FURUNO USER HANDBOOK
COLOR INSTRUMENT Model FI-70

This User Handbook covers the basic installation and operation of the FI-70.
For detailed information, refer to the Operator's Manual, not included with the product carton but accessible from the URL or quick response code to the right.
URL: http://www.furuno.com/en/support/manuals/terms
In the search box at the top of the screen, enter "FI-70", then click "Search".

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SAFETY INSTRUCTIONS

The operator and installer must read the applicable safety instructions before attempting to operate or install the equipment.

WARNING Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION Indicates a potentially hazardous situation which, if not avoided, can result in minor or moderate injury.

Warning, Caution | Prohibitive Action | Mandatory Action

Safety instructions for the operator

WARNING

Do not open the equipment.

Only qualified personnel should work inside the equipment. There are no servicable or replacable parts inside the equipment.

Do not disassemble or modify the equipment.

Fire or electrical shock can result if the equipment is modified.

Do not operate the equipment with wet hands.

Electrical shock can result.

Make sure no rain or water splash leaks into the equipment.

Fire or electrical shock can result if water leaks into the equipment.

Immediately turn off the power at the switchboard if water leaks into the equipment.

Continued use of the equipment can cause fire or electrical shock.

CAUTION

Do not use high-pressure cleaners to clean this equipment.

This equipment has the waterproof rating of IP56. However, the use of high-pressure cleaning equipment can cause water ingress, resulting in damage to, or failure of, the equipment.

Safety instructions for the installer

WARNING

Turn off the power at the switchboard before beginning the installation.

Turn off the power to prevent electrical shock.

Make sure the installation site is not subject to water spray.

Fire or electrical shock can result if water leaks into the equipment.

CAUTION

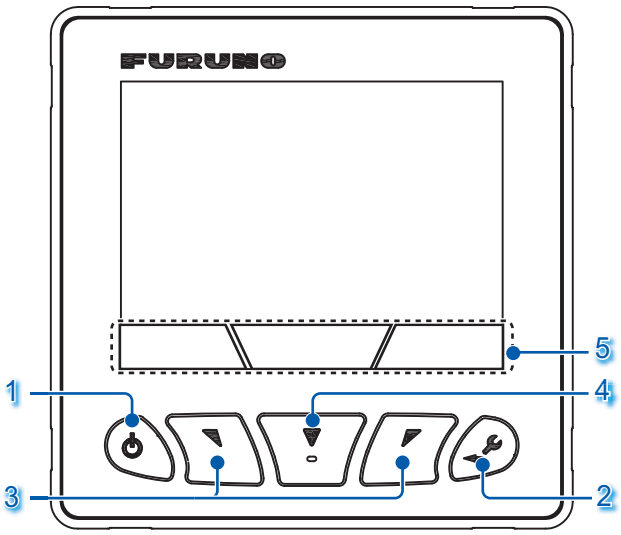
Observe the following compass safe distances to prevent interference to a magnetic compass:

	Standard Compass	Steering Compass
FI-70	0.30 m	0.30 m
IF-NMEAFI	0.30 m	0.30 m

About the TFT LCD

The TFT LCD is constructed using the latest LCD techniques, and displays 99.99% of its pixels. The remaining 0.01% of the pixels may drop out or blink, however this is not an indication of malfunction.

UNIT OVERVIEW, FUNCTIONS



1. Power/Brill key

- Turn power on/off
- Open Brilliance window

2. Menu/Back key

- Open/close the menu
- Go back one menu layer

3. Software keys

- Change displayed page
- Move cursor
- Adjust settings

4. Function key

- Confirm selection/changes
- Switch displayed data

5. Key Indicators

The indicators show the operative function for the **Software** and **Function** keys. Press any key to display the indicators. If there is no operation, the indicators are minimized after a short period of time, however, they are always displayed when a menu is open. The indications vary, depending on the displayed screen/menu.

Key indicators and corresponding keys

INSTALLATION

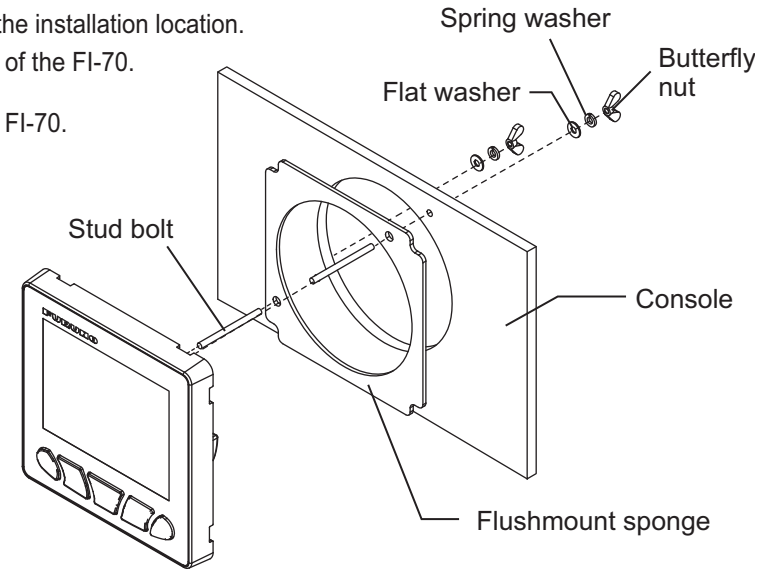
Installation considerations

When installing the FI-70, keep the following points in consideration:

- Select a well-ventilated location.
- Select a location with minimal vibrations and shock.
- Keep the FI-70 away from heat sources.
- Observe the compass safe distances. (Standard: 0.30 m, Steering: 0.30 m)
- Select a location with a smooth surface. (1 mm flatness or less)
- Keep cable lengths in mind when selecting the mounting location.
- When not in use, fit the rubber cover to the FI-70. Leave sufficient room surrounding the FI-70 to allow fitting of the rubber cover.
- Referring to the outline drawings at the back of the handbook, leave sufficient space for service and maintenance.
- Where the rear connector or T-connectors may get wet, waterproof the connectors. (See page 4 for how to waterproof the connectors.)

Flushmount Installation

1. Using the supplied template, mark and cut a hole in the installation location.
2. Fit the supplied stud bolts (M3×40, 2 pcs) to the rear of the FI-70.
   Note: Do not use tools to fit or insert the stud bolts.
3. Fit the supplied flushmount sponge to the rear of the FI-70.
4. Referring to page 4, connect and ground the FI-70.
5. Set the FI-70 into the mounting hole.
6. Fit and tighten the washers and butterfly nut.

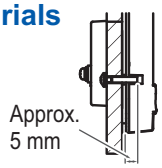


FI-50 Retrofitting

When retrofitting from the FI-50 series unit to the FI-70, drill new bolt holes to fit the stud bolts for the FI-70. The FI-70 can then be installed in place of the FI-50 series unit.

Using locally supplied materials

When using locally supplied screws to secure the FI-70, the thread depth should be approx. 5 mm, as indicated in the figure to the right.

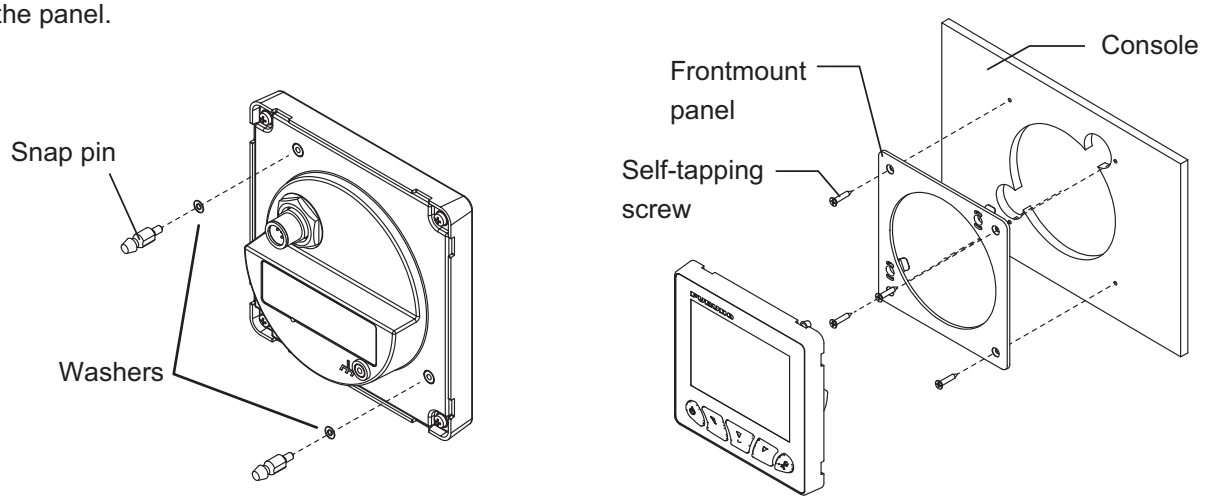


Frontmount Installation (Option)

The optional frontmount kit OP26-29 may be used to install the FI-70 where access behind the console is limited.

