FURUNO

FI-503 DIGITAL Instrument

FURUNO ELECTRIC CO., LTD.

ECF

(Elemental Chlorine Free)

The paper used in this manual
is elemental chlorine free.

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IMPORTANT NOTICES

General

• The operator of this equipment must read and follow the descriptions in this manual. Wrong operation or maintenance can cancel the warranty or cause injury.

• Do not copy any part of this manual without written permission from FURUNO.

• If this manual is lost or worn, contact your dealer about replacement.

• The contents of this manual and equipment specifications can change without notice.

• The example screens (or illustrations) shown in this manual can be different from the screens you see on your display. The screens you see depend on your system configuration and equipment settings.

• Save this manual for future reference.

• Any modification of the equipment (including software) by persons not authorized by FURUNO will cancel the warranty.

• All brand and product names are trademarks, registered trademarks or service marks of their respective holders.

How to discard this product

Discard this product according to local regulations for the disposal of industrial waste. For disposal in the USA, see the homepage of the Electronics Industries Alliance (http://www.eiae.org/) for the correct method of disposal.

How to discard a used battery

Some FURUNO products have a battery(ies). To see if your product has a battery(ies), see the chapter on Maintenance. Follow the instructions below if a battery(ies) is used.

In the European Union

The crossed-out trash can symbol indicates that all types of batteries must not be discarded in standard trash, or at a trash site. Take the used batteries to a battery collection site according to your national legislation and the Batteries Directive 2006/66/EU.
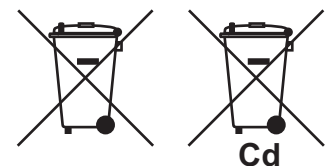
In the USA

The Mobius loop symbol (three chasing arrows) indicates that Ni-Cd and lead-acid rechargeable batteries must be recycled. Take the used batteries to a battery collection site according to local laws.
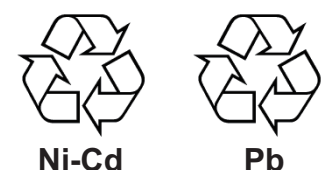
⚠ **SAFETY INSTRUCTIONS**

The operator of this equipment must read these safety instructions before attempting to operate 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, may 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.

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.

Warning Label

A warning label is attached to the equipment. Do not remove the label. If the label is missing or damaged, contact a FURUNO agent or dealer about replacement.

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 the instruments:

	Standard compass	Steering compass
FI-50 series Instruments	0.35 m	0.30 m

⚠ ⚠
WARNING
DO NOT OPEN,
DANGEROUS
VOLTAGES INSIDE.

警告
この電圧部分が
内部にあるた
め、開けない
いこと。

FURUNO
INSTRUMENT

MODEL

SER.NO.

COMPASS SAFE DISTANCE C€
STD ⓪.35 m STEER ⓪.30 m
Made in Japan

FURUNO ELECTRIC CO., LTD.
http://www.furuno.co.jp

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FOREWORD

A Word to the Owner of the FI-503

Congratulations on your choice of the FURUNO FI-503 Digital Display, a member of the FI-50 series of marine instruments. We are confident you will see why the FURUNO name has become synonymous with quality and reliability.

For over 60 years FURUNO Electric Company has enjoyed an enviable reputation for quality marine electronics equipment. This dedication to excellence is furthered by our extensive global network of agents and dealers.

This equipment is designed and constructed to meet the rigorous demands of the marine environment. However, no machine can perform its intended function unless operated and maintained properly. Please carefully read and follow the recommended procedures for operation and maintenance.

Thank you for considering and purchasing FURUNO equipment.

Features

The FI-503 Digital Display provides depth, speed, trip and timer information, all on a high quality, backlit LCD. The sturdy weather-proof case is built to stand up to even the harshest of environments.

