1. INSTALLATION

1.1 Equipment List

Standard supply

Name	Type	Qty	Remarks
AIS Receiver	FA-40	1	
Installation Materials	61110000000061	1	PWR/NMEA1 Cable
	NPD-MM1MF1000G02M	1	NMEA2000 Cable
	PA4×25	4	Tapping Screws
Spare Parts	250VAC 5A	2	Tube Fuses
Accessories	FA70/60/40 SW *CD*	1	AIS Setting Tool (CD-ROM for PC software*)

*: The CD-ROM for PC software and USB driver is supplied as standard. The folder structure of the CD-ROM is shown in the table below.

Folder		File	Remarks
AIS_Setting_ Tool	DotNetFX40	dotNetFx40_Full_ x86_x64.exe	
	vcredist_x86	vcredist_x86.exe	
	Windows Installer4_5	Windows6.0-KB958655-v2-x64.MSU, etc.	
	–	AIS_Setting_Tool_ Installer.msi	
	–	setup.exe	Install file of AIS setting tool
USBDriver ForWindows7	–	cdc.cat	Install file of USB driver (required to connect the FA-40 with USB CDC)
		FURUNO_AIS.inf	

PC requirements

OS	Microsoft® Windows® 7 (32 bit / 64 bit), Microsoft® Windows® 10 (64 bit), Microsoft® Windows® 11 (64 bit)
CPU	Min. 1 GHz
Main memory	32 bit: min. 1 GB, 64 bit: min. 2 GB
Resolution	1280 × 720 or better
Language pack	English
USB communication	USB CDC (Communication Device Class) USB2.0 / Type A-Micro B cable

Optional supply

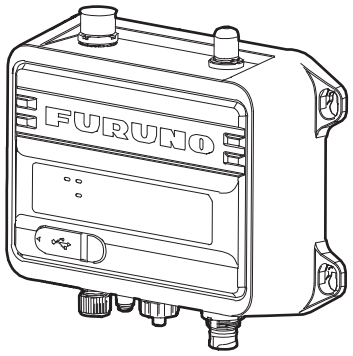
Name	Type	Code No.	Remarks
Antenna Unit	GPA-017	-	GPS antenna
	GPA-017S	-	
	GPA-C01	-	
AC/DC Power Supply Unit	PR-240	-	
	PR-241	-	
Ferrite Core	OP86-11	001-594-450	For PR-241
Cable Assembly	TNC-PS/PS-3D-L15M-R	001-173-110-10	For GPA-017S, TNC-TNC (15 m)
	FRU-NMEA-PMMFF-010	001-533-060	Max. 6 m
	FRU-NMEA-PMMFF-020	001-533-070	
	FRU-NMEA-PMMFF-060	001-533-080	
	FRU-NMEA-PFF-010	001-507-010	
	FRU-NMEA-PFF-020	001-507-030	
	FRU-NMEA-PFF-060	001-507-040	
	MJ-A6SPF0003-020C	000-154-029-10	Max. 15 m
	MJ-A6SPF0003-050C	000-154-054-10	
	MJ-A6SPF0003-100C	000-168-924-10	
	MJ-A6SPF0003-150C	000-159-643-10	
Antenna Cable Assembly	CP20-02700 (30M)	004-381-160	For GPA-017S (30 m), 8D-FB-CV*30M*
	CP20-02710 (50M)	004-381-170	For GPA-017S (50 m), 8D-FB-CV*50M*
	CP20-02720 (40M)	001-207-990	For GPA-017S (40 m), 8D-FB-CV*40M*
Mast Mounting Kit	CP20-01111	004-365-780	For GPS antenna
Antenna	CX4-3/FEC	001-474-340	
Antenna Fixing Bracket	N173F/FEC	001-474-350	For CX4-3/FEC (ϕ49-90)
	N174F/FEC	001-494-890	For CX4-3/FEC (ϕ30-61)
Right Angle Mounting Base	NO.13-QA330	001-111-910-10	For GPS antenna
L-Angle Mounting Base	NO.13-QA310	001-111-900-10	For GPS antenna
Handrail Mounting Base	NO.13-RC5160	001-111-920-10	For GPS antenna
Micro T-Connector	FRU-MM1MF1MF1001	001-507-050	

