







## NAVpilot-700/711/711C VOLVO IF KIT FAP-6300 YAMAHA HM IF KIT FAP-6310 INSTALLATION INSTRUCTIONS





This information provides the instructions for the installation of the optional kit FAP-6300/6310. This kit enables the NAVpilot-700/711 to automatically steer a EVC system equipped vessel whose length is between 35 and 80 ft.

For the operation and installation of the autopilot, see documents below.

- NAVpilot-700/711: Operator's manual (OME-72720) and installation manual (IME-72720)
- NAVpilot-711C: Operator's manual (OME-72780) and installation manual (IME-72720)

Please read these safety instructions before you install or operate the equipment.

 <b>WARNING</b>	
	<p><b>Do not open the equipment unless you are well familiar with electrical circuits.</b></p> <p>Only qualified personnel should work inside the equipment.</p>
	<p><b>Do not lock the helm when the autopilot controls the vessel.</b></p> <p>Malfunction or accident can result.</p>
	<p><b>Do not use the autopilot in the following situations:</b></p> <ul style="list-style-type: none"> <li>- Cruising speed is more than 40 kn</li> <li>- Harbor entrance or narrow channel</li> <li>- Where vessels change course often, such as a cape or small island</li> <li>- Poor visibility areas because of the fog or rain, etc.</li> <li>- When the vessel is stopped</li> </ul>
	<p><b>Do not speed up suddenly when the autopilot controls the vessel.</b></p> <p>Do not raise the speed to 30-40 kn within 30 seconds. The autopilot can not calculate parameters under those conditions. Malfunction or accident can result.</p>
	<p><b>When an alarm sounds, switch the steering mode to the STBY mode and then control the vessel with the helm.</b></p> <p>Malfunction or accident can result if the vessel is steered automatically.</p>

 <b>CAUTION</b>							
	<p><b>For the heading sensor, use the PG-700.</b></p> <p>Use the rate gyro hybrid sensor (PG-700) for the heading sensor. Install the PG-700 away from metallic objects, radiotelephone, and the antenna of a radiotelephone. Malfunction or accident can result if the sensor is too close to those objects.</p>						
	<p><b>Do not input the heading data (output from the autopilot) to the radar, etc.</b></p> <p>The heading data output from the autopilot is delayed for max 1 second over the input data.</p>						
	<p><b>Follow the compass safe distances to prevent interference to a magnetic compass.</b></p> <table border="1" data-bbox="855 1464 1350 1592"> <thead> <tr> <th></th> <th>Standard Compass</th> <th>Steering Compass</th> </tr> </thead> <tbody> <tr> <td>IF-700IPS</td> <td>0.30 m</td> <td>0.30 m</td> </tr> </tbody> </table>		Standard Compass	Steering Compass	IF-700IPS	0.30 m	0.30 m
	Standard Compass	Steering Compass					
IF-700IPS	0.30 m	0.30 m					

### Notice for the discontinued model

The autopilot NAVpilot-711 is discontinued.



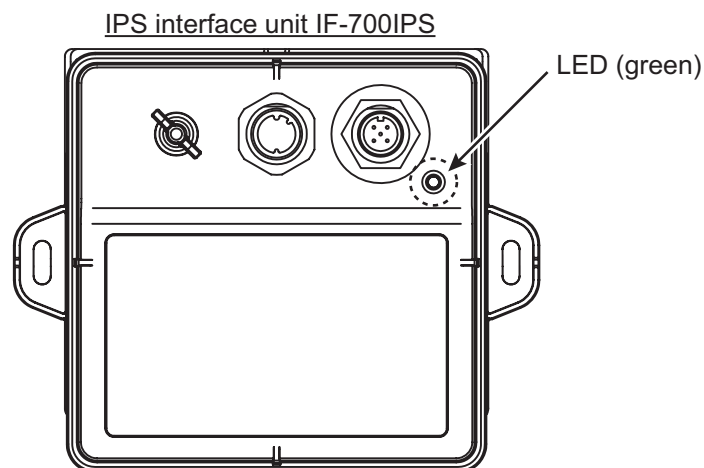
# 1. Materials

Name	Type	Code No.	Qty	Remarks
IPS Interface Unit	IF-700IPS	-	1	
VOLVO IPS Gateway	AUTOPILOT-GATEWAY	-	1	Gateway unit for FAP-6300
YAMAHA HM Gateway	YAMAHA-HM-GATEWAY	-		Gateway unit for FAP-6310
Cable Assy.	MJ-A7SPF0005-020C	000-159-699-10	1	2 m
Self-tapping Screw	4x16 SUS304	000-162-605-10	4	
Fuse	FGMB 125V 1A PBF	000-157-478-10	1	Spare parts

## 2. IPS Interface Unit (IF-700IPS)

### 2.1 LED status and meaning

The LED on the IPS interface unit indicates the status of the unit.



The LED status and meaning are shown below.

LED Lamp Status	Status/Action
Off	The IPS interface unit is OFF. The unit is powered by the processor unit (FAP-7002). Turn on the processor unit.
Flashes	The IPS interface unit operates normally.
Flashes twice, and then goes off for two seconds	Communication error between the gateway unit and IPS interface unit. Check the connection between the gateway unit and IPS interface unit.