The main features are

- Three displays in one
- Three levels of backlighting.
- Timers: Stopwatch and count-down
- Depth alarms: Shallow alarm, Deep alarm.
- Anchor alarms: Shallow alarm, Deep alarm
- Wind alarms: High apparent wind angle, Low apparent wind angle, Max. true wind speed, Low true wind speed
- Speed indications: Max. STW, Average STW, SOG, Max. SOG, Average SOG, Wind speed, Max. true wind speed.
- Velocity Made Good (VMG).
- Log indication from 0 to 99,999 nm
- Resettable trip counter, from 0 to 999 nm

SYSTEM CONFIGURATION

Standalone configuration
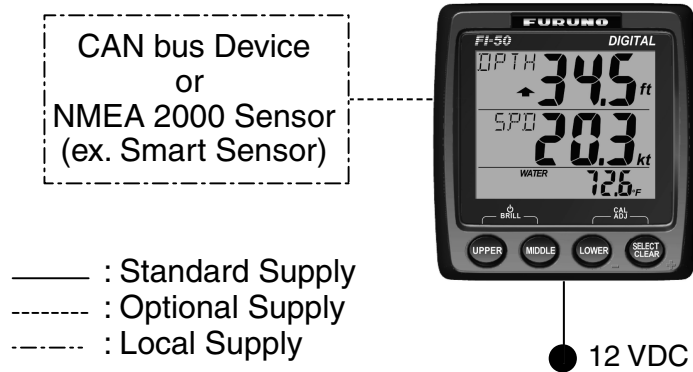
NOTICE: Turn on the terminal resistor in the instrument when connecting an NMEA 2000 sensor of CAN bus device. For the procedure, see the section on setting up, in the installation chapter.

CAN bus network

FI-5001
WIND
TRANSDUCER

TERMINAL BOX
(where necessary)

FI-501*
and/or
FI-502

FI-503
DIGITAL

FI-505
COURSE PILOT

FI-506
RUDDER

FI-504
MULTI

FI-507
MULTI XL

CAN bus Device or NMEA 2000 SENSOR*	CAN bus Device or NMEA 2000 SENSOR*	CAN bus Device or NMEA 2000 SENSOR*	CAN bus Device or NMEA 2000 SENSOR*	CAN bus Device or NMEA 2000 SENSOR*

JUNCTION BOX
FI-5002
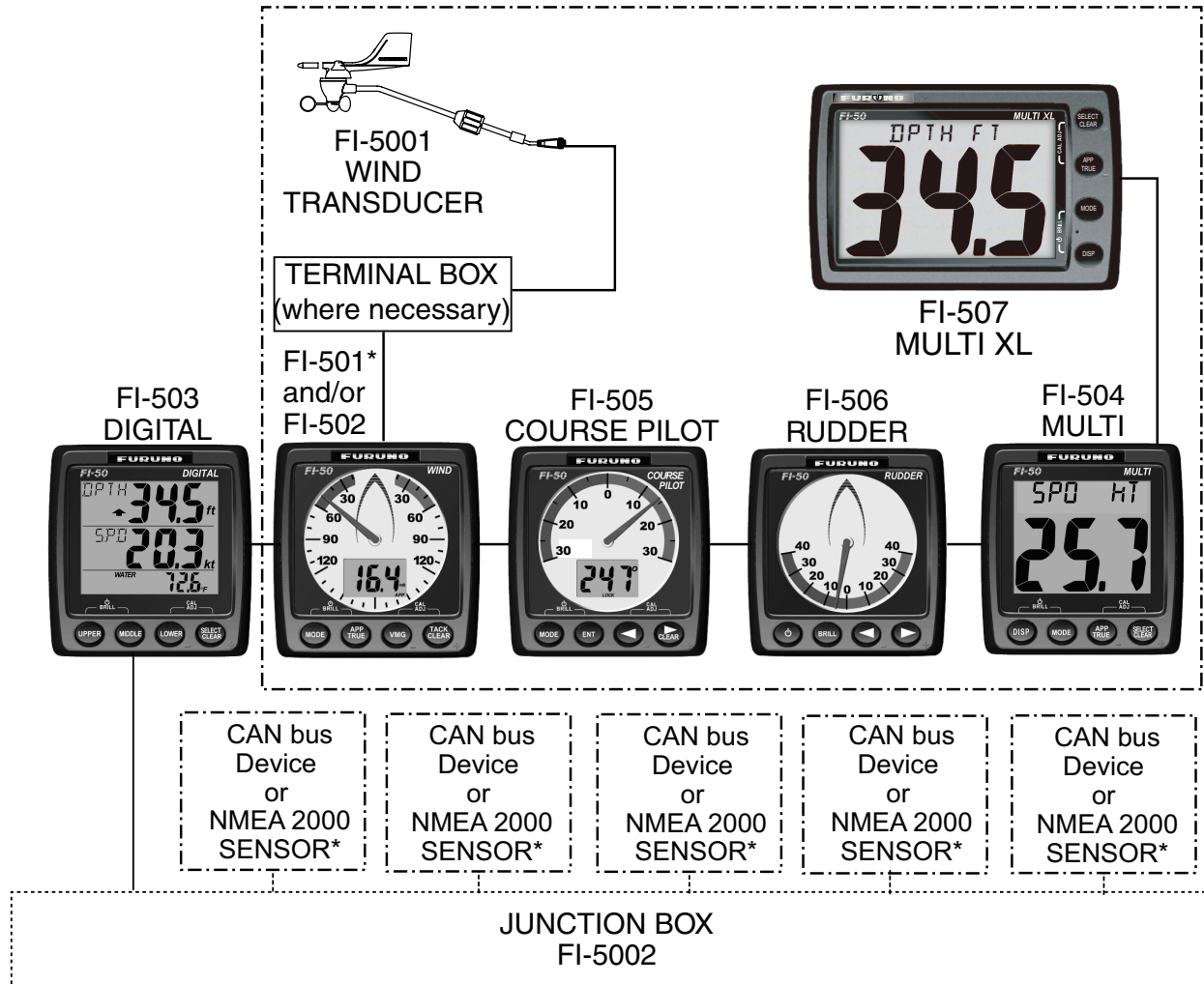
* NMEA 2000 SENSORS
 - Boat speed
 - Depth
 - Heading
 - Navigation
 - Environment
 - Autopilot
 - Engine