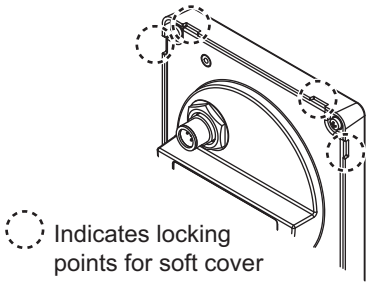
Note: Do not fit the flushmount sponge to the FI-70. The unit will not lock into the frontmount panel.

1. Using the template supplied with the frontmount kit, cut a hole in the mounting location.
2. Fit the snap pins (supplied) to the FI-70, as shown in the figure below.
3. Fit the frontmount panel to the console with four self-tapping screws (supplied).
4. Referring to page 4, connect and ground the FI-70.
5. Set the FI-70 into the frontmount panel, using the snap pins and snap pin slots as guides.
6. Push the FI-70 into the frontmount panel until a “click” sound is made, indicating that the FI-70 is now secure in the panel.



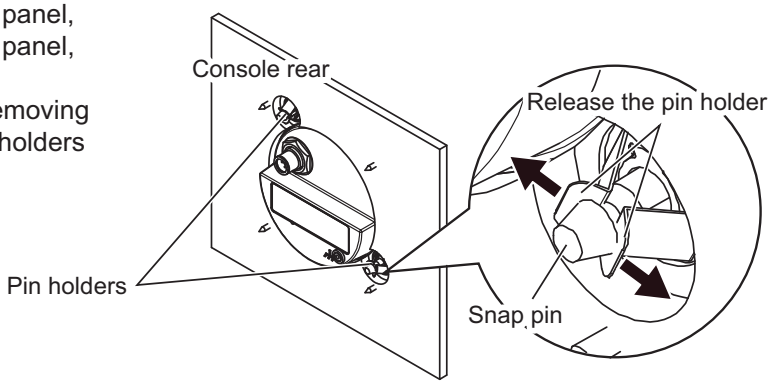
Preventing water seepage from the mounting holes

Where there is a risk of water seepage behind the unit or through the screw holes, apply marine sealant around the FI-70 for waterproofing. Referring to the figure on the right, apply masking tape to the soft cover locking points to prevent marine sealant from blocking the locking points.
There are eight locking points in total, four at the top rear of the unit and four at the bottom rear of the unit.
Marine sealant blocking these locking points will prevent the soft cover from fitting to the FI-70.

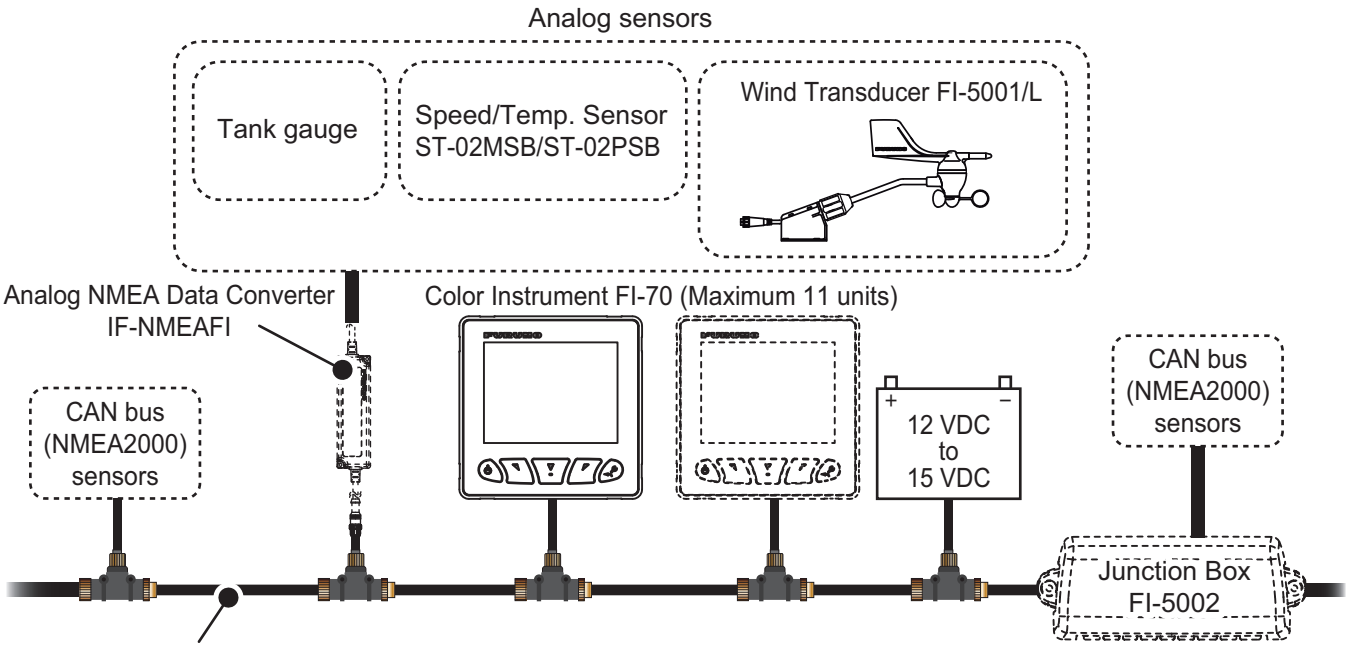


Removing the FI-70 from the frontmount panel

To remove the FI-70 from the frontmount panel, release the pin holders at the back of the panel, then remove the FI-70.
Failure to release the pin holders when removing the FI-70 may damage the FI-70, the pin holders or the pins.



WIRING



CAN bus (NMEA2000) Backbone: Terminal resistors must be installed at both ends of the backbone.

Network Connection

Use the included cable to connect the FI-70 NMEA2000 port to the CAN bus (NMEA2000) network backbone.

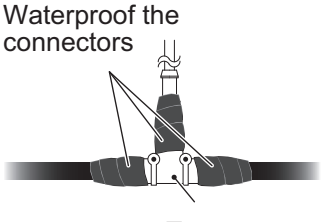
FI-50 Series Retrofitting

Unlike the FI-50 series, the FI-70 can not be daisy-chained. When retrofitting from the FI-50 series, connect each FI-70 to the CAN bus (NMEA2000) backbone.

How to waterproof the connectors

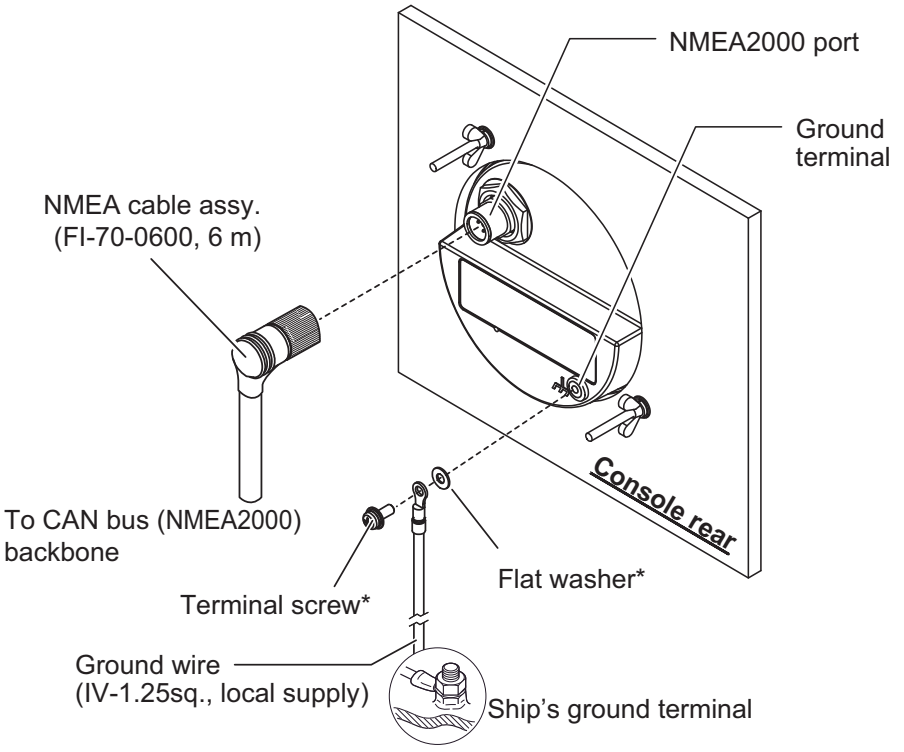
Where the rear connectors and CAN bus (NMEA2000) connectors are subjected to moisture or water spray, waterproof the connectors as shown below.

1. Wrap the connection point with a single layer of vinyl tape.
2. Wrap one layer of self-bonding tape over the vinyl tape.
3. Wrap two layers of vinyl tape over the self-bonding tape.



Grounding

1. Fabricate a ground wire (IV-1.25sq., local supply) with a closed-end terminal.
2. Unfasten the ground terminal screw, then referring to the figure below, connect the ground wire to the ground terminal of the FI-70.
3. Connect the loose end of the ground wire to the ship's ground terminal.



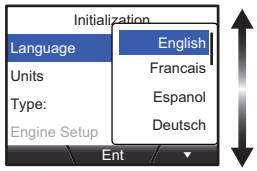
*: Attached to FI-70 when shipped. Remove the terminal screw and washer to install.