## 2.2 Mounting

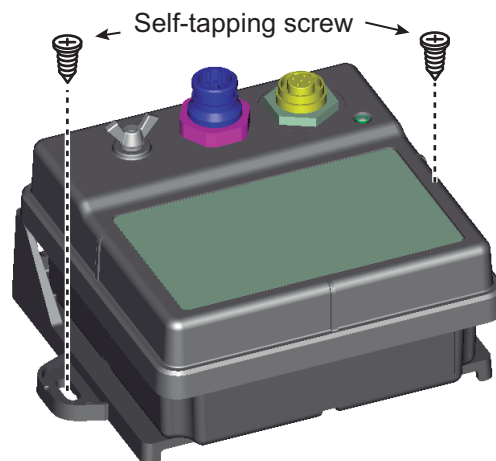
### Mounting considerations

When selecting a location, keep in mind the following points.

- Make sure the location is strong enough to support the unit under the conditions of continued vibration and shock normally encountered on the vessel.
- Locate the unit away from heat sources.
- The location must not be near water, rain and water splash.
- Follow the recommended maintenance space shown in the outline drawing.
- Follow the compass safe distance (standard compass: 0.30 m, steering compass: 0.30 m) to prevent interference to a magnetic compass.
- Connect the ground wire between the ground terminal and ship's earth.
- Keep in mind the length of the connection cable between the units.

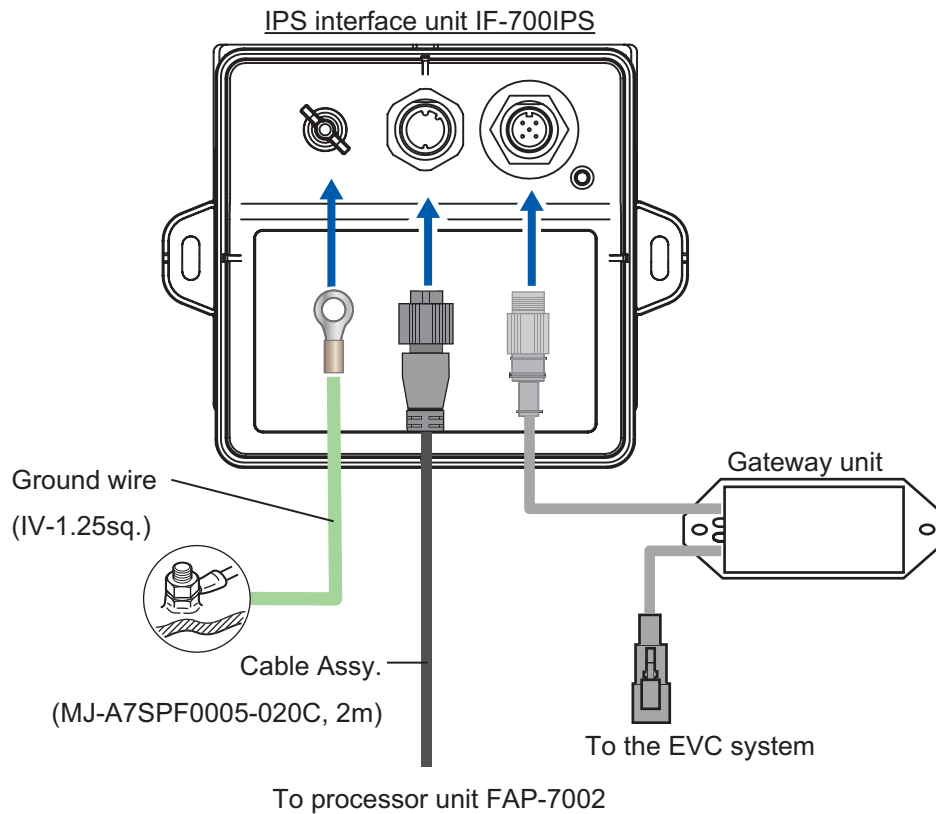
### Procedure

Install the unit with two self-tapping screws, on a bulkhead or desktop.



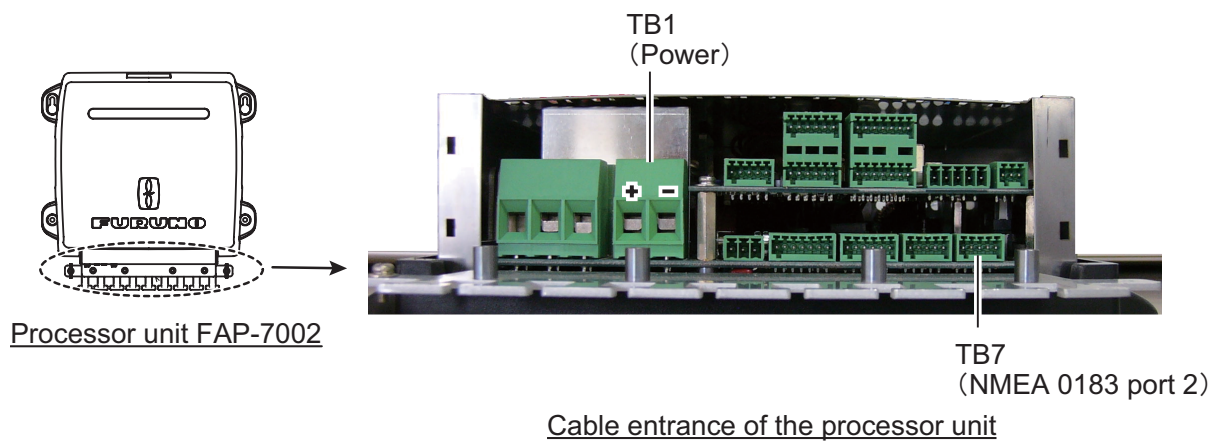
## 2.3 Wiring

Connect the cable assy. (MJ-A7SPF0005-020C) and gateway unit to the IPS interface unit as shown below.