*FI-501 Wind Angle
 FI-502 Close Hauled Wind Angle

12 VDC
(not necessary if powered
by CAN bus network)

―――― : Standard Supply
------- : Optional Supply
         : Local Supply

NOTICE: Turn on the terminal resistor in the terminator of the CAN bus network.

1.   OPERATION

The FI-503 Digital instrument provide depth, wind, boat speed and environmental information, on three separate displays. Various navigation alarms and distance counters are also provided.

1.1   Operating Controls, Display Layout

UPPER display
(Depth and wind angle information and associated alarms)

MIDDLE display
(Boat speed and wind speed information and associated alarms)

LOWER display
(Environmental information, timer alarms, distance counters)

SELECT/CLEAR
- Select menu option.
- Select apparent or true wind.
- Silence alarm.
- Clear data.
- Reset counters and indications.
- Increment value.

LOWER
- Select data for lower display.
- Decrement value.

MIDDLE
Select data for middle display.

UPPER
- Turn on power.
- Select data for upper display.

1.2   Turning the Power On/Off

To power the instrument, press the **UPPER** key. All LCD segments go on and off and then the last-used display appears.
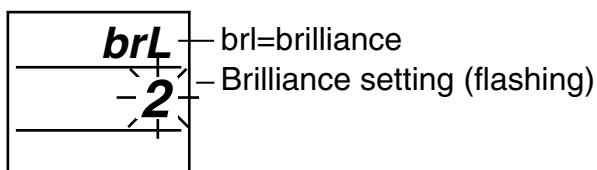
To power off the instrument, press the **UPPER** and **MIDDLE** keys together. The timer appears and counts down from three seconds to one second, and then the power goes off.
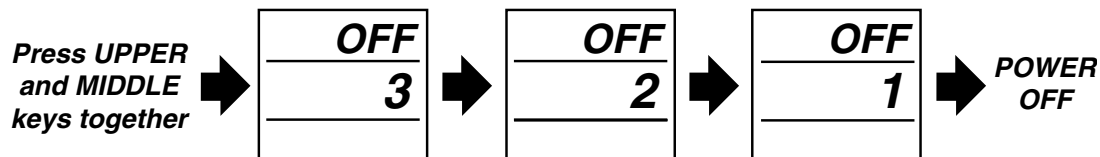

Power OFF sequence

1.3   Adjusting Brilliance and Contrast

1. Press the **UPPER** and **MIDDLE** keys together. The display for adjustment of brilliance appears, with current brilliance setting flashing.

2. Within seven seconds of completing step 1, press the **LOWER** key to lower the brilliance, or the **SELECT/CLEAR** key to raise it.