Name	Type	Code No.	Remarks
Termination Resistor (Micro)	FRU-MM1000000001	001-507-070	
	FRU-MF000000001	001-507-060	
In-Line Terminator	FRU-0505-FF-IS	001-077-830-10	

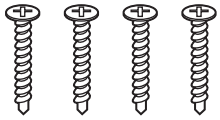
1.2 Included Items and Local Supplies

AIS Receiver

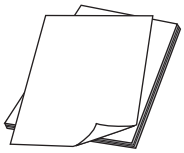
• AIS Receiver (1 pcs)



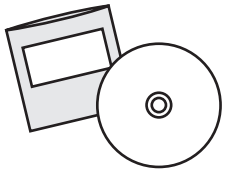
• Tapping screws (4 pcs)



• Documents (1 set)

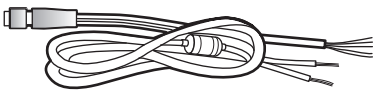


• AIS Setting Tool (1 pcs)

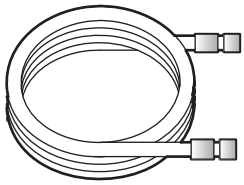


Cable assembly

• PWR/NMEA1 cable (1 pcs): 2 m



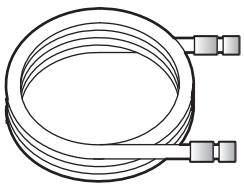
• NMEA2000 cable (1 pcs): 2 m



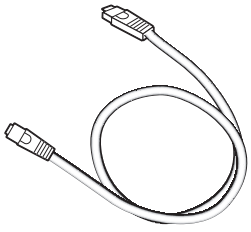
• Spare tube fuse (5A, 2 pcs)

Local supplies

• 5D-2V cable

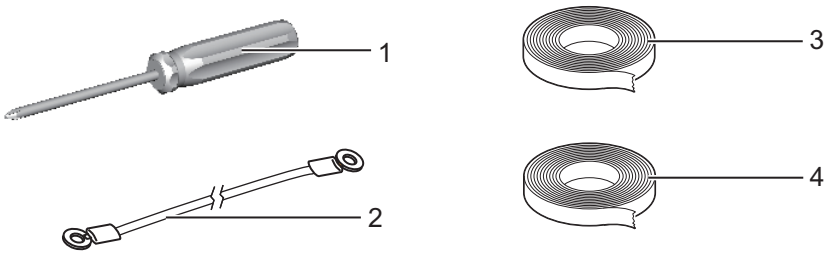


• USB (standard-A - micro-B) cable: max. 2 m



1.3 Required Tools and Materials

The following tools should be prepared in advance for this installation.



No.	Name	Remarks
1	Phillips-head screwdriver	#3, for mounting the chassis
2	Ground wire	IV-1.25sq
3	Self-vulcanizing tape	For waterproofing the junction of connectors
4	Vinyl tape*	

*: For cosmetic purposes, black color vinyl tape (cable color) is recommended.

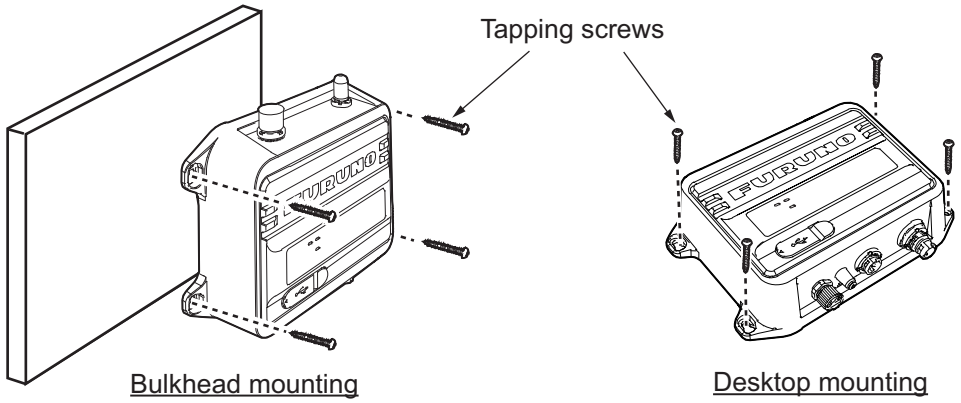
1.4 AIS Receiver FA-40

Mounting considerations, mounting

The FA-40 can be mounted on a desktop or on a bulkhead. When selecting a mounting location, keep in mind the following points:

- Keep the unit out of direct sunlight.
- The temperature and humidity should be moderate and stable.
- Locate the unit away from exhaust pipes and vents.
- The mounting location should be well ventilated.
- Mount the unit where shock and vibration are minimal.
- Keep the unit away from electromagnetic field-generating equipment such as motors and generators.
- A magnetic compass will be affected if the FA-40 is placed too close to it. Observe the compass safe distances noted in the safety instructions to prevent disturbance to the magnetic compass.