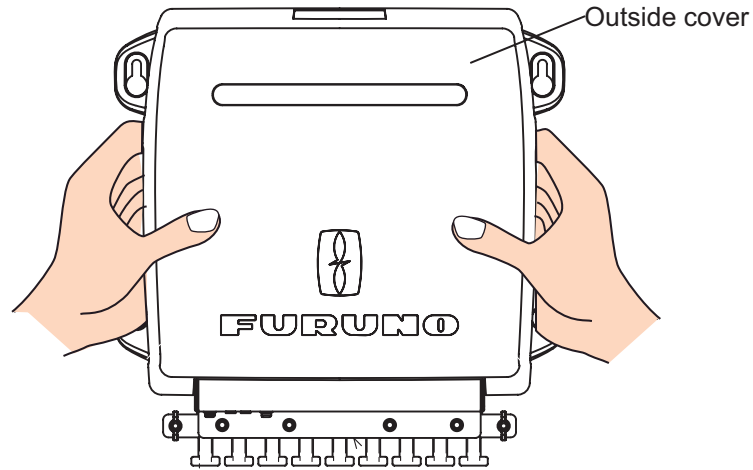


### Connection with the processor unit FAP-7002

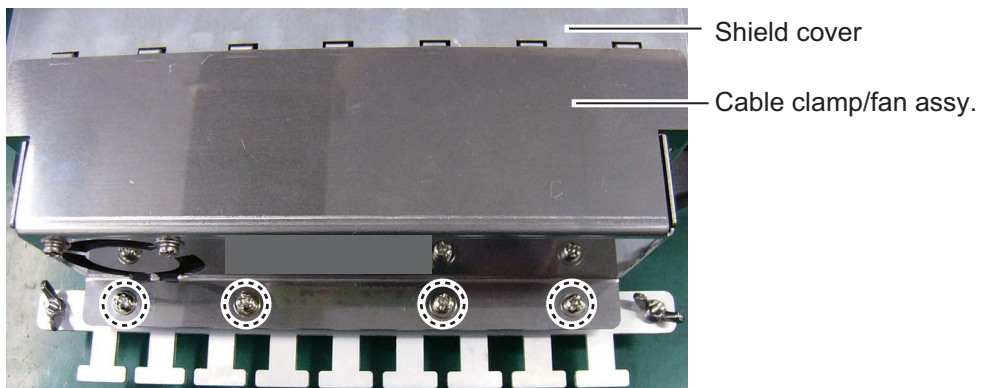
Connect the cable assy. (MJ-A7SPF0005-020C) to TB1 (power) and TB7 (NMEA0183 port 2) of the processor unit as shown in the procedure which follows.



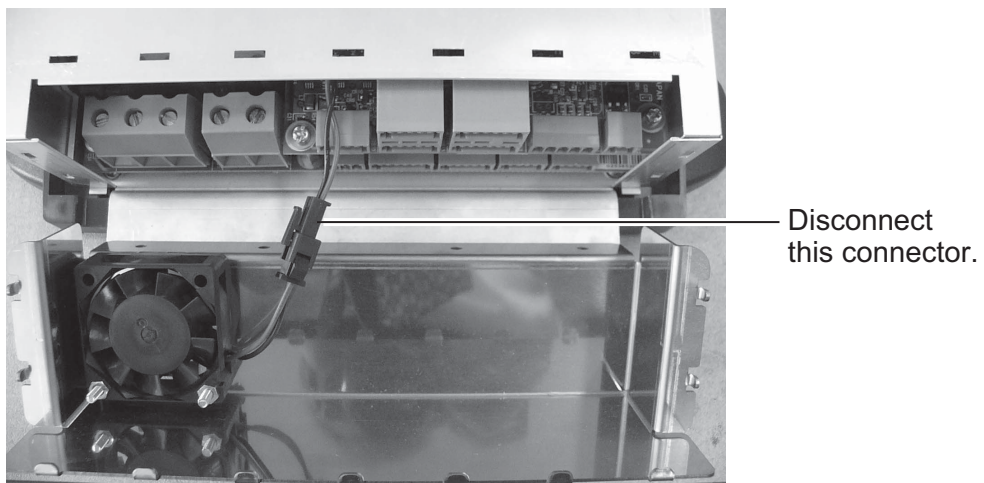
1. Remove the outside cover of the processor unit; hold the right and left sides of the cover and pull the cover outward.



2. Remove the four screws circled below.



3. Remove the cable clamp/fan assy. from the shield cover.  
**Note:** When removing the cable clamp/fan assy., be careful not to apply tension to the fan connector.
4. Disconnect the fan connector.



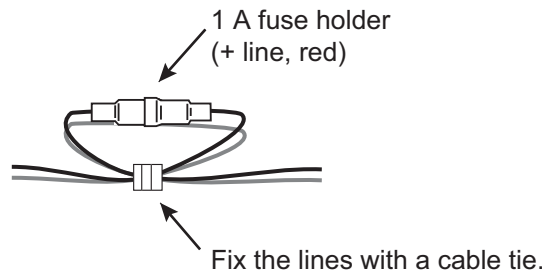
- Connect the cable assy. (MJ-A7SPF0005-020C) to the connector blocks TB1 and TB7.

