or malfunction.

3.12.1 Input Voltage Specification

•AC-Input

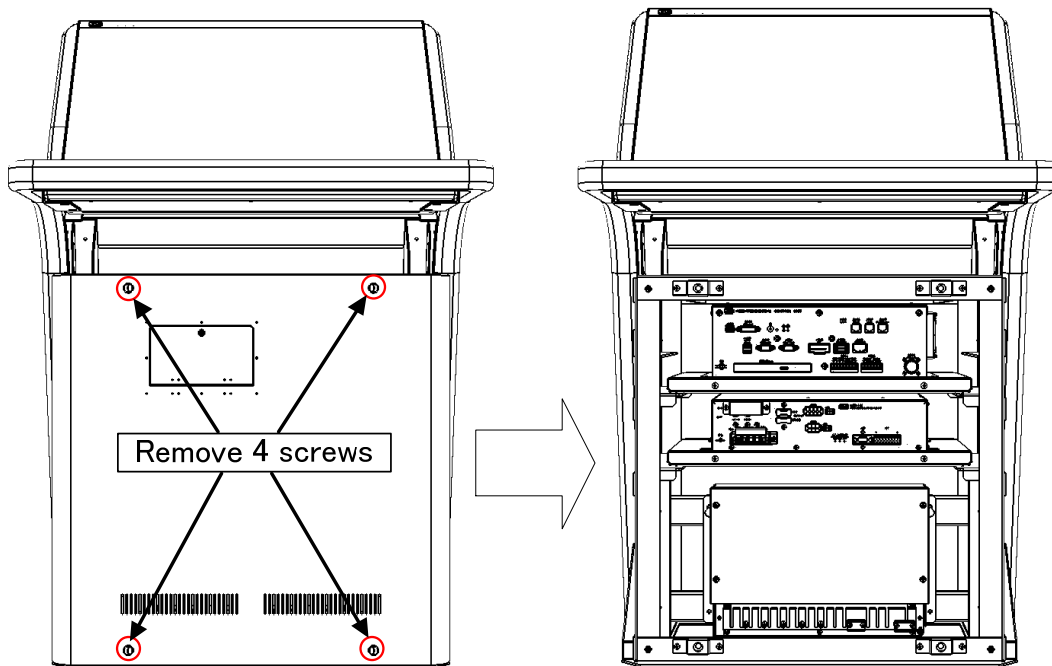
Voltage	: 100 to 115VAC, 220 to 240VAC
Voltage ranges	: 85 to 264VAC
Overvoltage Protection	: 295VAC $\pm$ 2V,
Frequency	: 50Hz/60Hz
Input Current	: Max 6.8A(100VAC)/3.4A(220VAC)
Over current Protection	: equipped

•DC-input

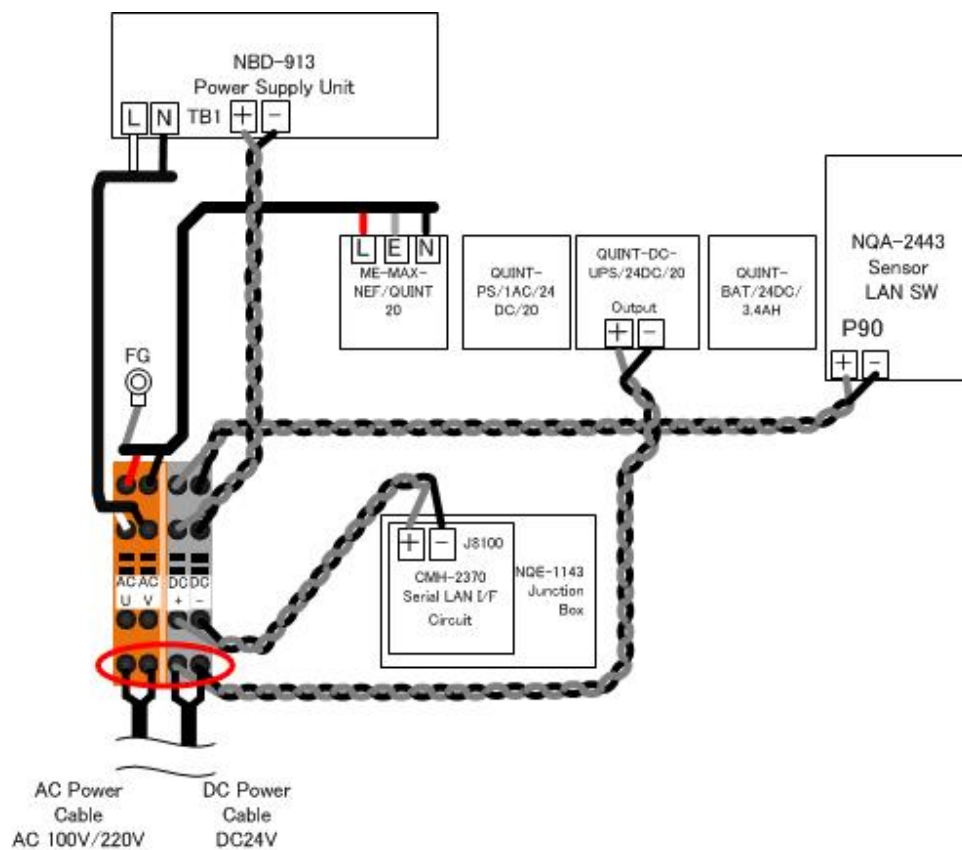
Voltage	: 24VDC
Voltage ranges	: 21.6 to 31.2VDC
Overvoltage Protection	: 42V
Input Current	: Max 16A
Over current Protection	: equipped