Fix the unit to the mounting location with four tapping screws (supplied).



Bulkhead mounting Desktop mounting

1.5 GPS Antenna (option)

> **⚠ CAUTION**
>
> **Do not connect the GPS antenna connector to ground.**
>
> Short circuit can result.

Install the GPS antenna unit referring to the outline drawing at the back of this manual. When selecting a mounting location for the antenna, keep the following in mind:

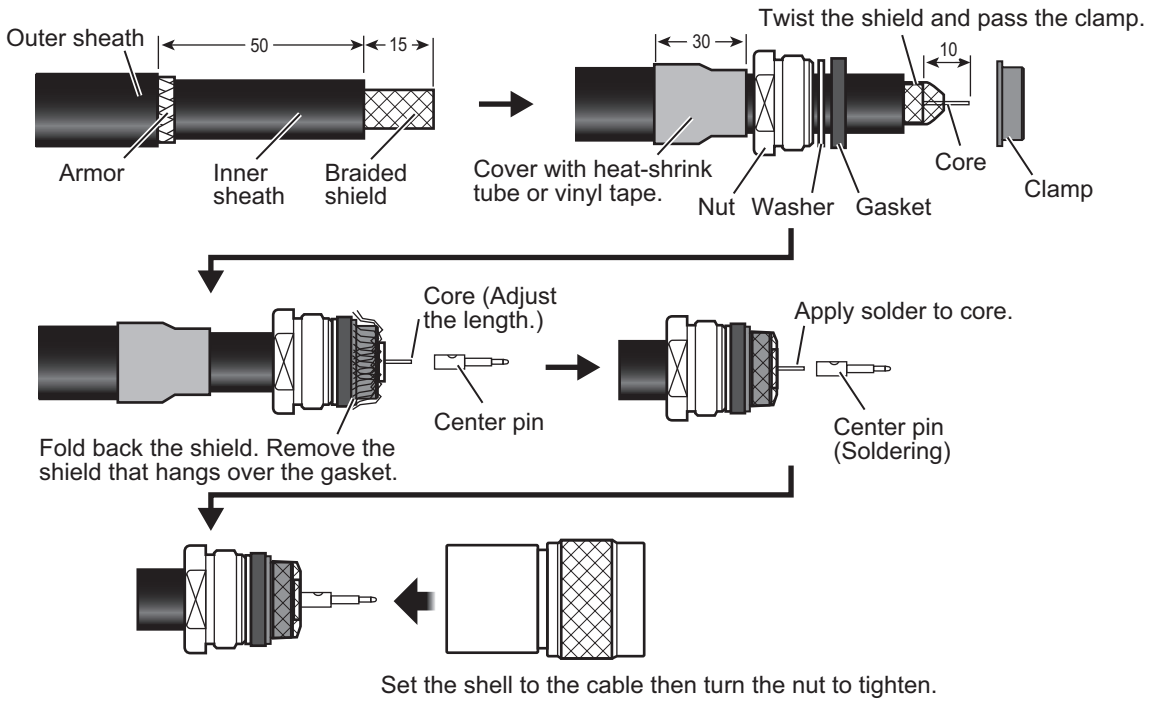
- Select a location out of the radar and inmarsat beams. The radar beam will obstruct or prevent reception of the GPS satellite signal.
- There should be no interfering object within the line-of-sight to the satellites. Objects within line-of-sight to a satellite, for example, a mast, may block reception or prolong acquisition time.
- Mount the antenna unit as high as possible to keep it free of interfering objects and water spray, which can interrupt reception of GPS satellite signal if the water freezes.
- The location should be well away from a VHF antenna. A VHF antenna emits harmonic waves, which can interfere with the GPS receiver.