Connection with TB1 (power)

Clamp the power line of the cable assy. and power cable of processor unit with the crimping terminal, and then connect the + line (red) and - line (black) to the TB1 of the processor unit. For the crimping terminal, use rod terminals or plate shape pre-insulation terminals.

**Note1:** Do not twist cores.

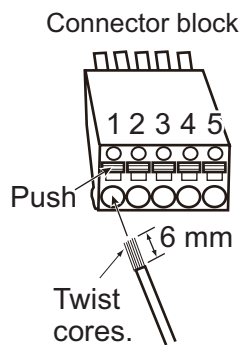
**Note2:** The + line (red) has a fuse holder. To prevent the detachment of the fuse, make a loop in the power line of the cable assy. and then fix the lines as shown below.



Connection with TB7 (NMEA port 2)

Connect the signal lines of the cable assy. to TB7.

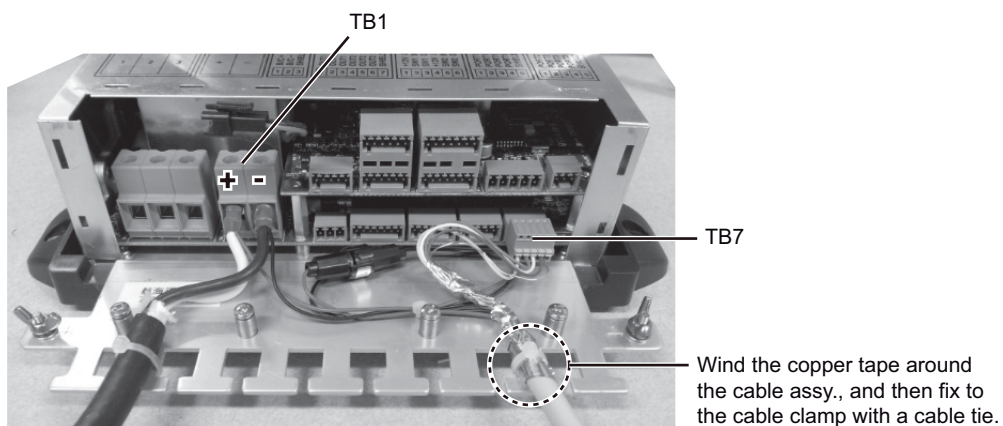
TB7		
Pin No.	Signal	Color
1	TD_A	Yellow
2	TD_B	Green
3	RD_H	White
4	RD_C	Blue
5	Shield	Drain



How to put wire into connector block

1. Make length of cores 6 mm.
2. Twist cores.
3. Push spring-loaded catch with slotted-head screwdriver.
4. Insert core into hole.
5. Release screwdriver.
6. Pull wire to confirm it is securely inserted.

- Fix the cable assy. to the cable clamp with a cable tie (supplied with processor unit).



Example: After connecting the cable assy.

- Connect the fan connector.
- Reattach the cable clamp/fan assy. and outside cover.

### **Fuse replacement**

The fuse in the fuse holder on the + line (red) of the cable assy. (MJ-A7SPF0005-020C) protects the IPS interface unit from overcurrent and equipment fault. If you can not turn on the power, check if the fuse has blown. If the fuse has blown, find the reason before you replace the fuse. If the fuse blows again after the replacement, contact your dealer for advice.

⚠

## WARNING

**Use the proper fuse.**

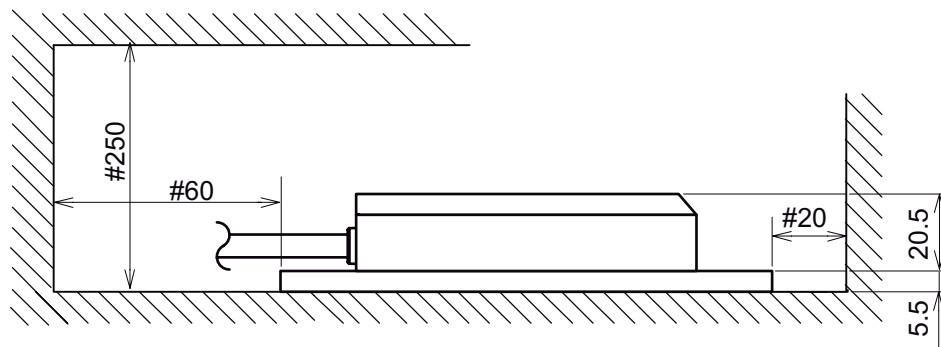
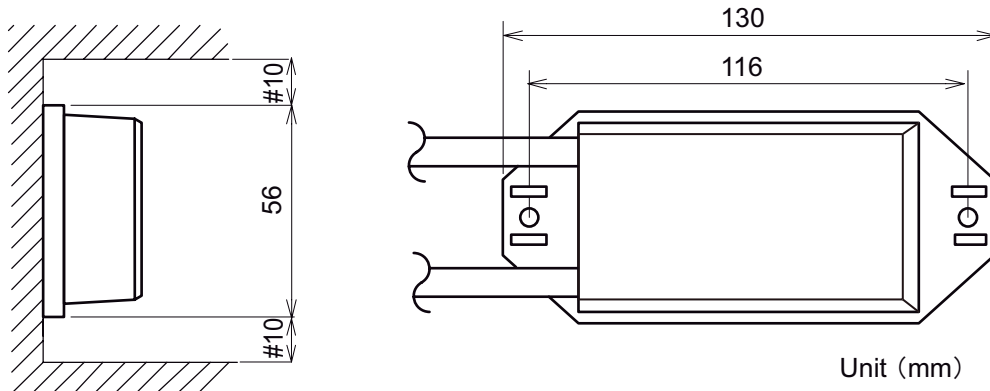
Use of a wrong fuse can result in fire and damage the equipment.