3.12.2 Connecting Power Cable

- 1) Remove 4 screws of the front cover in processing unit.



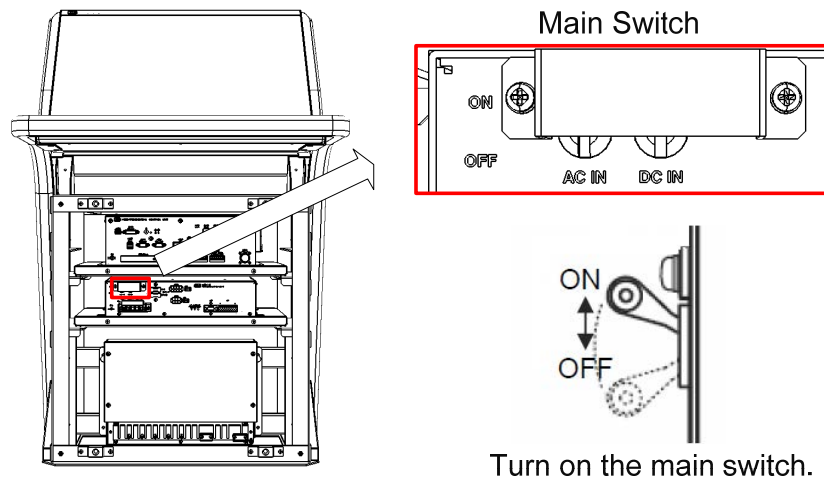
- 2) After confirming the circuit breaker of the main power line is "OFF", connect the AC power cable to the AC-U and AC-V terminal on the CQD-2312 Relay terminal. Also, DC power cable connect to the DC+ and DC- terminal on the Relay terminal. Refer to figure below.



3.13 Initialization for the specified model

The initialization of the following is necessary to use when the equipment will be shipped from the stock of the each unit. Turn on the AC/DC circuit breaker (refer to the figure below). And proceed to Chapter 4.

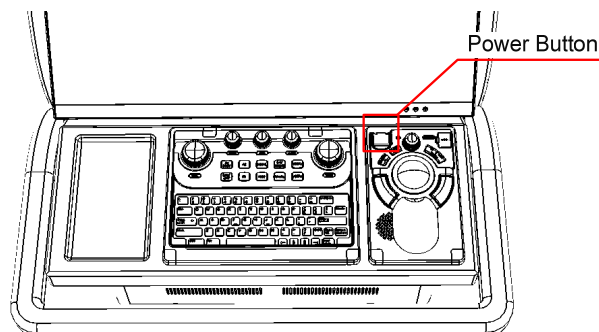
- 1) Connect the USB flash drive included initialization tool to the Display Unit. And turn on both AC and DC.



- ⚠ Before turn on the Display Unit, please make sure that wired correctly.
- ⚠ The initializaiton tool is autorun. When connect the USB flash drive, initialization tool is executed.
- ⚠ Can not use the USB flash drive have the security function.
- ⚠ For the details that how to obtain the data files for NDC-1590-CCU, please contact our head office or a nearby branch or local office beforehand.

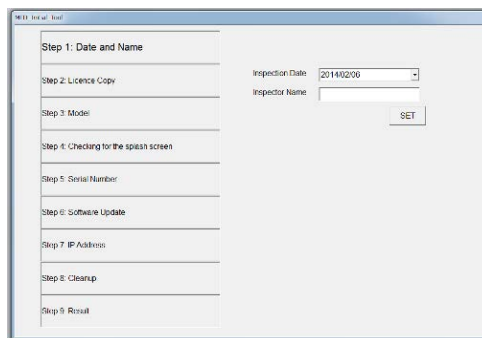
- 2) The system is turned on automatically only after the first time turning on the main switch. And after a few seconds, the system of the power is down and up automatically. This is a normal behavior. Go to next step.

When the system will not boot up, check the ship's main and the main switch of PSU and press the power button on the trackball operation unit.