INITIAL SETTINGS

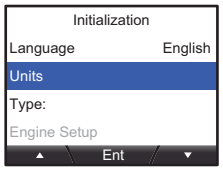
After mounting and wiring are completed, when the CAN bus (NMEA2000) network is turned on, the FI-70 will start up. If this is the first time the FI-70 has been powered, the [Initialization] menu is displayed. Set the language, units of measurement and your ship type in this menu. After these settings are complete, select the appropriate data source(s) for the displayed data.

How to Select a Language and Units of Measurement

1. Use the **software** keys to select the language then press the **function** key.



2. Using the same method, select [Units] then press the **function** key.



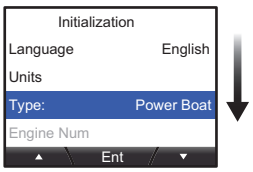
Units of measurement have a language-based default setting. For example, English has the following unit defaults.

- Depth : ft
- Speed : kn
- Fuel : gal
- Distance : NM
- Temperature : °F
- Wind Speed : kn
- Atmospheric Pressure : hPa
- Engine Pressure : psi

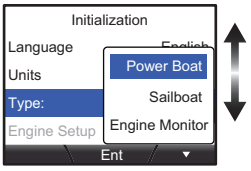
How to Set Up Own Ship Type

The default displayed pages and categories depend on the type of ship selected. Each page may be customized later.

1. Select [Type] from the [Initialization] menu, then press the **function** key.



2. Select your vessel type from the menu, then press the **function** key.



3. Press the **Menu/Back** key to return to the [Initialization] menu.

Vessel-type default display settings

Page	Power Boat	Sailboat	Engine Monitor
1	Compass	Compass	Engine
2	STW	AWA	Data Box (Engine Oil, Engine Temp., etc.)
3	Water Temp. Graph	STW	OFF
4	Custom Box (POSN, STW, COG)	Custom Box (STW)	OFF
5	Custom Box (POSN, W Temp., SOG)	Custom Box (POSN, AWS, STW)	OFF
6	OFF	OFF	OFF
7	OFF	OFF	OFF

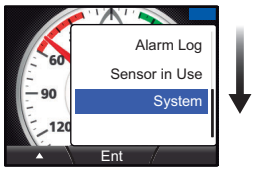
Where the vessel type is set to [Engine Motor], the following settings must also be adjusted from the [Engine Setup] menu.

- [Number of Engine] : Number of engines to have data displayed.
- [Engine Assign] : Select which engine's data will be displayed. (When [Number of Engine] is set to [1].)
- [Engine PORT] : Select which engine will be displayed as the port engine. (When [Number of Engine] is set to [2] or [3].)
- [Engine STBD] : Select which engine will be displayed as the starboard engine. (When [Number of Engine] is set to [2] or [3].)
- [Engine Center] : Select which engine will be displayed as the center engine. (When [Number of Engine] is set to [3].)

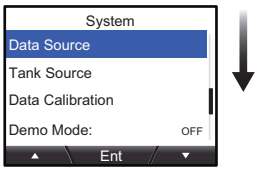
How to Select the Data Source

This section explains how to set the data source(s) for displayed data.

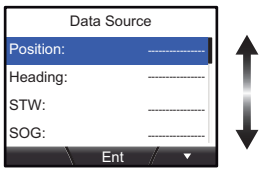
1. Select [System] from the main menu, then press the **function** key.



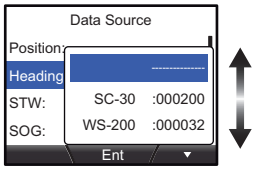
2. Select [Data Source], then press the **function** key.



3. Select the item who's data source you wish to adjust, then press the **function** key.



4. Select the device to use as the data source, then press the **function** key.



5. Repeat steps 3 to 4 to set up the remaining data sources.

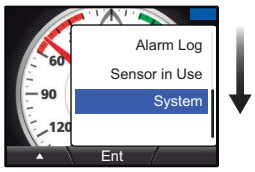
Automatic data source switching

If data from any data source is interrupted, the FI-70 will automatically switch data sources to the next available source. If there is no source available, the data is not displayed.

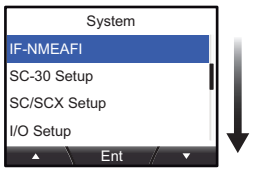
How to Set Up the IF-NMEAFI (option)

When connecting analog sensors such as the wind transducer FI-5001/L, the optional IF-NMEAFI data converter must be used as between the sensor and the FI-70. When using the IF-NMEAFI, set up the IF-NMEAFI using the following procedure.

1. Select [System] from the main menu, then press the **function** key.

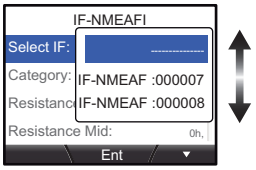


2. Select [IF-NMEAFI], then press the **function** key.

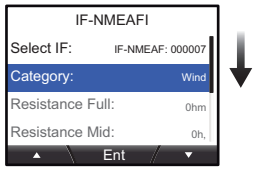


3. Select [Select IF], then press the **function** key.

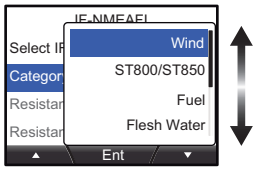
4. Select the IF-NMEAFI to set up, then press the **function** key.



5. Select the [Category], then press the **function** key.



6. Select the connected sensor's category, then press the **function** key.



IF Categories and their respective sensors/gauges

- [Wind]: FI-5001/L wind sensor
- [Fuel]: Fuel tank gauge
- [Waste Water]: Waste tank gauge
- [Oil]: Oil tank gauge
- [ST800/ST850]: Water temperature sensor (ST-02PSB/MSB)
- [Fresh Water]: Fresh water tank gauge
- [Live Well]: Live well tank gauge
- [Black Water]: Black water tank gauge

STANDARD OPERATION

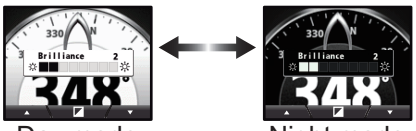
How to Adjust Brilliance and Change between Day/Night Modes

Screen brilliance and changing from Day to Night mode may be done from the Brilliance setting window. The Brilliance setting window disappears if the **Menu/Back** is pressed, or if there is no interaction over a short period.

1. Press the **Power/Brill** key to display the Brilliance setting window.

2. Press the **software** keys to select the desired brilliance.*

3. Press the **function** key to change between Day and Night modes.



Day mode Night mode

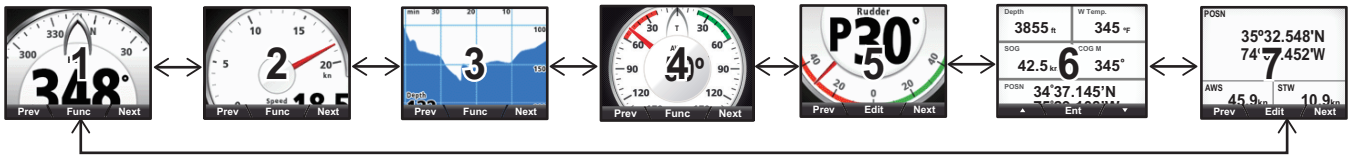
*: The brilliance may also be changed by pressing the Power/Brill key.

Screen brilliance settings sharing

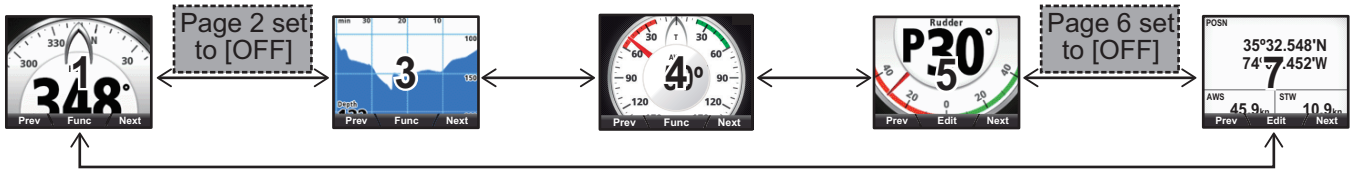
FI-70 units on the same network may be grouped, allowing the brilliance settings and language settings to be shared. For example, if one FI-70 in Group A has the brilliance setting adjusted, all FI-70 units in Group A are also adjusted. For further details on groups, see page 11.

How to Change Pages

Press the **software** keys to change pages. A total of seven pages may be displayed.
The page number is displayed in the center of the screen for several seconds.



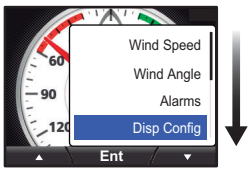
Pages set to [OFF] are skipped when changing pages. In the example below, pages 2 and 6 are set to [OFF] and are skipped, the displayed pages would be [1 ↔ 3 ↔ 4 ↔ 5 ↔ 7].



How to Adjust Page Settings (Displayed Category)

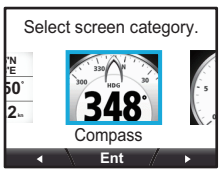
Each page may be customized to suit your needs.