Name	Type	Code No.
Fuse	FGMB 125V 1A PBF	000-157-478-10

### **3. Gateway Unit**

Install the unit with two self-tapping screws.

For details of the installation and wiring, see the installation manual of the gateway unit.



#: Minimum service clearance.

## 4. Initial Settings

This section shows you how to select language and units and open the [INSTALLATION] menu. For details of the settings on the [INSTALLATION] menu, see the document below.

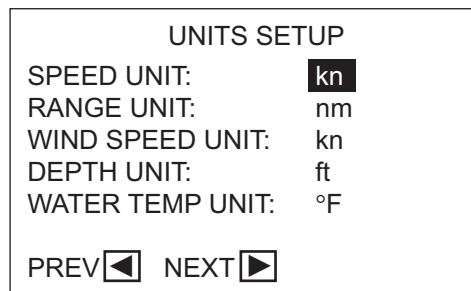
- NAVpilot-700/711: Installation manual (IME-72720)
- NAVpilot-711C: Operator's manual (OME-72780)

The display examples in this section are shown for NAVpilot-700/711.

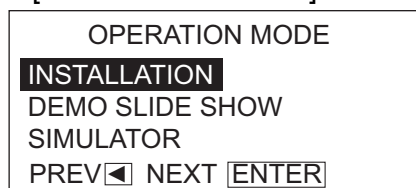
1. Press the **POWER/BRILL** key or **POWER/STBY** key to turn on the power.  
The first time the system is powered, the language selection menu appears.



2. Rotate the knob to select required language, and then push the knob.
3. Press the ► key to show the [UNIT SETUP] menu.



- 1) Select the item to change then push the knob.
  - 2) Select the unit to use then push the knob.
4. Press the ► key to show the [OPERATION MODE] menu.





5. Select [INSTALLATION] then push the knob to show the [INSTALLATION] menu.

For how to set the [INSTALLATION] menu, see the document below.

- NAVpilot-700/711: Installation manual (IME-72720)
- NAVpilot-711C: Operator's manual (OME-72780)

**Note1:** The [INSTALLATION] menu can be opened from the STBY display by pressing the knob three times while pressing and holding down the **MENU** key.

**Note2:** Set [BOAT TYPE] to [EVCS BOAT] on the [SHIP'S CHARACTERISTICS] menu to connect to the EVC system.

NAVpilot-700 [INSTALLATION] menu  
([BOAT TYPE]=[EVCS BOAT])

Page 1

Page 2

INSTALLATION MENU LANGUAGE: ENGLISH UNITS SETUP DISPLAY SETUP SHIP'S CHARACTERISTICS CAN BUS SETUP NMEA0183 SETUP SENSOR SELECTION UNIVERSAL PORT SEA TRIAL COMPASS CALIBRATION: NO*1. *2 DATA CALIBRATION PARAMETER SETUP AUTO OPTION NAV OPTION
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INSTALLATION MENU FISH HUNTER OPTION SYSTEM SETUP RC SETUP ALARM
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\*1: NO is replaced with DONE when respective setup is completed.

\*2: Shown when PG-700 is connected.

### **Check points before cruising**

Check the following points before cruising.

- Confirm that no error message appears.
- When the EVC system controls the rudder, the OVRD (override) mode is automatically enabled.
- The rudder turns according to the ◀ and ▶ key in the AUTO mode.

## 5. OVRD Mode

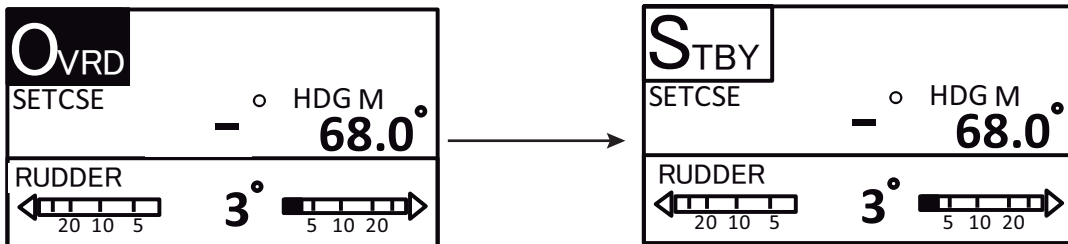
When the EVC system controls the rudder, the OVRD (override) mode is automatically enabled. The autopilot can not control the vessel in the OVRD mode.

The display examples in this section are shown for NAVpilot-700/711.

**Note:** The OVRD mode is enabled when [BOAT TYPE] is set to [EVCS BOAT].

### OVRD mode activation in the STBY mode

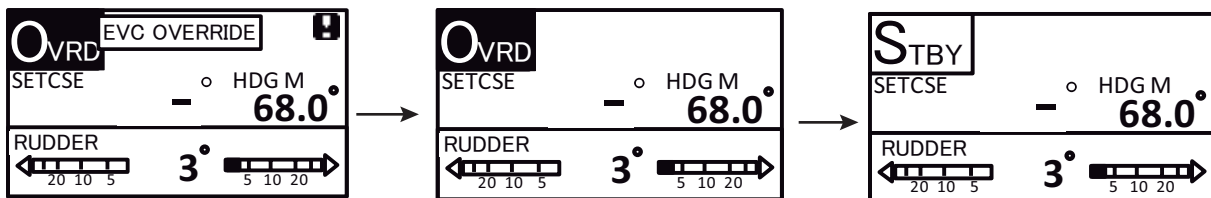
When the OVRD mode activates in the STBY mode, [OVRD] appears at the top-left position of the display. At this time only the [INSTALLATION] and user menus are operative. When the EVC system releases control of the rudder, the autopilot goes to the STBY mode.