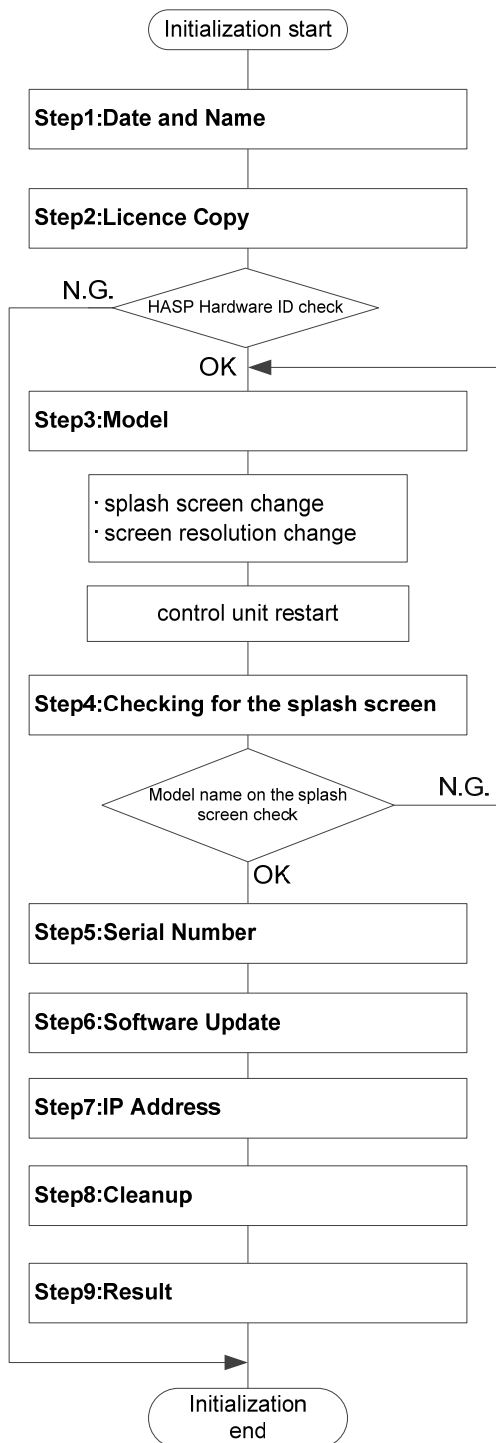


- 3) Initialization tool is started.

3) Initialization tool is started.



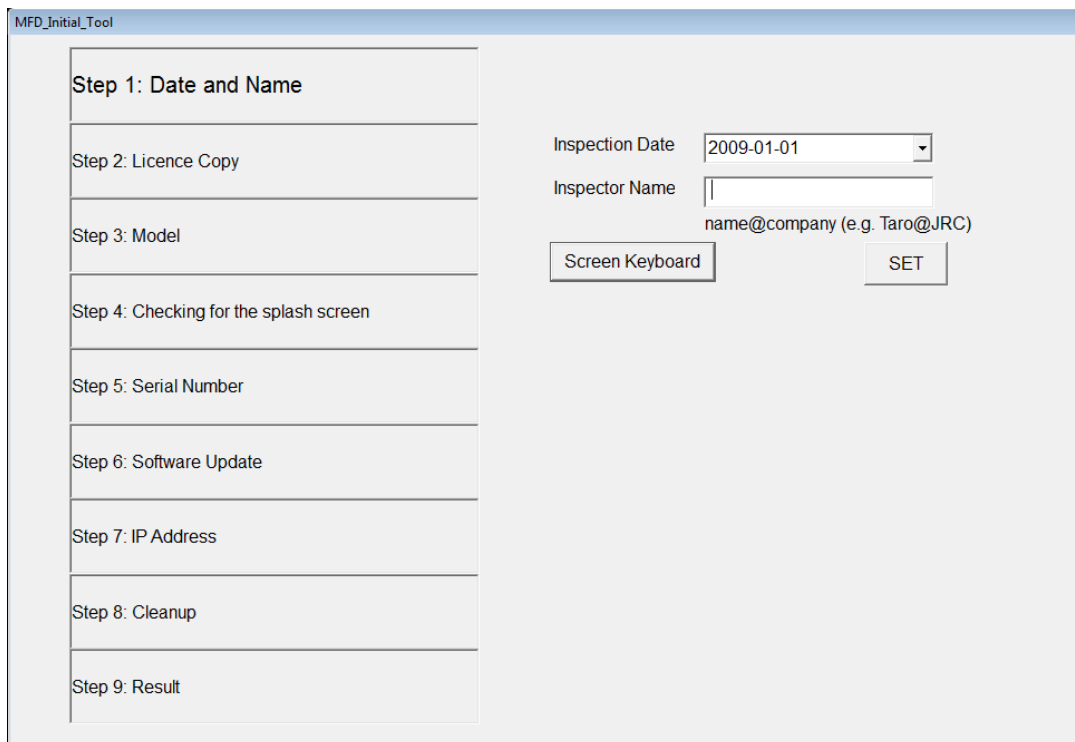
The following describes the outline of Initialization tool.



4) Initialize according to the following procedures before using the equipment.

Step1: Date and Name

Input the inspector date, inspector name. And then click the [SET] button.