3. Press the **UPPER** and **MIDDLE** keys together. The display for adjustment of contrast appears, with current contrast setting flashing.
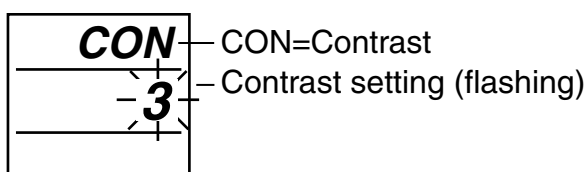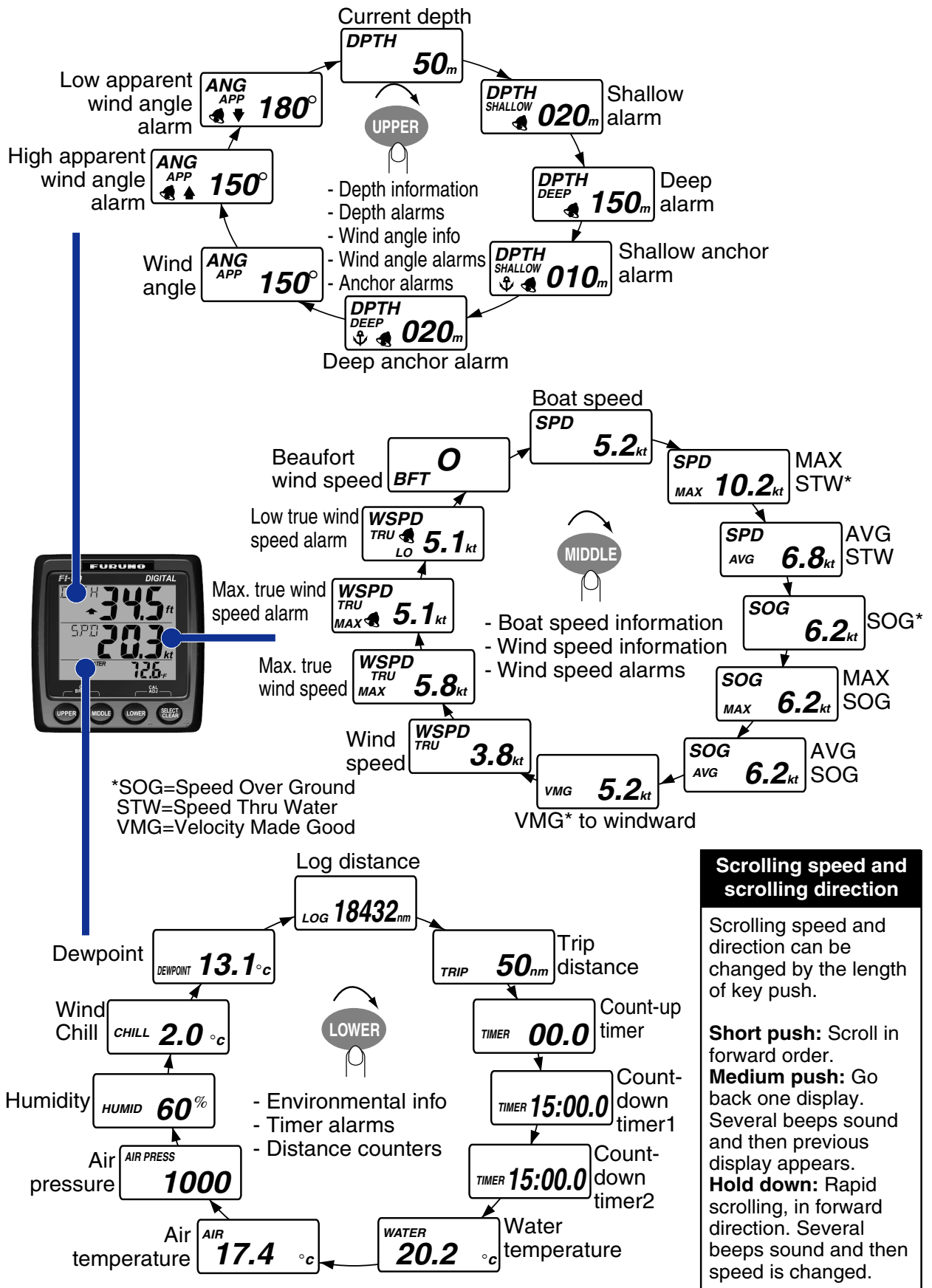

4. Within seven seconds of completing step 3, press the **LOWER** key to lower the contrast, or the **SELECT/CLEAR** key to raise it.