How to extend the antenna cable

Use the cable type RG-10/UY (shipyard supply) to extend the antenna cable.

Note: The length of this cable should be less than 20 m to prevent signal loss. The coax. coupling cable assy.(type: NJ-TP-3DXV-1, code no. 000-123-809), coaxial connector (N-P-8DFB; supplied), vulcanizing tape and vinyl tape are required. Fabricate both ends of the cable as shown in the figure below.

How to attach the connector N-P-8DSFA for cable 8D-FB-CV

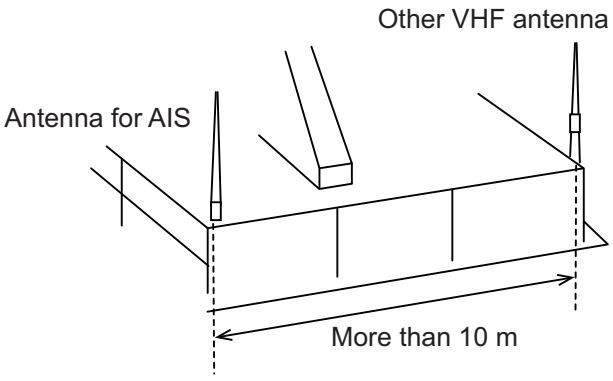


1.6 VHF Antenna (option)

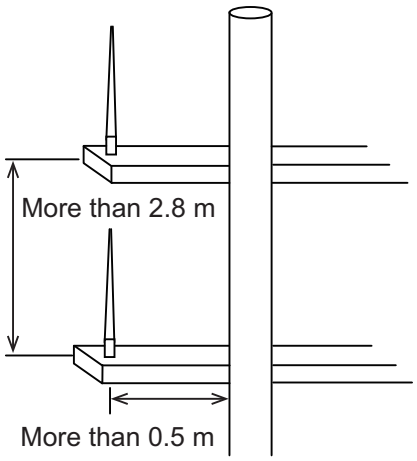
Location

The location of the VHF antenna should be carefully considered. It may be necessary to relocate the VHF radiotelephone antenna to minimize interference effects. To minimize interference effects, the following guidelines apply:

- Select a location out of the radar and inmarsat beams. Those beams will obstruct or prevent reception of the AIS signal.
- The VHF antenna should be placed in an elevated position that is as free as possible with a minimum of 0.5 meters in the horizontal direction from constructions made of conductive materials. The antenna should not be installed close to any large vertical obstruction. The objective for the VHF antenna is to see the horizon freely through 360 degrees.
- There should not be more than one antenna on the same plane. The VHF antenna should be mounted directly above or below the ship's primary VHF radiotelephone antenna, with no horizontal separation and with a minimum of 2.8 meters vertical separation. If it is located on the same plane as other antennas, the distance apart should be at least 10 meters.



Horizontal separation distance



Vertical separation distance

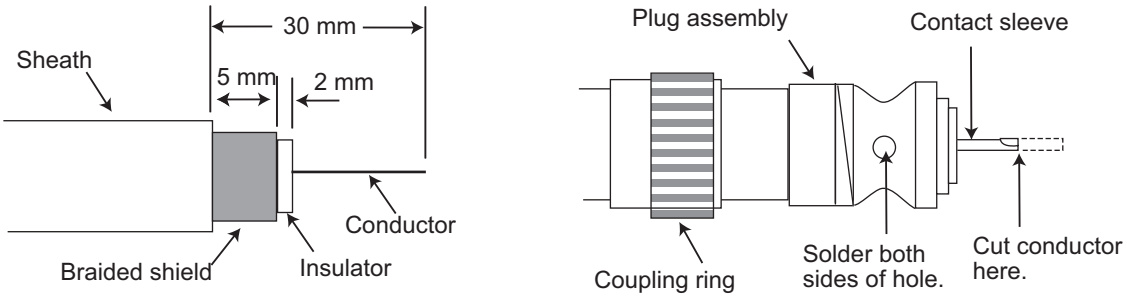
Cabling

- The cable should be kept as short as possible to minimize signal attenuation. Coaxial cables equal to or better than 5D-2V are recommended.
- All outdoor-installed connectors on coaxial cables should be fitted with preventive isolation such as vulcanizing tape to protect against water penetration into the antenna cable. Also, apply marine sealant at the antenna base to prevent water intrusion from the screw part of the antenna base.
- Coaxial cables should be installed in separate signal cable channels/tubes and at least 10 cm away from power supply cables. Crossing of cables should be done at right angles (90 degrees). The minimum bend radius of the coaxial cable should be 5 times the cable's outer diameter.