1. Press the **Menu/Back** key to display the menu. Select [Disp Config], then press the **function** key.



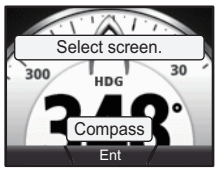
2. Select the page you wish to customize, then press the **function** key.

3. Select the Category you wish to display, then press the **function** key.

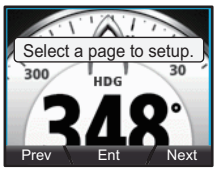


Example: Compass category is selected.

4. Select the screen type (where available) then press the **function** key.



5. Press the **Menu/Back** key to complete the process.



Categories and displayable screens

Some categories have only one displayable screen. For further details on displayable screens for each category and displayable data, see “Page List by Category” on page 8.

Page List by Category

On-screen data display may be changed by pressing the function key.
Note1: On-screen data display requires connection of the appropriate sensor and [Data Source] menu set up.
Note2: All maximum and average data are cleared at power off and calculated from power on.

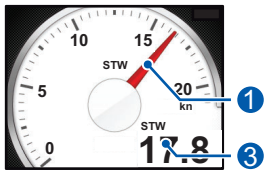
Compass

Compass : Heading data

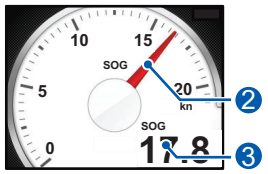
❶ Heading marker
❷ Data display:
- HDG : Heading
- HDG Avg. : Average heading
- HDG Tack : Heading after tack

Speed

STW : Speed Through Water



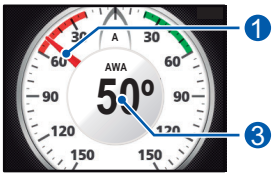
SOG : Speed Over Ground



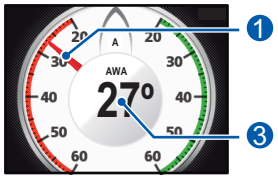
❶ Speed Through Water ❷ Speed Over Ground
❸ Data display:
- STW : Speed Through Water
- STW Max : Maximum STW
- STW Avg. : Average STW
- SOG : Speed Over Ground
- SOG Max : Maximum SOG
- SOG Avg. : Average SOG
- VMG : Velocity Made Good (Only on STW screen)

Wind

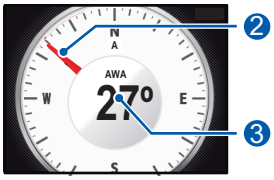
AWA: Apparent Wind Angle
TWA: True Wind Angle



CH AWA: Close Hauled Apparent Wind
CH TWA: Close Hauled True Wind



Ground Wind



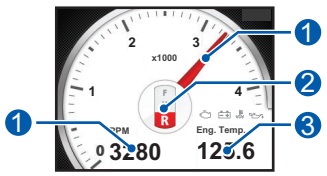
❶ Wind Angle ❷ Ground Wind*1
❸ Data display:
When true wind data*2 is displayed
- TWA : True Wind Angle
- TWS: True Wind Speed
- TWS Max : Maximum TWS
- Beaufort : TWS in Beaufort units

When apparent wind data is displayed
- AWA : Apparent Wind Angle
- AWS : Apparent Wind Speed
- Beaufort : AWS in Beaufort units

***1: AWA, AWS, STW and heading data are required to display ground wind.**
***2: AWA, AWS and ship's speed (STW or SOG) data are required to display true wind (ship's speed data priority: STW > SOG).**

Engine

Engine : Single engine display



Engine : Dual engine display

Engine : Triple engine display

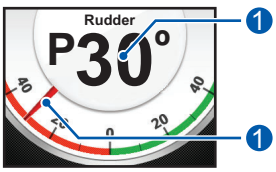
❶ Engine RPM ❷ Gear selection (N=Neutral, F=Forward, R=Reverse)
❸ Data display:

- Eng. Temp. (Engine temperature)
- Eng. Hour (Engine hours)
- Coolant P (Coolant Pressure)
- Gear Oil P (Gear oil pressure)
- Fuel Used
- Oil Press (Oil Pressure)
- E Load (Engine Load)
- Boost
- Fuel Rate
- Oil Temp. (Oil temperature)
- Gear Oil T (Gear oil temperature)

Note: Data shown in the engine category is input from engine sensors. Always check any malfunction at the engine, do not rely solely on the FI-70 indications.

Rudder

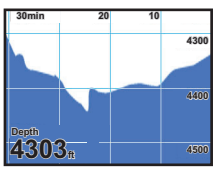
Rudder



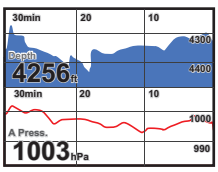
❶ Rudder angle

Graph

1Graph



2Graphs



Select one or two items, depending on graph size, to be displayed from the following data:
- Depth
- A Temp (Atmospheric temperature)
- W Temp (Water temperature)
- A Press (Atmospheric pressure)

Timer

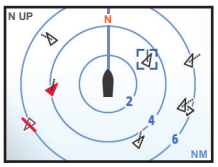
Countdown Timer1

Countdown Timer2

Countup Timer

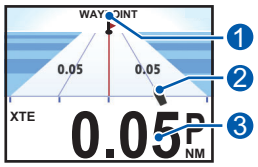
❶ Countdown Timer ❷ Lap Time ❸ Trip Meter ❹ Countup Timer

AIS



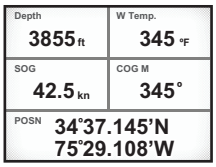
The simplified AIS category shows your and other vessel's data as symbols. Up to 25 symbols, in order from closest to farthest, can be displayed.
Note: The AIS category is a simplified AIS, with limited function and capacity. Only Class A and Class B AIS targets are displayed. Do not rely solely on the FI-70 indications.

Highway



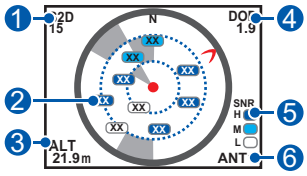
❶ Waypoint name/mark
❷ Own ship symbol
❸ Data display:
- XTE (Cross-track Error)
- WPT (Waypoint co-ordinates)
- RNG (Range to waypoint)
- BRG (Bearing to waypoint)

Custom Box



The Custom Box category can display up to six data boxes, each showing data input from sensors and other external sources. The boxes are fully customizable.

Satellite Positions (Skyplot)

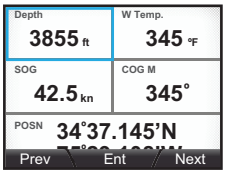


❶ Position fixing mode and accuracy level
❷ Satellite location and elevation
❸ Altitude of own vessel
❹ Dilution of Position
❺ Signal to Noise Ratio
❻ Selected antenna

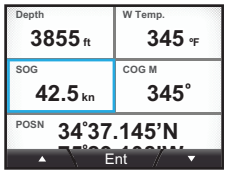
HOW TO EDIT THE CUSTOM BOXES

How to Adjust Data Box Displayed Data

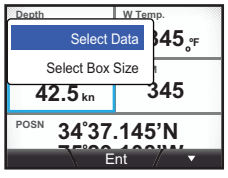
❶ With the Custom Data box page displayed, press the **function** key.



❷ Select the box to adjust, then press the **function** key.

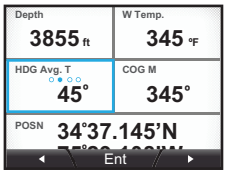


❸ Select [Select Data], then press the **function** key.



❹ Select the category to be displayed, then press the **function** key.

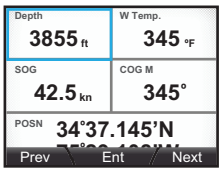
❺ Press the **software** keys to select which data to display, then press the **function** key.



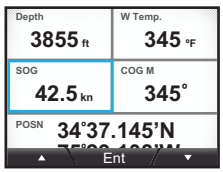
❻ Press the **Menu/Back** key to complete the customization.

How to Adjust Custom Box Size Settings

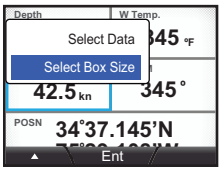
1. With the Custom Data box page displayed, press the **function** key.



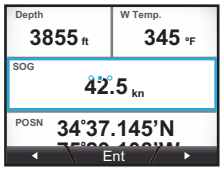
2. Select the box to adjust, then press the **function** key.



3. Select [Select Box Size], then press **function** key.



4. Press the **software** keys to select a box size, then press the **function** key.



5. Press the **Menu/Back** key to complete the customization.

Note
Depending on the selected data type, some boxes have a fixed size and cannot be resized.

Displayable data for the data boxes

Note: *Sensor connection and data source settings are required for all listed data to be output.*

Data Type	Displayable data		
Speed	STW	STW Max*	STW Avg.*
	SOG	SOG Max*	SOG Avg.*
	VWG	3-Axis Speed	
Wind	AWS	TWS	TWS Max*
	AWA	TWA	GWD M(T)
	Beaufort		
Heading	HDG M(T)	Average HDG M(T)*	ROT
	HDG Tack M(T)		
Course	COG M(T)		
Navigation	BRG M(T)	RNG	WPT
	XTE	POSN	ETA Time
	ETA Date	Trip	Odometer
Boat	Rudder	Trim Tabs	Roll/Pitch
	Heave		
Engine	Engine RPM	Fuel Used	Fuel Rate
	Eng. Trim	Boost	Eng. Temp.
	Eng. Hour	Oil Press.	Oil Temp.
	Coolant P	E Load	Gear Oil T
	Gear Oil P		
Tank	T1 thru T6 tank information		
Depth	Depth		
Environment	Date	Time	W Temp.
	A Temp.	A Press.	Humidity
	Wind Chill	Dew Point	
Voltage	Volts		
OFF	Disable display for this box.		