The screenshot shows the 'MFD_Initial_Tool' window. On the left, there is a vertical list of steps: Step 1: Date and Name, Step 2: Licence Copy, Step 3: Model, Step 4: Checking for the splash screen, Step 5: Serial Number, Step 6: Software Update, Step 7: IP Address, Step 8: Cleanup, and Step 9: Result. Step 1 is currently selected. On the right, there are input fields for 'Inspection Date' (a dropdown menu showing '2009-01-01') and 'Inspector Name' (a text box). Below the text box is a hint: 'name@company (e.g. Taro@JRC)'. At the bottom right, there are two buttons: 'Screen Keyboard' and 'SET'.

Step2: Licence Copy

The Hardware ID of HASP is compared with the Hardware ID in the licence file.

If they match, the licence file is copied over.

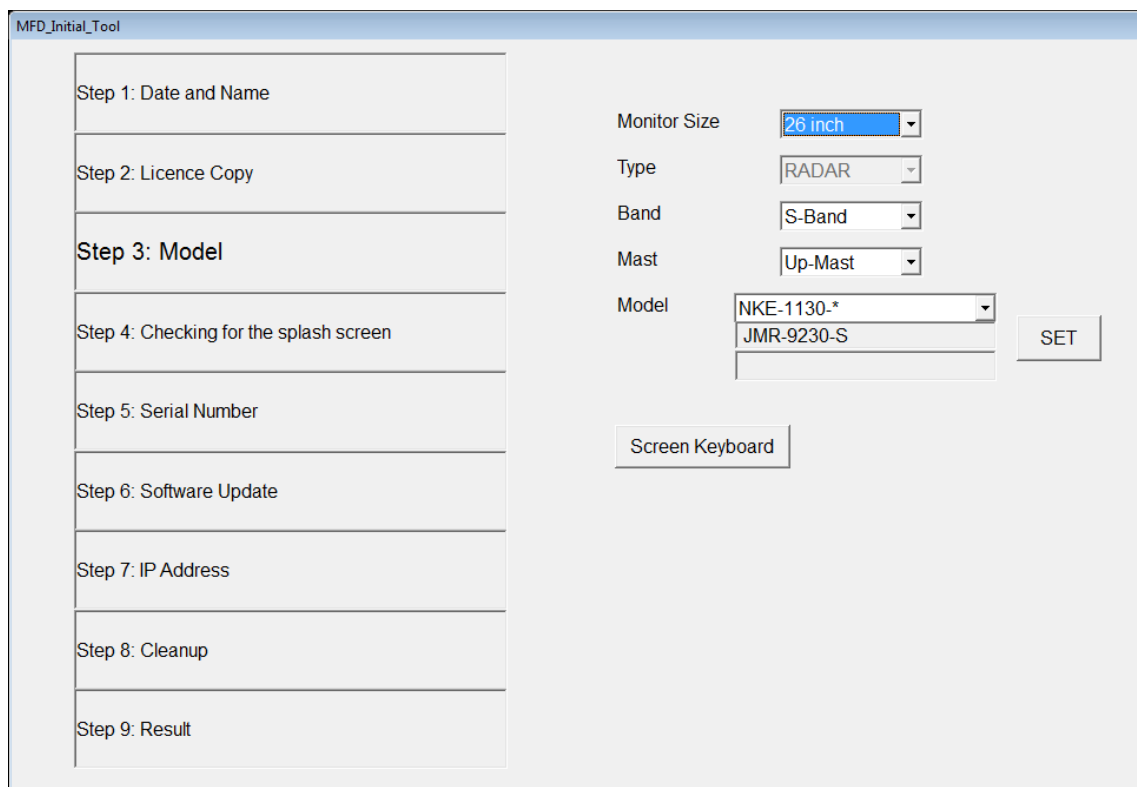
HASP: Hardware Against Software Piracy (included NDC-1590 Central Control Unit)

If they mismatch, following dialog is displayed.



Step3: Model

Select each item from the drop-down list. Model name is displayed in the Model window. And then click the [SET] button.