When coaxial cable 5D-2V (shipyard supply) is used, attach the coaxial plug M-P-5 (shipyard supply) as shown on the next page.

How to attach the plug M-P-5

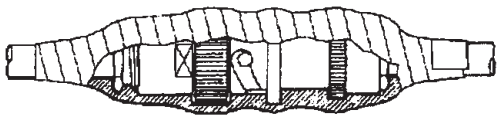
Lay the coaxial cable and attach an M-type plug to the cable as follows.



1. Remove the sheath by 30 mm.
2. Bare 23 mm of the center conductor. Trim braided shield by 5 mm and tin.
3. Slide coupling ring onto cable.
4. Screw the plug assembly on the cable.
5. Solder plug assembly to braided shield through solder holes. Solder contact sleeve to conductor.
6. Screw coupling ring into plug assembly.

Waterproofing connector

Wrap connector with vulcanizing tape and then vinyl tape. Bind the tape end with a cable-tie.



1.7 AC-DC Power Supply (option)

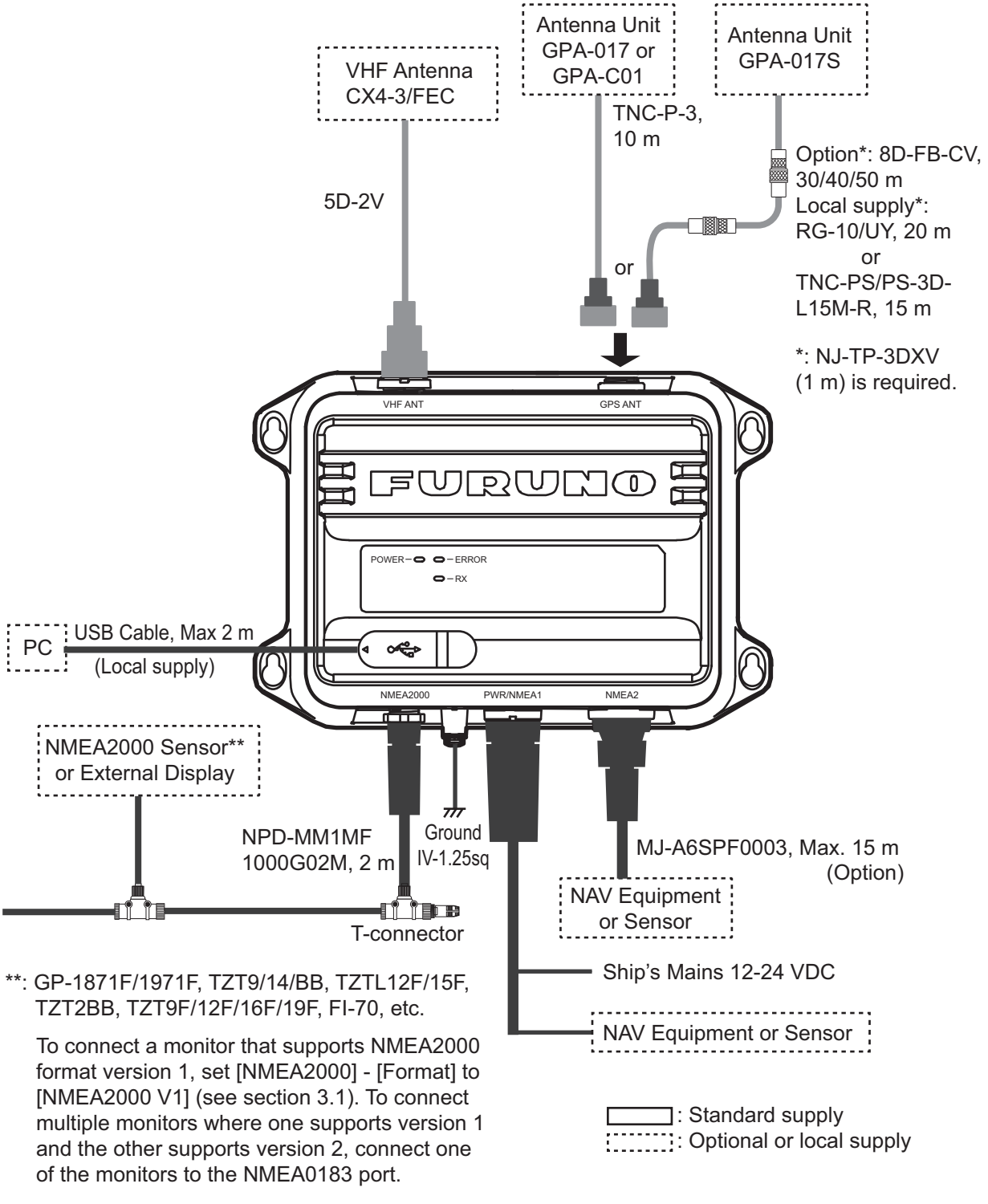
When selecting a mounting location for the unit, keep the following in mind:

- Keep the unit away from areas subject to water splash.
- Locate the unit away from exhaust pipes and vents.
- The mounting location should be well ventilated.
- Mount the unit where shock and vibration are minimal.
- A magnetic compass will be affected if the unit is placed too close to it. Observe the compass safe distances noted in the safety instructions to prevent disturbance to the magnetic compass.

Fix the unit with four self-tapping screws (4×16) to a desktop or the deck. It is not necessary to open the cover.

1.8 Wiring

Connect the equipment, referring to the figure below and the interconnection diagram at the back of this manual.



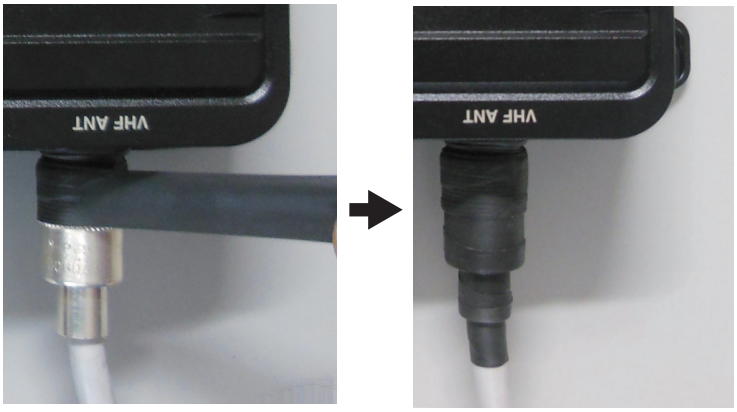
**: GP-1871F/1971F, TZT9/14/BB, TZTL12F/15F, TZT2BB, TZT9F/12F/16F/19F, FI-70, etc.

To connect a monitor that supports NMEA2000 format version 1, set [NMEA2000] - [Format] to [NMEA2000 V1] (see section 3.1). To connect multiple monitors where one supports version 1 and the other supports version 2, connect one of the monitors to the NMEA0183 port.

Note: The FA-40 does not have a power switch. Install an external device (power switchboard, etc.) from which to control its power.

How to waterproof the connector for VHF antenna

Wrap the connector for VHF antenna with vulcanizing tape.



Connection with the PC and NavNet TZtouch2/3

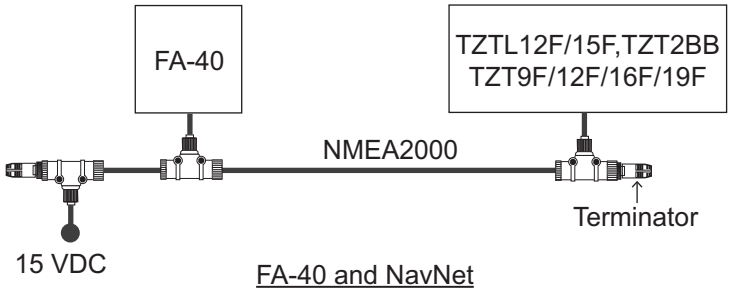
The FA-40 may be connected to a PC or TZTL12F/TZTL15F/TZT2BB/TZT9F/ TZT12F/TZT16F/TZT19F. See the figure below for connection examples.

⚠ CAUTION

PC connected by USB is only powered by a battery.

Short circuit can result if the PC is connected to ground.

FA-40 and PC



FA-40 and NavNet