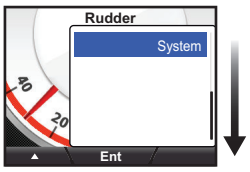
*: The average and maximum values are calculated from when the FI-70 is turned on. All calculations for average and maximum are reset when the power is turned off.

SHARING AND GROUPS

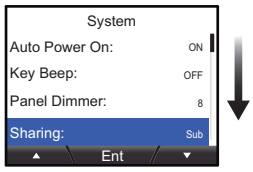
Network Settings

Some settings and offsets for the FI-70 may be shared across a CAN bus (NMEA2000) network.
See the list below for details.

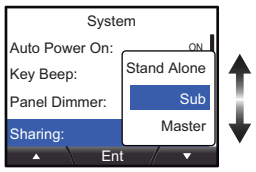
❶ Select [System] from the main menu, then press the **function** key.



❷ Select [Sharing], then press the **function** key.



❸ Select the sharing level for this FI-70 unit, then press the **function** key.



- [Stand Alone]: Settings are not shared across the network. This unit can be set up individually.
- [Sub]: Settings are received from a Multi Function Display (TZTL12F/TZTL15F), or a FI-70 unit assigned as [Master].
- [Master]: Settings for this FI-70 are shared across the network. This option is not available if there is a Multi Function Display (TZTL12F/TZTL15F) in the same network. In this case, the TZTL12F/TZTL15F is made the [Master].

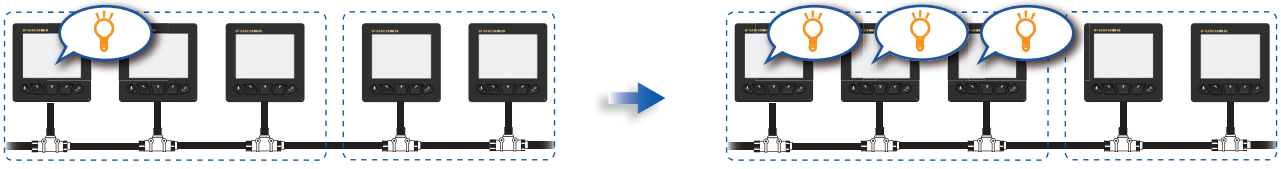
CAN bus (NMEA2000) Network Shared Settings

After setting the sharing levels for the network, settings between units can be shared.
All shared settings are displayed as gray menu items on FI-70 units assigned as [Sub].
The shared settings cannot be adjusted from a [Sub] FI-70 unit.

- [Display Format] menu
  [HDG/COG Ref], [Mag. Var.], [Time Offset] only
- [Data Source] menu
  All menu settings, excluding tank information ([Tank1] through [Tank 6]).
- [Data Calibration] menu
  All menu settings, excluding [W Angle Response].
- [Units] menu
  All menu settings.

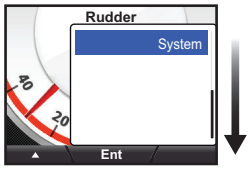
Language and Brilliance Sharing Between FI-70 Units

FI-70 units may be grouped together in one or more groups, allowing language and brilliance settings to be shared between FI-70 units in the same group.
As shown in the example figure below, adjusting the brilliance settings for one FI-70 unit in Group A changes the brilliance settings for all FI-70 units in the same group. While one FI-70 unit in a group has the brilliance adjusted or the language changed, all other FI-70 units in the same group cannot have the brilliance or language settings adjusted.

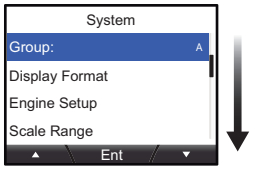


Grouping the FI-70 units eliminates the need to adjust each unit individually. Up to three groups (A, B, C) may be set up.

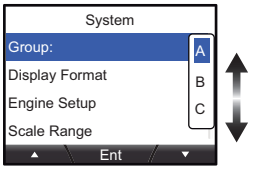
❶ Select [System] from the main menu, then press the **function** key.



❷ Select [Group], then press the **function** key.



❸ Select the group for this FI-70 unit, then press the **function** key.



MENU TREE

Main Menu

Menu/Back key

Default settings shown in bold italic.

- Displayed page-based menus (See Pages 14 to 15)
- Alarms
  - STW Alarm
    - Alarm (***OFF***, Low, High; 0.0kn to 999.9kn, ***10.0kn***)
    - Buzzer (***Short***, Middle, Long, Continue)
  - SOG Alarm
    - Alarm (***OFF***, Low, High; 0.0kn to 999.9kn, ***10.0kn***)
    - Buzzer (***Short***, Middle, Long, Continue)
  - Max TWS Alarm
    - Alarm (***OFF***, ON; 0.0kn to 99.9kn, ***19.4kn***)
    - Buzzer (***Short***, Middle, Long, Continue)
  - Wind Shift Alarm
    - Alarm (***OFF***, ON)
    - Buzzer (***Short***, Middle, Long, Continue)
  - High AWA Alarm
    - Alarm (***OFF***, ON; 0° to S179°, ***S60°***)
    - Buzzer (***Short***, Middle, Long, Continue)
  - Low AWA Alarm
    - Alarm (***OFF***, ON; P1° to P180°, ***P60°***)
    - Buzzer (***Short***, Middle, Long, Continue)
  - Trip Alarm
    - Alarm (***OFF***, ON; 0NM to 9999NM, ***0NM***)
    - Buzzer (***Short***, Middle, Long, Continue)
  - Depth Alarm
    - Alarm (***OFF***, Deep, Shallow; 0ft to 4921ft, ***50ft***)
    - Buzzer (***Short***, Middle, Long, Continue)
  - Voltage Alarm
    - Alarm (***OFF***, ON; 8.5V to 32.0V, ***9.0V***)
    - Buzzer (***Short***, Middle, Long, Continue)
  - W Temp. Alarm
    - Alarm (***OFF***, Low, High, Shear; 0°F to 120°F, ***50°F***)
    - Buzzer (***Short***, Middle, Long, Continue)
  - Engine Alarm
    - Alarm (***OFF***, ON)
    - Buzzer (***Short***, Middle, Long, Continue)
  - Anchor Alarm
    - Alarm (***OFF***, Distance, Depth)
    - [Distance]: 0.00NM to 99.9NM, ***0.00NM***
    - [Depth]: 0ft to 9999ft, ***50ft***
    - Buzzer (***Short***, Middle, Long, Continue)
  - CPA/TCPA Alarm
    - Alarm (***OFF***, ON)
    - CPA (0NM to 6.00NM, ***0.00NM***)
    - TCPA (***30sec***, 1min, 2min, 3min, 4min, 5min, 6min, 12min)
    - Buzzer (***Short***, Middle, Long, Continue)
- Disp Config
- Alarm Log
- Sensor in Use
- System
  - Auto Power On (OFF, ***ON***)
  - Key Beep (OFF, ***ON***)
  - Panel Dimmer (1 to ***8***)
  - Sharing (***Stand Alone***, Sub, Master)
  - Group (***A***, B, C)
  - Display Format
    - HDG/COG Ref (***Magnetic***, True)
    - Mag. Var. (***Auto***, Manual; E99.9° to W99.9°, ***0.0°***)
    - Time Offset (-14:00 to 14:00, ***0:00***)
    - Time Display (12Hour, ***24Hour***)
    - Date Display (***MMM DD, YYYY***; DD MMM YYY; YYYY MM DD)
    - Position Format (DD° MM.MM', ***DD° MM.MMM'***, DD° MM.MMMM', DD° MM'SS.S)

1 **(Continued on next page)**

1 (Continued from previous page)