When the EVC system releases control of the rudder.

### OVRD mode activation in the AUTO or NAV mode

When the OVRD mode activates in the AUTO or NAV mode, the audio alarm sounds, the pop-up [EVC OVERRIDE] appears, and the mode indication at the top-left position of the display shows [OVRD]. Press any key to stop the alarm and erase the pop-up. When the EVC system releases control of the rudder, the autopilot goes to the STBY mode.



Press any key.

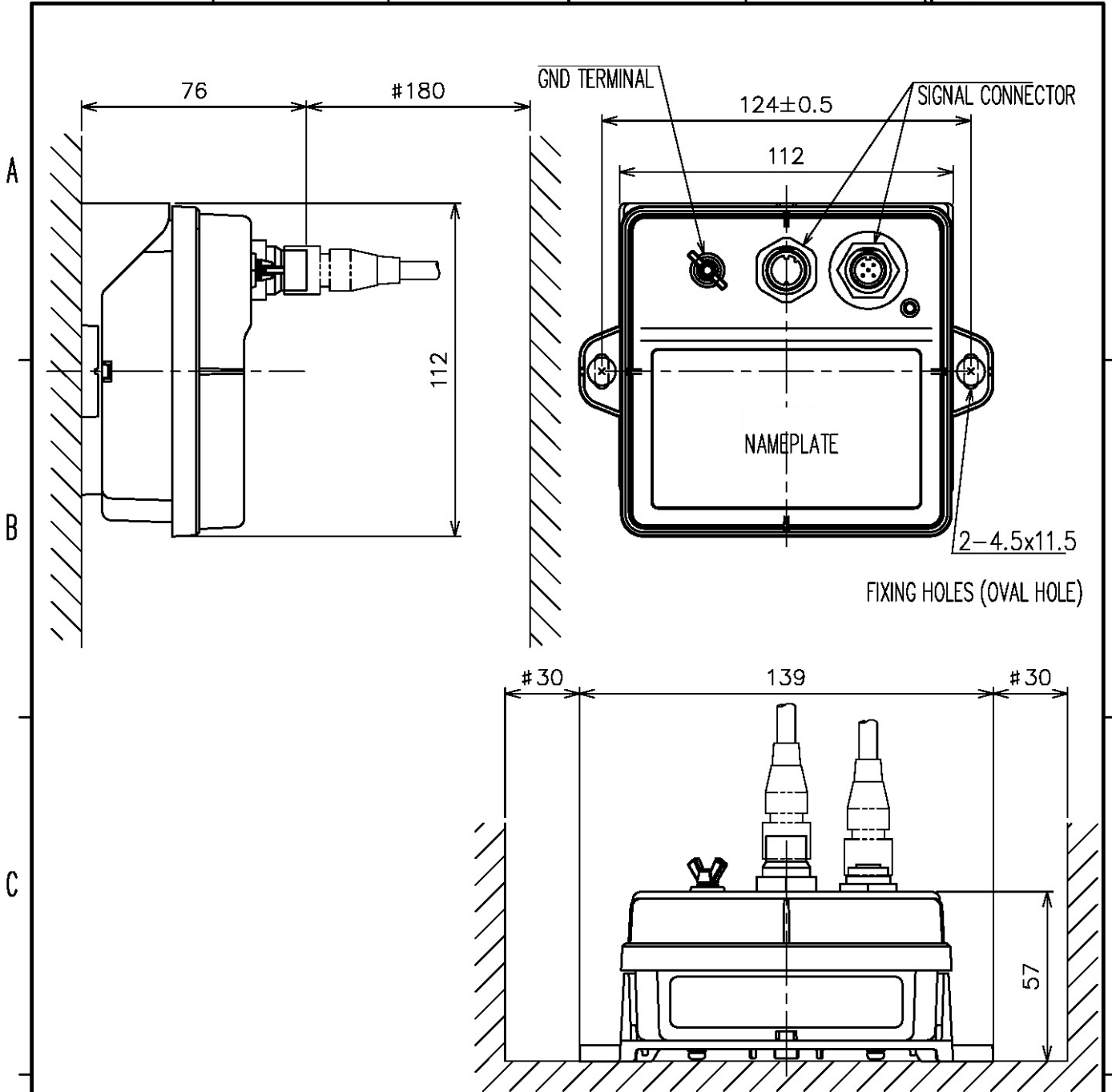
When the EVC system releases control of the rudder

## 6. Messages

The messages which may appear when the [BOAT TYPE] is set to [EVCS BOAT] are shown below.

When the system detects an alarm violation, error, etc., the alarm sounds and a message appears on the display. Press the any key to stop the alarm and delete the message.