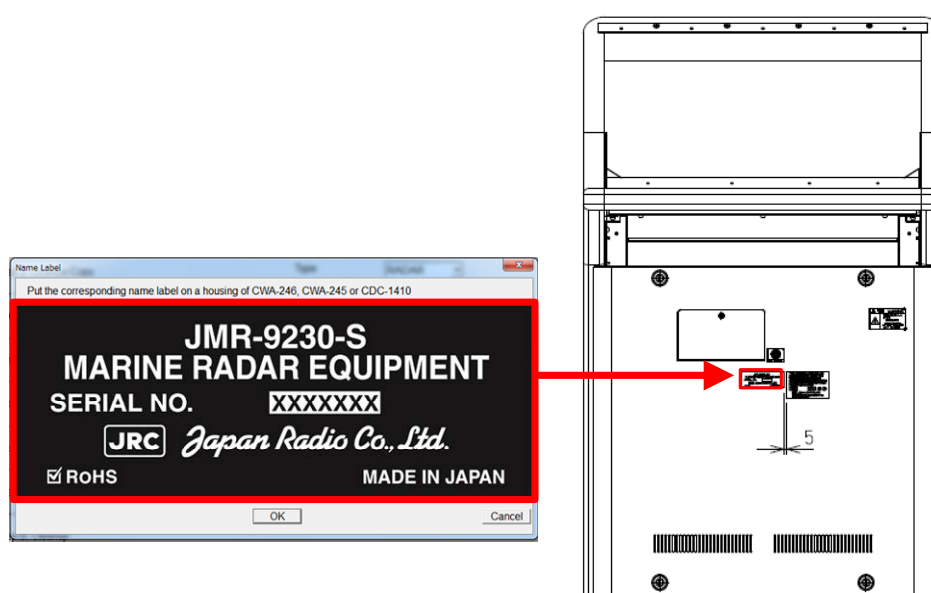


After clicking the [SET] button, the following image is displayed.

a) When installing the stand alone type

Paste the Name Label same as the image to the position shown in the figure below.

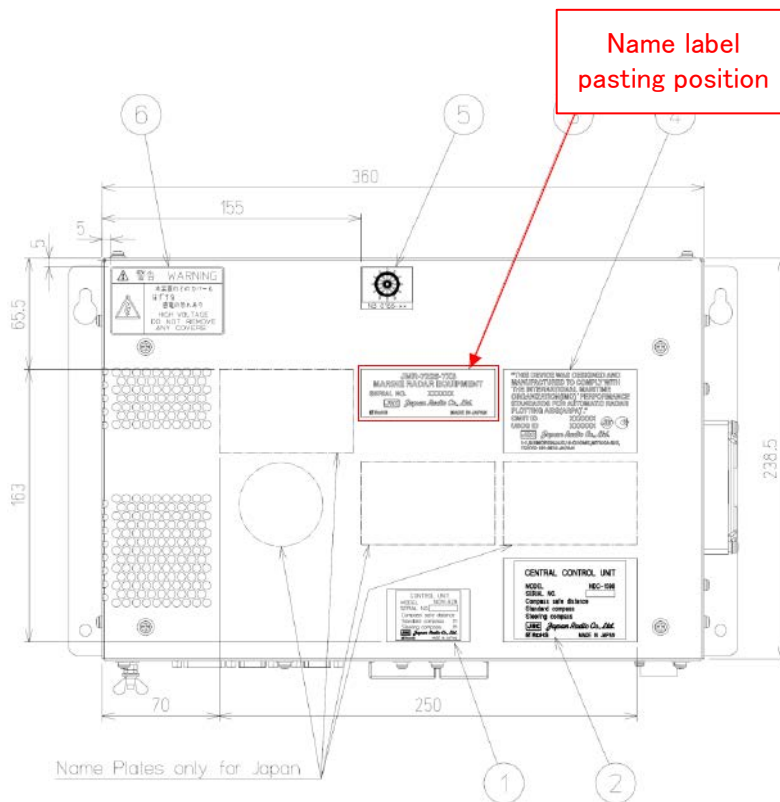
All model name label each two have been attached to the display unit. Please discard the label which model name does not match or remained.



In case of JMR-9230-S

b) When installing the desktop type or flush mount type

All model name label each two have been attached to the display unit. Paste the Name Label same as the image to the position shown in the figure below. Back the other label of the same model name to the bag and attach the bag to the NDC-1590. Please discard the label which model name does not match.



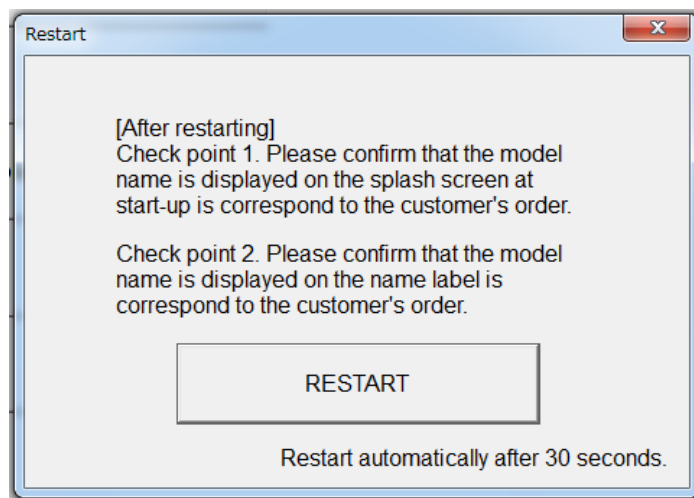
After pasting, please press the [OK] button. The following screen is displayed and start-up screen will be changed automatically. It will take a few minutes to process. Please press any key because it is a key input required at the end. After processing, please press any key because key input required at the end. Resolution and splash screen is automatically changed, and then the following dialog is displayed.

```

C:\Windows\system32\cmd.exe
wallpapers\1920x1200_JMR-9230-S.merged
ASIC1 Install
Command Table Make
Flash Memory Writer
File Name is ..\data\tabledata0.bin
Interrupt configure %d1
Interrupt configure %d1
Interrupt configure %d1
Interrupt configure %d1
log 0
list
open 1
Load target binary.
fsize:2052
len=2052
Load writer.
Interrupt configure %d1
Kick the programmer.
Interrupt configure %d1
Please wait 10 sec

```

Then the following screen is displayed. Make sure that the model name that appears during a restart and model name selected in step 3 matches.