5. Press the **UPPER** and **MIDDLE** keys together to save the settings and restore normal operation.

The brilliance and contrast will be the same on all units which are synchronized. (For how to synchronize instruments, see page 24.)
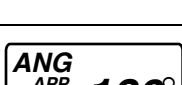
1.4   Selecting a Display

Use the **UPPER**, **MIDDLE** and **LOWER** keys to select the item to display in the upper, middle and lower displays.
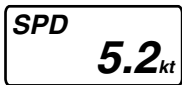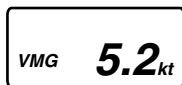
Current depth
DPTH **50**m

Low apparent wind angle alarm
ANG APP **180°**

High apparent wind angle alarm
ANG APP **150°**

Wind angle
ANG APP **150°**

- Depth information
- Depth alarms
- Wind angle info
- Wind angle alarms
- Anchor alarms

UPPER

DPTH SHALLOW **020**m
Shallow alarm

DPTH DEEP **150**m
Deep alarm

DPTH SHALLOW **010**m
Shallow anchor alarm

DPTH DEEP **020**m
Deep anchor alarm

Boat speed
SPD **5.2**kt

Beaufort wind speed
BFT **O**

Low true wind speed alarm
WSPD TRU LO **5.1**kt

Max. true wind speed alarm
WSPD TRU MAX **5.1**kt

Max. true wind speed
WSPD TRU MAX **5.8**kt

Wind speed
WSPD TRU **3.8**kt

MIDDLE

- Boat speed information
- Wind speed information
- Wind speed alarms

SPD MAX **10.2**kt
MAX STW*

SPD AVG **6.8**kt
AVG STW

SOG **6.2**kt
SOG*

SOG MAX **6.2**kt
MAX SOG

SOG AVG **6.2**kt
AVG SOG

VMG **5.2**kt
VMG* to windward

*SOG=Speed Over Ground
STW=Speed Thru Water
VMG=Velocity Made Good

Log distance
LOG **18432**nm

Dewpoint
DEWPOINT **13.1**°c

Wind Chill
CHILL **2.0** °c

Humidity
HUMID **60**%

Air pressure
AIR PRESS **1000**

Air temperature
AIR **17.4** °c

LOWER

- Environmental info
- Timer alarms
- Distance counters

Trip distance
TRIP **50**nm

Count-up timer
TIMER **00.0**

Count-down timer1
TIMER **15:00.0**

Count-down timer2
TIMER **15:00.0**

Water temperature
WATER **20.2** °c

Scrolling speed and scrolling direction

Scrolling speed and direction can be changed by the length of key push.

Short push: Scroll in forward order.
Medium push: Go back one display. Several beeps sound and then previous display appears.
Hold down: Rapid scrolling, in forward direction. Several beeps sound and then speed is changed.

Upper display

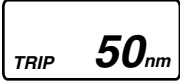| Display	Function	Display	Function
DPTH 50m	Current depth, in meters, feet or fathoms.	DPTH DEEP ⚓🔔 020m	Set deep anchor alarm. The alarms are released when depth goes higher than threshold value.
DPTH SHALLOW 🔔 020m	Set shallow alarm. The alarms are released when depth goes lower than threshold value.	ANG APP 150°	Apparent (or true) wind angle, in degrees.
DPTH DEEP 🔔 150m	Set deep alarm. Alarms released when depth goes higher than threshold value.	ANG APP 🔔▲ 150°	Set high apparent wind angle alarm. The alarms are released when wind angle goes higher than threshold value.
DPTH SHALLOW ⚓🔔 010m	Set shallow anchor alarm. The alarms are released when depth goes lower than threshold value.	ANG APP 🔔▼ 180°	Set low apparent wind angle alarm. The alarms are released when wind angle goes lower than threshold value.
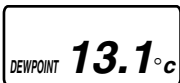
Middle display

Display	Function	Display	Function
SPD 5.2kt	Boat speed, in kt or m/s.	VMG 5.2kt	Velocity made good.
SPD MAX 10.2kt	Maximum boat speed. Resettable with the **SELECT/CLEAR** key.	WSPD APP 3.8kt	Apparent (or true) wind speed.
SPD AVG 6.8kt	Average boat speed. Resettable with the **SELECT/CLEAR** key.	WSPD TRU MAX 5.8kt	Maximum true wind speed. Resettable with the **SELECT/CLEAR** key.
SOG 6.2kt	Speed over ground.	WSPD TRU MAX🔔 5.1kt	Set maximum true wind speed alarm. The alarms are released when true wind speed is higher than threshold value.
SOG MAX 6.2kt	Maximum speed over ground. Resettable with the **SELECT/CLEAR** key.	WSPD TRU🔔 LO 5.1kt	Set low true wind speed alarm. The alarms are released when true wind speed is lower than threshold value.
SOG AVG 6.2kt	Average speed over ground. Resettable with the **SELECT/CLEAR** key.	O BFT	Beaufort wind speed. Beaufort speeds up to 12 are shown. See the table at the top of the next page for Beaufort no. and wind speed.