Message	Status/Action
EVC INTERFACE ERROR	Communication error between the processor unit and IPS interface unit. Check the connection between the processor unit and IPS interface unit.
NO CONTACT WITH EVC.	Communication error between the gateway unit and IPS interface unit occurs. Check the connection between the gateway unit and IPS interface unit. Also check the connection between the gateway unit and EVC system.
EVC INTERFACE FAIL. PLEASE TURN OFF AND CHECK EVC INTERFACE.	System error of the IPS interface unit. Turn off the autopilot, contact your dealer.
EVC OVERRIDE	The OVRD mode is enabled.
EVC INTERFACE HAS FAILED STARTUP TEST. PLEASE CONTACT A LO- CAL FURUNO REPRE- SENTATIVE FOR REPAIR.	This message appears for the result of the startup test. System error of the IPS interface unit. Turn off the autopilot, contact your dealer.
NO CONNECT EVC INTER FACE. PUSH ANY KEY TO CONTINUE.	This message appears for the result of the startup test. The IPS interface unit is not connected. Check the connection between the processor unit and IPS interface unit.



A

B

C

D

**NOTE**

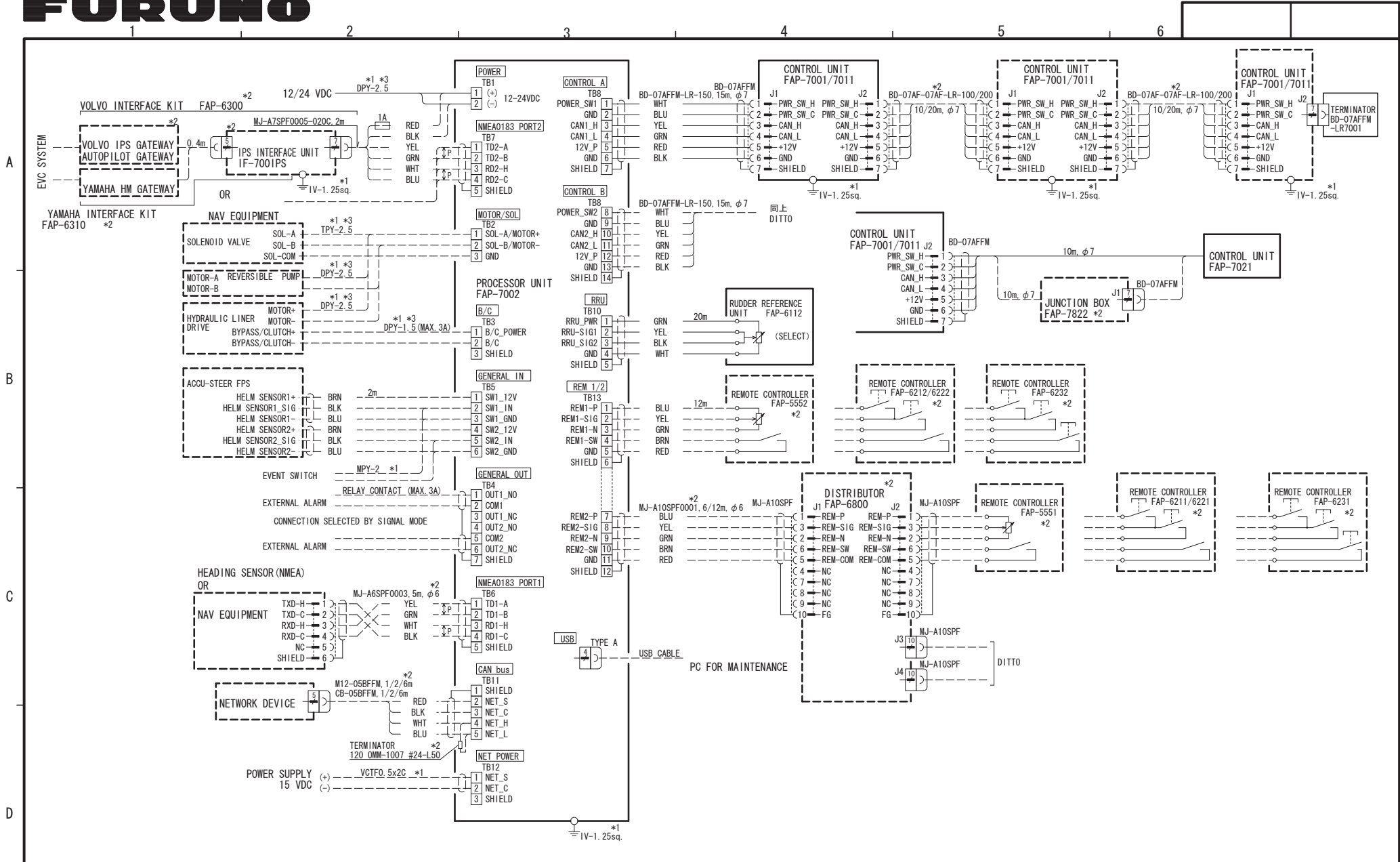
1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
2. #: MINIMUM SERVICE CLEARANCE.
3. USE TAPPING SCREWS  $\phi 4 \times 16$  FOR FIXING THE UNIT.