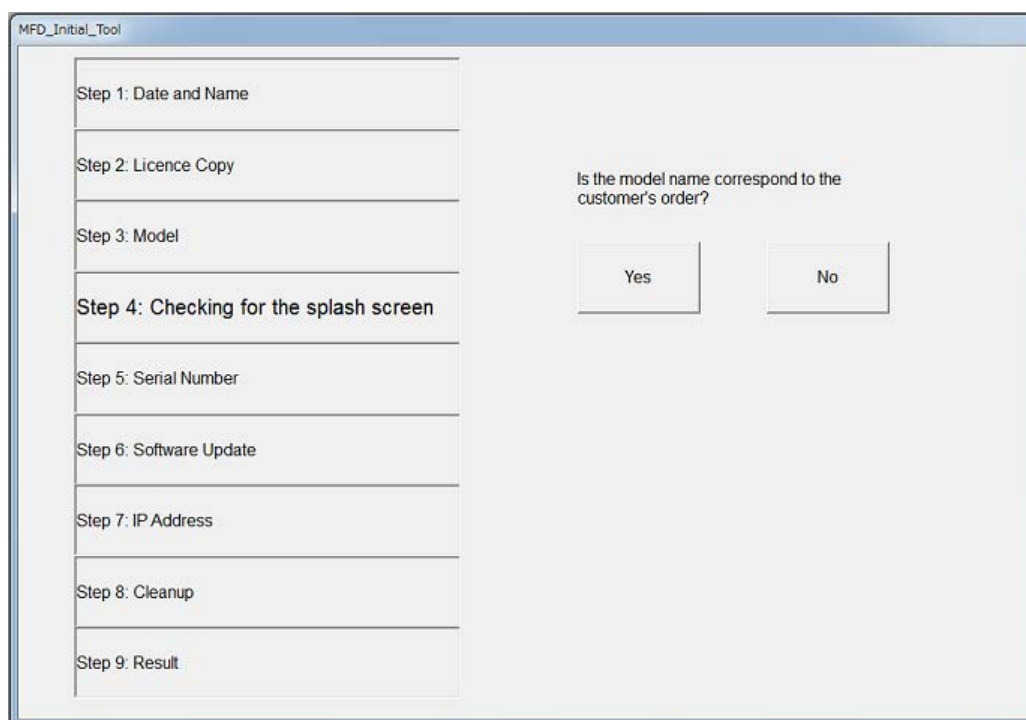


Restart by clicking the [RESTART] button. Or restart automatically after 30 seconds.

Step4: Checking for the splash screen

After restarting, the following dialog is displayed. Confirm that the Model name displayed on the splash screen and the Name Label pasted in step 3 is match.

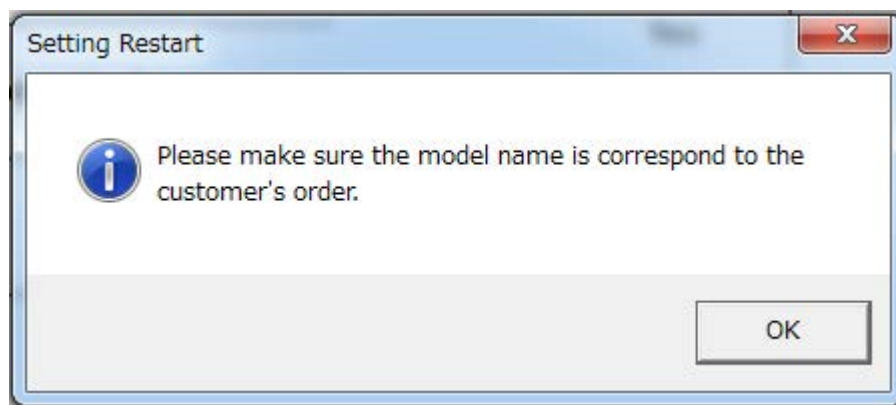
- When the model name matched, click the [Yes] button. Proceed to the next step.



- When the model name mismatched, click the [No] button.

Initialization tool will return to the screen of step3. Please check the equipment information again.

The following dialog is displayed. Peel off the Name Label pasted in step 3, and then click the [OK] button.