- Engine Setup
  - Number of Engine (1 to 3, ***1***)
  - Engine Assign (1 to 4, ***1***) *Where [Number of Engine] is set to [1]*
  - Engine PORT (1 to 4, ***1***) *Where [Number of Engine] is set to [2] or [3]*
  - Engine STBD (1 to 4, ***2***) *Where [Number of Engine] is set to [2] or [3]*
  - Engine Center (1 to 4, ***3***) *Where [Number of Engine] is set to [3]*
  - Engine Refresh
- Scale Range
  - Speed (***0-20kn***, 0-40kn, 0-80kn)
  - Engine RPM (***0-4×1000rpm***, 0-6×1000rpm, 0-8×1000rpm)
  - Boost (***0-30psi***, 0-70psi, 0-150psi, 0-360psi, 0-440psi)
  - Eng. Temp. (***150-250°F***, 120-300°F)
  - Oil Press. (***0-30psi***, 0-70psi, 0-150psi, 0-360psi, 0-440psi)
  - Oil Temp. (***150-250°F***, 120-300°F)
  - Coolant P (***0-30psi***, 0-70psi, 0-150psi, 0-360psi, 0-440psi)
  - Gear Oil P (***0-30psi***, 0-70psi, 0-150psi, 0-360psi, 0-440psi)
  - Gear Oil T (***150-250°F***, 120-300°F)
  - Voltage (***8-16V***, 16-32V)
- IF-NMEAFI
  - Select IF
  - Category (Wind, ST800/ST850, Fuel, Fresh Water, Waste Water, Live Well, Oil, Black Water)
  - Resistance Full (0 to 300ohm)
  - Resistance Mid (0 to 300ohm)
  - Resistance Empty (0 to 300ohm)
  - Capacity (0 to 2640gal)
  - IF-NMEAFI Test
  - Refresh
- SC-30 Setup
  - Select SC
  - SBAS Mode (ON, OFF)
- SC/SCX Setup
  - Select SC/SCX
  - SBAS Mode (ON、OFF)
  - Ship Size/ANT Position
    - Ship's Width (1.0 to 999.9 m)
    - Ship's Length (1.0 to 999.9 m)
    - Ship's Height (1.0 to 199.9 m)
    - ANT Position X0 (Setting range depends on the ship's size information)
    - ANT Position Y0 (Setting range depends on the ship's size information)
    - ANT Position Z0 (0.0 to 99.9 m)
    - CAL-SPD-POSN Y1 (Setting range depends on the ship's size information)
    - CAL-SPD-POSN Y2 (Setting range depends on the ship's size information)
    - CAL-SPD-POSN Z (Setting range depends on the ship's size information)
  - System Information
  - Factory Default
- I/O Setup
  - Incoming PGN
  - Device List
  - NMEA2000 Refresh
  - Wiring Info
  - ICOM AIS Data (***Yes***, No)
- Data Source
  - Position
  - Heading
  - STW
  - SOG
  - Navigation
  - Depth
  - W Temp.
  - Wind
  - AIS
  - Heave
  - 3-Axis Speed
  - Roll/Pitch

1 (Continued on next page)

(1) (Continued from previous page)

- Tank Source
  - Tank1
    - Fluid Type (Fuel, Fresh Water, Waste Water, Live Well, Oil, Black Water, Fuel (Gasoline))
    - Source (*Select from displayed list*)
    - Instance (0 to 14)
  - Tank2 (Same as Tank1)
  - Tank3 (Same as Tank1)
  - Tank4 (Same as Tank1)
  - Tank5 (Same as Tank1)
  - Tank6 (Same as Tank1)
- Data Calibration
  - Adjust(STW) (0.30 to 2.50, ***1.00***)
  - Wind Damping (0s to 12s, ***3s***)
  - Adjust(W Speed) (0.30 to 2.50, ***1.00***)
  - W Angle Response (0s to 12s, ***4s***)
  - Offset(W Angle) (180° to P179°, ***0°***)
  - Offset(HDG) (180° to W179°, ***0°***)
  - Offset(Depth) (-327.8ft to +327.8ft, ***0.0ft***)
  - Offset(W Temp.) (-179.8°F to 179.8°F, ***0.0°F***)
  - SOG/COG Damping (***0s*** to 59s)
  - STW Damping (***0s*** to 59s)
  - 3-Axis Speed Damping (***0s*** to 59s)
  - ROT Damping (***0s*** to 59s)
  - Pitch Offset (-10.0° to 10.0°, ***0.0°***)
  - Roll Offset (-10.0° to 10.0°, ***0.0°***)
  - Air Press. Offset (-99.9hpa to 99.9hpa, ***0hpa***)
  - Air Temp. Offset (-99.9°C to 99.9°C, ***0°C***)
  - VMG-CAL-SPD (STW, ***SOG***)
- Demo Mode (***OFF***, ON)
- Diagnostic (***OFF***, Self Test, Keyboard Test, Screen Test)
- Restore Factory Default
- Language (***English***, Francais, Espanol, Deutsch, Italiano, Potugues, Dansk, Svenska, Norsk, Suomi)
- Units
  - Depth (m, ***ft***, fm, PB)
  - Speed (***kn***, km/h, MPH)
  - Distance (***NM***, km, SM, NM,yd, NM,m, km,m, SM,yd)
  - Wind Speed (***kn***, km/h, MPH, m/s)
  - Temp (°C, ***°F***)
  - Atmos. Press. (***hPa***, mbar)
  - Engine Press. (kPa, bar, ***psi***)
  - ALT & Heave (m ,***ft***)
  - 3-Axis Speed (***kn***, km/h, MPH, m/s)

Category Specific Menus

◆ Compass

Press the **Menu/Back** key

- Heading
  - Offset(HDG)(180° to W179°, ***0°***)

◆ STW

Press the **Menu/Back** key

- STW
  - Adjust(STW)(0.30 to 2.50, ***1.00***)
  - STW Alarm
    - Alarm (***OFF***, Low, High: 0.0 to 999.9kn, ***10.0kn***)
    - Buzzer (***Short***, Middle, Long, Continue)

◆ SOG

Press the **Menu/Back** key

- SOG
  - SOG Alarm
    - Alarm (***OFF***, Low, High: 0.0 to 999.9kn, ***10.0kn***)
    - Buzzer (***Short***, Middle, Long, Continue)
  - SOG Damping (***0s*** to 59s)

◆ AWA, TWA, CH AWA, CH TWA, Ground Wind

Press the **Menu/Back** key

- Wind Speed
  - Wind Damping (0 to 12s, ***3s***)
  - Adjust (W Speed) (0.3 to 2.5, ***1.0***)
  - Max TWS Alarm
    - Alarm (***OFF***, ON: 0.0 to 99.9kn, ***19.4kn***)
    - Buzzer (***Short***, Middle, Long, Continue)
- Wind Angle
  - W Angle Response (0 to 12s, ***4s***)
  - Offset(W Angle) (-179° to +180°, ***0°***)
  - Wind Shift Alarm
    - Alarm (***OFF***, ON)
    - Buzzer (***Short***, Middle, Long, Continue)
  - High AWA Alarm
    - Alarm (***OFF***, ON: 0 to S179°, ***S60°***)
    - Buzzer (***Short***, Middle, Long, Continue)
  - Low AWA Alarm
    - Alarm (***OFF***, ON: P1 to P180°, ***P60°***)
    - Buzzer (***Short***, Middle, Long, Continue)

◆ Engine

Press the **Menu/Back** key

- Engine
  - Engine Assign (1 to 4, ***1***), Where [Number of Engine] = 1
  - Engine PORT (1 to 4, ***1***), Where [Number of Engine] = 2 or 3
  - Engine STBD (1 to 4, ***2***), Where [Number of Engine] = 2 or 3
  - Engine Center (1 to 4, ***3***), Where [Number of Engine] = 3
  - Engine Alarm
    - Alarm (***OFF***, ON)
    - Buzzer (***Short***, Middle, Long, Continue)

◆ 1Graph, 2Graphs

Press the **Menu/Back** key

- Depth Graph*
  - Period (***5min***, 30min, 1h, 3h, 6h, 12h, 1d, 2d, 3d, 7d)
  - Range (15 to 4921ft, ***1500ft***)
- W.Temp Graph*
  - Period (***5min***, 30min, 1h, 3h, 6h, 12h, 1d, 2d, 3d, 7d)
  - Range (9°F to 369°F, ***9°F***)
- A Temp. Graph*
  - Period (***5min***, 30min, 1h, 3h, 6h, 12h, 1d, 2d, 3d, 7d)
  - Range (9°F to 369°F, ***9°F***)
  - Air Temp. Offset (-99.9°C to 99.9°C, ***0°C***)
- A. Press Graph*
  - Period (***5min***, 30min, 1h, 3h, 6h, 12h, 1d, 2d, 3d, 7d)
  - Range (5 to 50hPa, ***10hPa***)
  - Air Press. Offset (-99.9hpa to 99.9hpa, ***0hpa***)

*: Depends on displayed graph data

◆ AIS

Press the **Menu/Back** key

- AIS
  - Orientation (***North Up***, Heading Up)
  - CPA TCPA Alarm
    - Alarm (***OFF***,ON)
    - CPA (0 to 6.00NM, ***0.00NM***)
    - TCPA (***30sec***, 1min, 2min, 3min, 4min, 5min, 6min, 12min)
    - Buzzer (***Short***, Middle, Long, Continue)
  - ICOM AIS Data (***Yes***, No)

◆ Custom Box

Press the **Menu/Back** key

- Heading* (See previous page)
- STW* (See previous page)
- SOG* (See previous page)
- Wind Speed* (See above menu tree)
- Wind Angle* (See above menu tree)
- Engine* (See above menu tree)
- Trip*
  - Clear (Yes, No)
  - Trip Alarm
    - Alarm (**OFF**, ON:0 to 9999NM; **0NM**)
    - Buzzer (***Short***, Middle, Long, Continue)

*: Dependant on data displayed in custom box.