**TABLE 1**

(mm) DIMENSION	(mm) TOLERANCE
$L \leq 50$	$\pm 1.5$
$50 < L \leq 100$	$\pm 2.5$
$100 < L \leq 500$	$\pm 3$

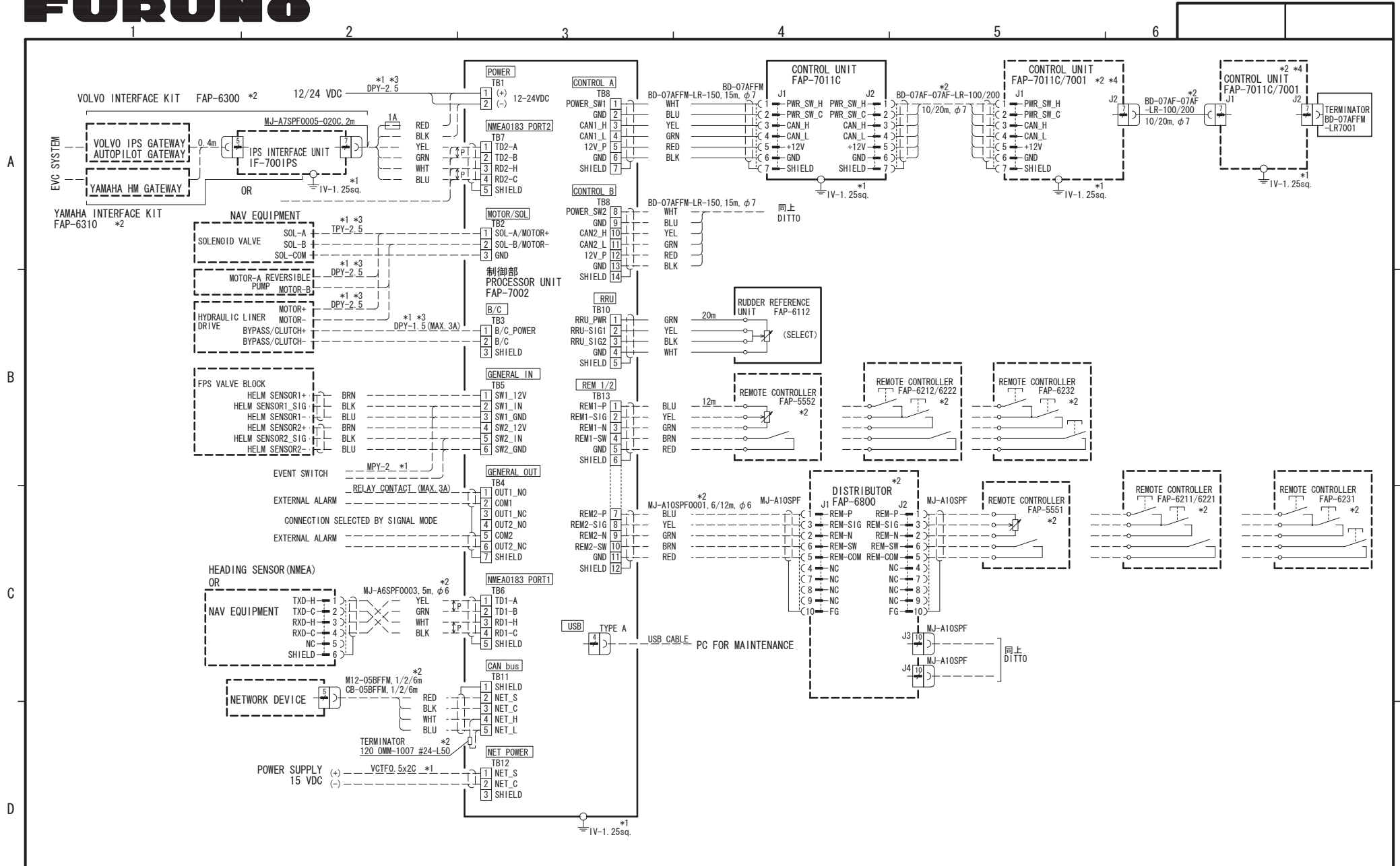
DRAWN 13/Mar/2013 T.YAMASAKI		TITLE	IF-700IPS
CHECKED 13/Feb/2013 H.MAKI			
APPROVED 13/Mar/2013 Y.NISHIYAMA	NAVpilot-700ser.		
SCALE MASS 0.30 $\pm 10\%$ kg	MASS DOES NOT INCLUDE CABLE.	NAME IPS INTERFACE UNIT	
DWG. No. C7272-G05-B	REF. No. 64-028-420G-0		OUTLINE DRAWING

# FURUNO



NOTE  
 \*1: SHIPYARD SUPPLY.  
 \*2: OPTION.  
 \*3: CHANGE THE CORE SIZE ACCORDING TO CABLE LENGTH.

DRAWN	18/Mar/2014 T. YAMASAKI	TITLE	NAVpilot-700/711/720
CHECKED	18/Mar/2014 H. MAKI		
APPROVED	18/Mar/2014 H. MAKI		
SCALE	MASS kg	NAME	AUTOPILOT
DWG No.	C7272-C01- L	REF. No.	64-028-5001-2
INTERCONNECTION DIAGRAM			



NOTE  
 \*1: SHIPYARD SUPPLY.  
 \*2: OPTION.  
 \*3: CHANGE THE CORE SIZE ACCORDING TO CABLE LENGTH.  
 \*4: THREE SETS OF CONTROL UNIT ARE AVAILABLE TO ONE PORT.

DRAWN	17/Mar/2014 T. YAMASAKI	TITLE	NAVpilot-711C
CHECKED	17/Mar/2014 H. MAKI		
APPROVED	17/Mar/2014 H. MAKI		
SCALE	MASS kg	NAME	AUTOPILOT
DWG No.	C7278-C01-B	REF. No.	INTERCONNECTION DIAGRAM