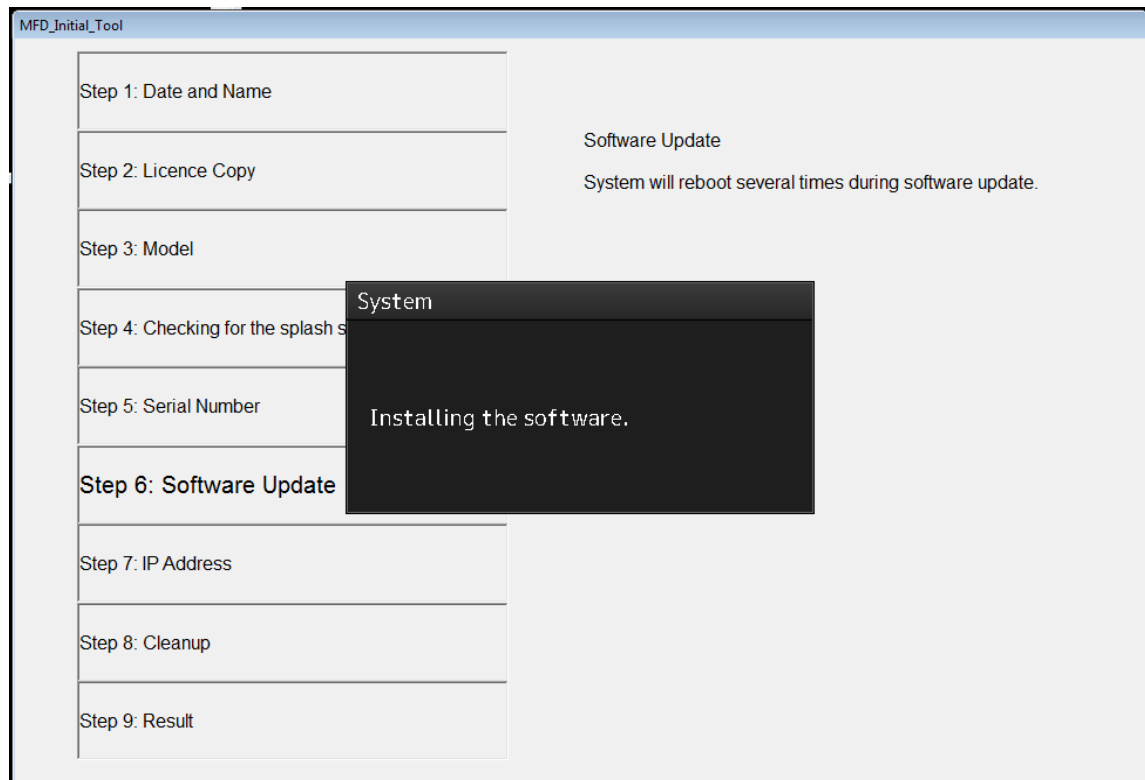
**Step5: Serial Number**

The following dialog is displayed. Input the serial number of each unit. And then click the [SET] button.

- Please make sure that serial number and manufacturing number indicated are matched.
- When setting the desktop type or flush mount type, may not enter the serial number of the monitor.
- When input the JB(Junction box) serial number , enter the barcode number and suffix of JB.
- May not enter the serial number of SLC, AOC, GIF, RIF, SLC#2.

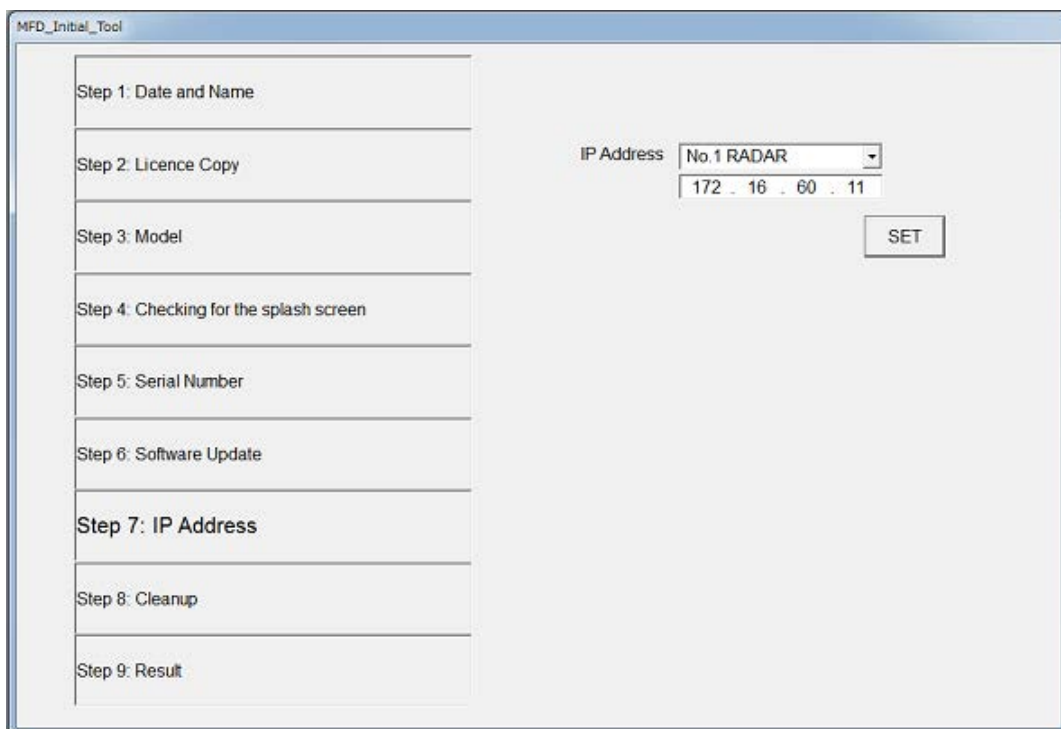
 The MFD_Initial_Tool window shows a sequence of steps on the left and input fields on the right. The steps are: Step 1: Date and Name, Step 2: Licence Copy, Step 3: Model, Step 4: Checking for the splash screen, Step 5: Serial Number (highlighted), Step 6: Software Update, Step 7: IP Address, Step 8: Cleanup, and Step 9: Result. The input fields for Step 5 are: Serial Number, Monitor Unit, Keyboard Operation Unit (*option), Scanner Unit (with a dropdown menu showing "NKE-1130.*"), Transmitter Receiver unit (with a dropdown menu showing "NTG-3230"), JB (with a dropdown menu showing "NQE-1143" and a suffix dropdown showing "-R"), SLC, AOC, GIF, RIF, SLC#2, and Central Control Unit. A "SET" button is located at the bottom right.
Step6: Software Update