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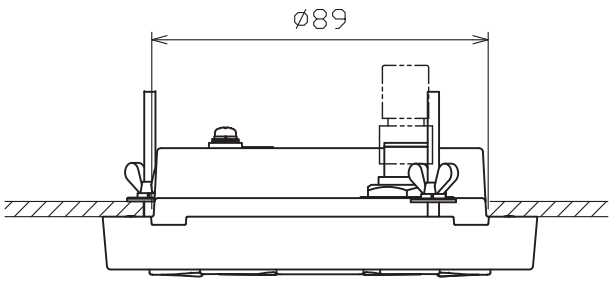
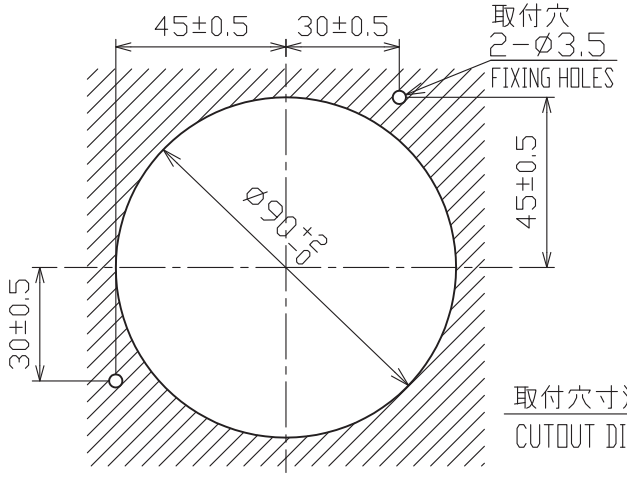
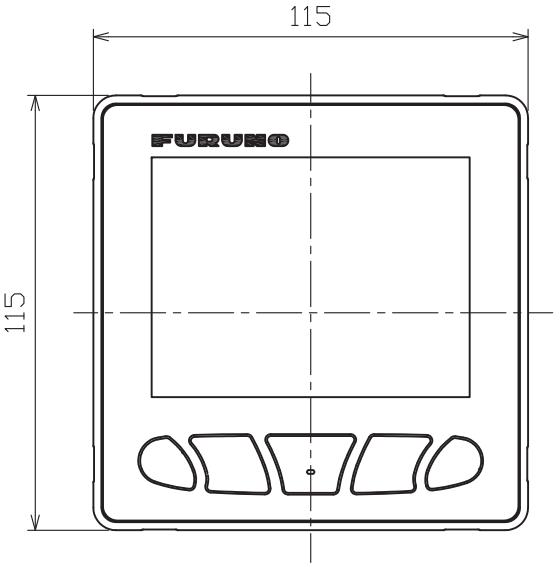


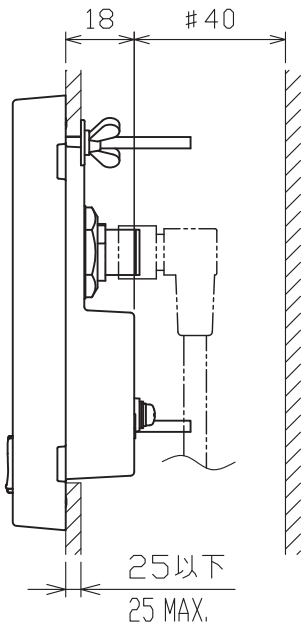


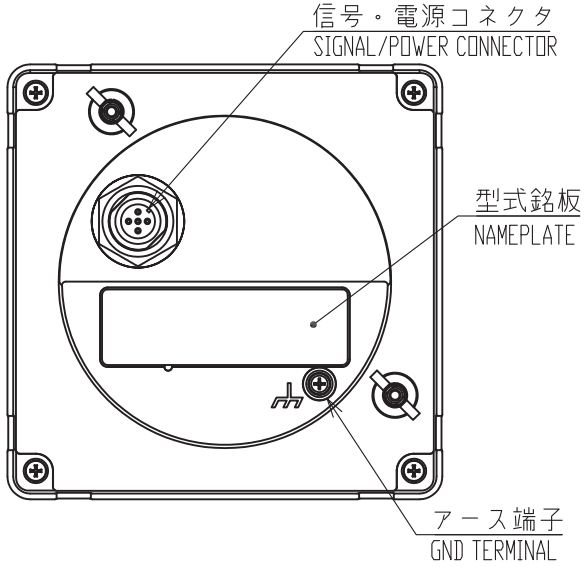
取付穴寸法
CUTOUT DIMENSIONS

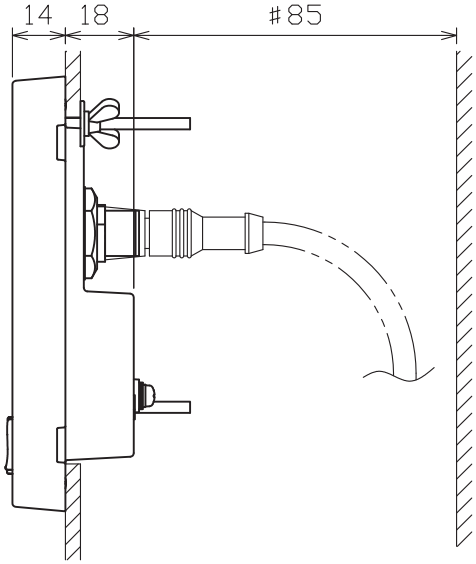
表1　TABLE 1

寸法区分（mm）DIMENSION	公差（mm）TOLERANCE
L≦50	±1.5
50<L≦100	±2.5
100<L≦500	±3









オプションコネクタ使用時
FOR OPTIONAL CONNECTOR USING

注記　1）指定外の寸法公差は表1による。
　　2）＃印寸法は最小サービス空間とする。
　　3）取付には、M3×40寸切りボルト、M3平座金・ばね座金・蝶ナットを使用のこと。

NOTE　1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
　　2. #: MINIMUM SERVICE CLEARANCE.
　　3. USE M3x40 STUD BOLTS AND M3 P.W. /S.W./WING NUTS FOR FIXING THE UNIT.

DRAWN 21/Apr/2017 T.YAMASAKI		TITLE	FI-70
CHECKED 21/Apr/2017 H.MAKI		名称	カラーインスツルメント（埋込装備）
APPROVED 24/Apr/2017 H.MAKI	FI-70		外寸図
SCALE	MASS 0.22 ±10% kg 質量は付属品・ケーブルを含まず。MASS DOES NOT INCLUDE CABLE AND ASSY.	NAME	COLOR INSTRUMENT(FLUSH MOUNT)
DWG.No. C7281-G01- C	REF.No. 26-008-100G-5		OUTLINE DRAWING

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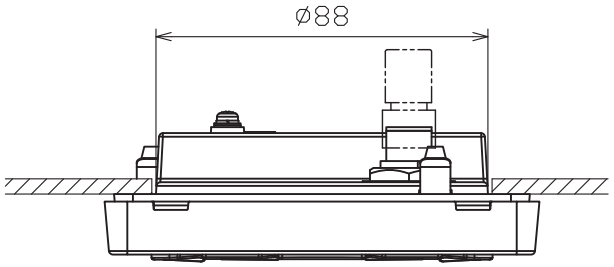
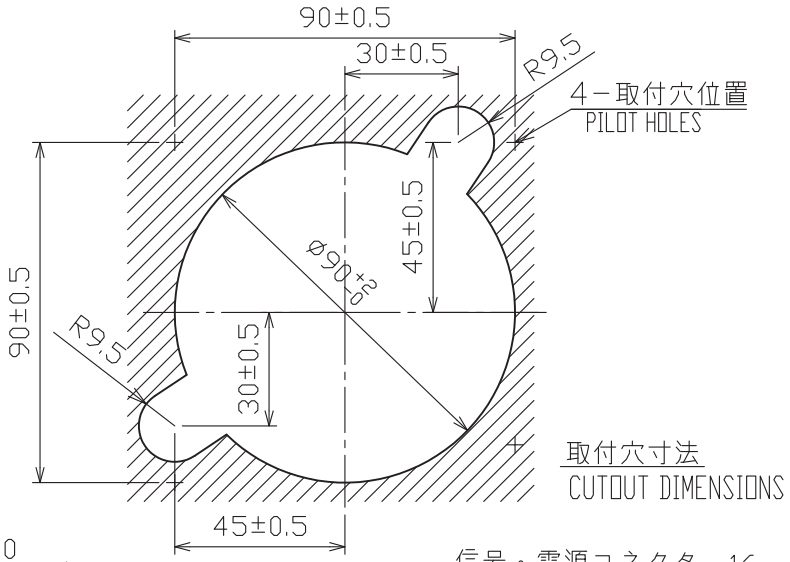
FURUNO





取付穴寸法
CUTOUT DIMENSIONS

表1　TABLE 1

寸法区分（mm）DIMENSION	公差（mm）TOLERANCE
L≦50	±1.5
50<L≦100	±2.5
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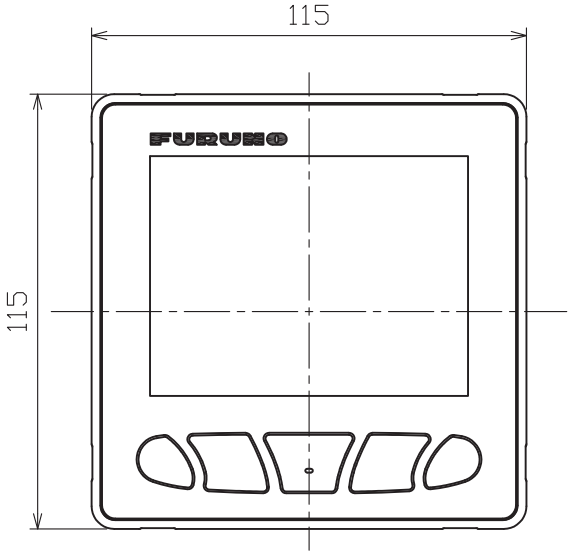