Update is started. It takes several ,minutes. Display unit will restart several times during the software update. This is normal behavior.



Step7: IP Address

Set the IP Address by selecting the Unit No. from dropdown list, and then click the [SET] button.

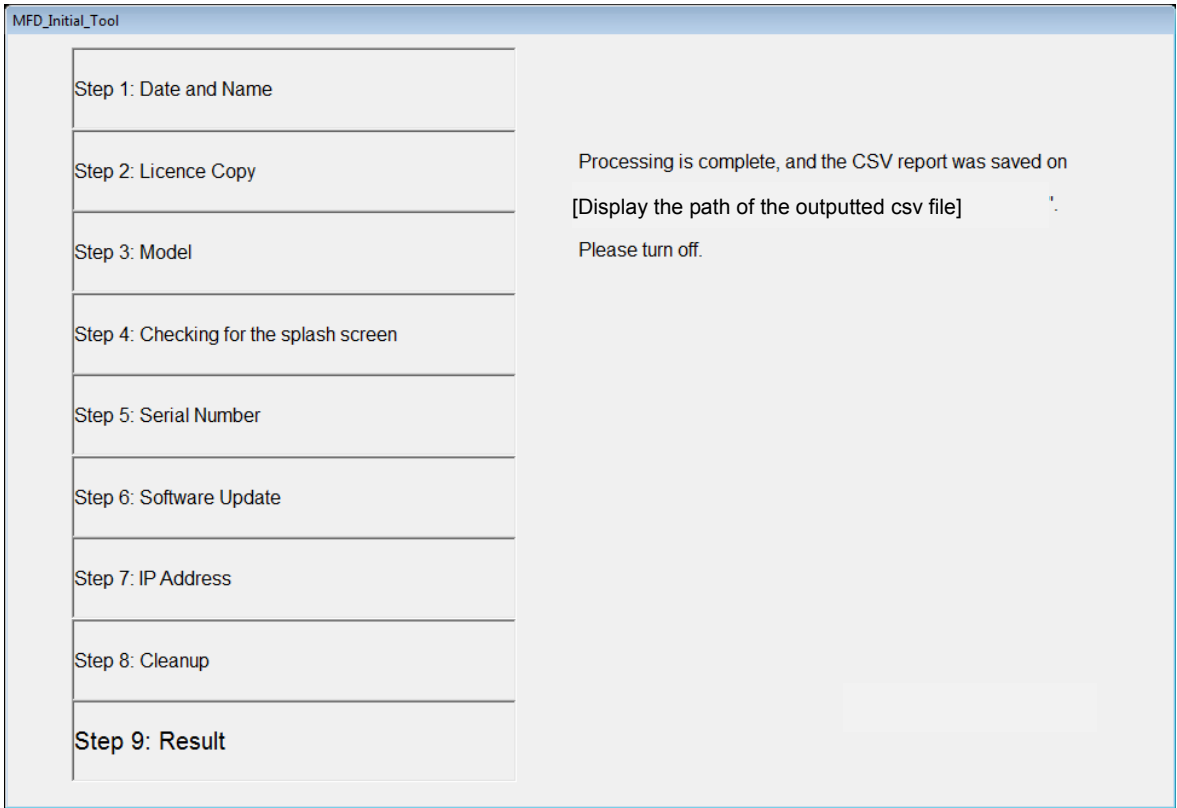


Step8: Cleanup

The tool deletes unnecessary files automatically.

Step9: Result

Click the [FINISH] button. The resulting CSV file is output.



The initialize ends above.