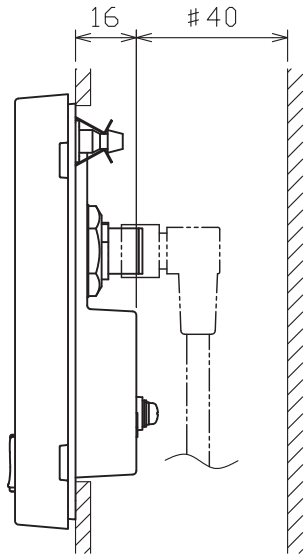

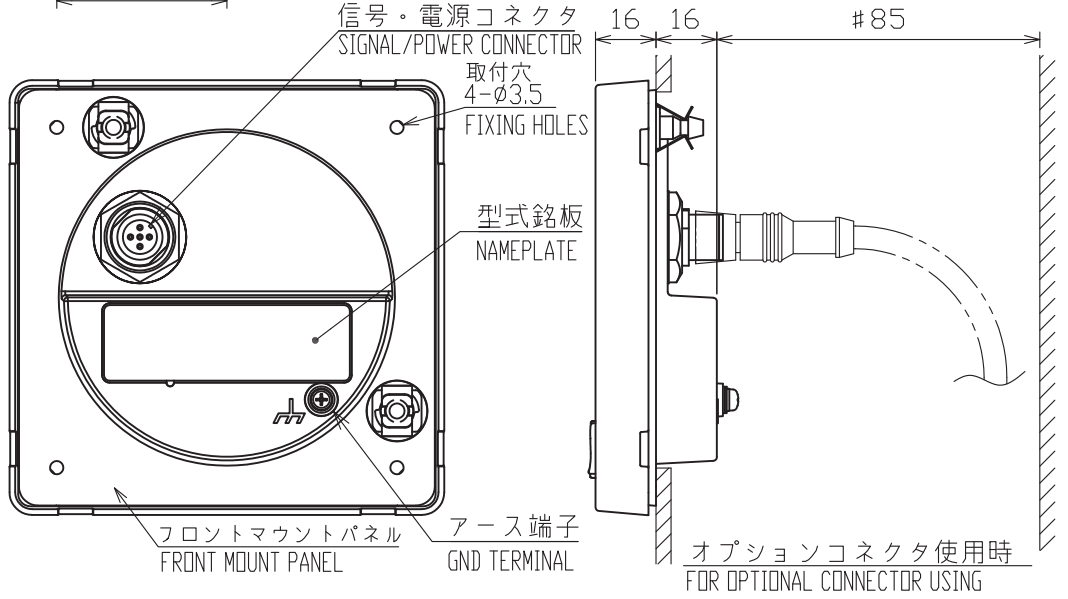

注記　1）指定外の寸法公差は表1による。
　　2）＃印寸法は最小サービス空間とする。
　　3）取付用ネジは、＋サラタッピンネジ呼び径３ｘ２０を使用のこと。

NOTE　1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
　　2. #: MINIMUM SERVICE CLEARANCE.
　　3. USE COUNTERSUNK HEAD TAPPING SCREWS ø3x20 FOR FIXING THE UNIT.

DRAWN 21/Apr/2017 T.YAMASAKI		TITLE	FI-70
CHECKED 21/Apr/2017 H.MAKI		名称	カラーインスツルメント（フロントマウント）
APPROVED 24/Apr/2017 H.MAKI	FI-70		外寸図
SCALE	MASS 0.24 ±10% kg 質量は付属品・ケーブルを含まず。MASS DOES NOT INCLUDE CABLE AND ASSY.	NAME	COLOR INSTRUMENT(FRONT MOUNT)
DWG.No. C7281-G03- C	REF.No. 26-008-102G-2		OUTLINE DRAWING

D-2

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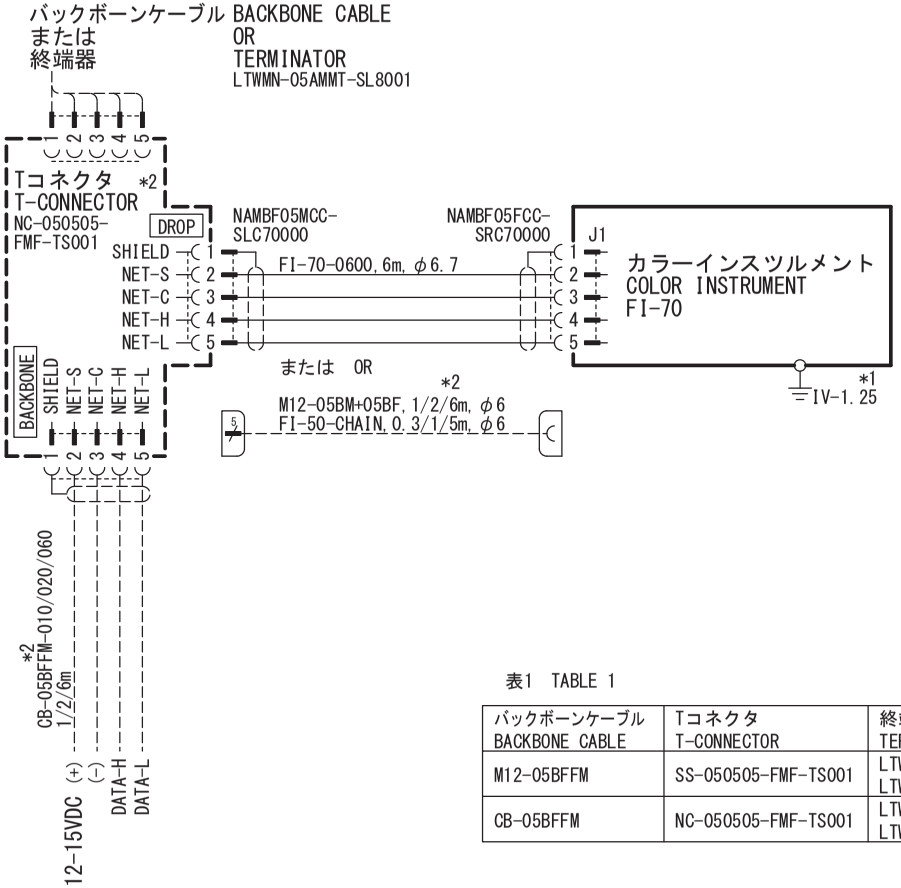

表1 TABLE 1

バックボーンケーブル BACKBONE CABLE	Tコネクタ T-CONNECTOR	終端器 TERMINATOR
M12-05BFFM	SS-050505-FMF-TS001	LTWMC-05BMMT-SL8001 MALE（オス） LTWMC-05BFFT-SL8001 FEMALE（メス）
CB-05BFFM	NC-050505-FMF-TS001	LTWMN-05AMMT-SL8001 MALE（オス） LTWMN-05AFFT-SL8001 FEMALE（メス）

注記
＊１）造船所手配。
＊２）オプション。
＊３）ケーブル、Tコネクタ、終端器の関係は表１による。

NOTE
*1: THE SHIPYARD SUPPLY.
*2: OPTION.
*3: TABLE 1 INDICATES RELATIONSHIP AMONG CABLE, T-CONNECTOR AND TERMINATOR.

DRAWN 11/Apr/2017 T. YAMASAKI		TITLE	FI-70
CHECKED 11/Apr/2017 H. MAKI		名 称	カラーインスツルメント
APPROVED 12/Apr/2017 H.MAKI			相互結線図
SCALE / MASS kg		NAME	COLOR INSTRUMENT
DWG. No. C7281-C01- C	REF. No.		INTERCONNECTION DIAGRAM

S-1

FURUNO ELECTRIC CO., LTD.

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Publication No. SOCQA0031

PSTI Statement of Compliance

We FURUNO ELECTRIC CO., LTD.

(Name of manufacturer of the product)

9-52 Ashihara-Cho, Nishinomiya City, 662-8580, Hyogo, Japan

(Address of manufacturer of the product)

declare under our sole responsibility that the product

COLOR INSTRUMENT,
FI-70

(Product type, batch)

December / 31 / 2027

(Support period for the product)

https://www.furuno.co.jp/en/csr/sociality/customer/product_security.html

(Weblink for latest information and contact to report to the manufacturer security issues)

to which this declaration relates conforms to the following standard(s) or other normative document(s)

Product Security and Telecommunications Infrastructure Act 2022
Product Security and Telecommunications Infrastructure (Security Requirements for Relevant Connectable Products) Regulations 2023 Schedule 1

On behalf of Furuno Electric Co., Ltd.

Nishinomiya City, Japan
24 April 2024

(Place and date of issue)

Akihiko Kanechika
Department General Manager
Quality Assurance Department

(Signature, name and function of the signatory)

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