Beaufort no. and wind speed

Beaufort no.	Wind speed		Beaufort no.	Wind speed	
	kt	m/s		kt	m/s
0	0	0-0.2	7	28-33	14.4-17.4
1	1-3	0.5-2.0	8	34-40	17.5-21.0
2	4-6	2.1-3.5	9	41-47	21.1-24.6
3	7-10	3.6-5.6	10	48-55	24.7-28.8
4	11-16	5.7-8.6	11	56-63	28.9-32.6
5	17-21	8.7-11.2	12	64	32.7-32.9
6	22-27	11.3-14.3			

Lower display

Display	Function	Display	Function
LOG 18432nm	Log distance, up to 99,999 nm.	AIR 17.4 °C	Air temperature, in °C or °F.
TRIP 50nm	Trip distance, up to 999 nm. Resettable with the **SELECT/CLEAR** key.	AIR PRESS 1000	Air pressure, in hecto-pascals.
TIMER 00.0	Count-up timer. Counts up, like a stopwatch.	HUMID 60%	Relative humidity, in percentage.
TIMER 15:00.0	Count-down timer 1. Counts elapsed time.	CHILL 2.0 °C	Wind chill temperature, in °C or °F.
TIMER 15:00.0	Count-down timer 2. Counts elapsed time, from 99:59.0	DEWPOINT 13.1°C	Dewpoint.
WATER 20.2 °C	Water temperature, in °C or °F.		

1.5 Selecting Apparent or True Wind Angle, Wind Speed

You can show wind angle and wind speed in apparent or true wind. The **apparent wind** is the actual flow of air acting upon a sail, or the wind as it appears to the sailor. **True wind** is the wind seen by a stationary observer in velocity and direction.

With a wind angle or wind speed indication displayed, long-push the **SELECT/CLEAR** key to change the wind angle or wind speed to apparent and true alternately. A beep sounds after the change is completed. (Wind angle and wind speed displays are mutually changed.) True wind requires boat speed input. If there is no speed input, three dashes appear.

Apparent and true
wind speeds

Apparent and true
wind angles
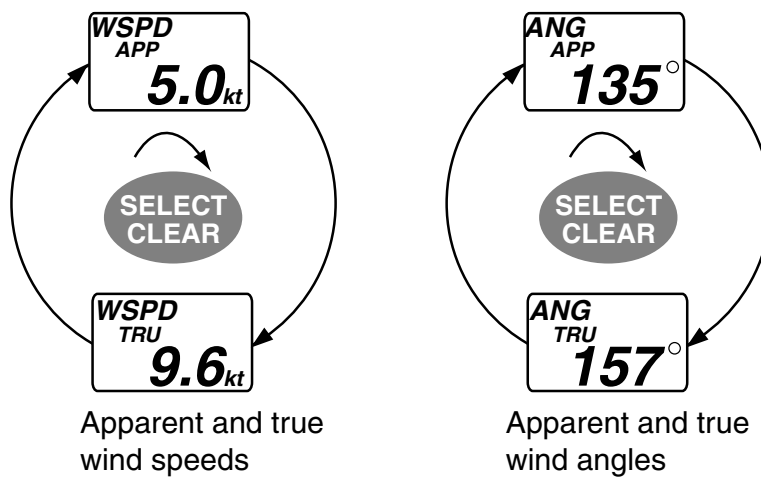
1.6   Alarms

There are eight conditions which trigger audio and visual alarms: Shallow alarm, Deep alarm, Shallow anchor alarm, Deep anchor alarm, High apparent wind angle, Low apparent wind angle, Maximum true wind speed alarm, and Low true wind speed alarm.

1. Press the **UPPER** or **MIDDLE** key to select desired alarm page. Use the **UPPER** key to select depth or wind angle alarm, or use the **MIDDLE** key to select a wind speed alarm.

Key	Available alarms		
UPPER	DPTH SHALLOW 020m Shallow alarm	DPTH DEEP 150m Deep alarm	DPTH SHALLOW 010m Shallow anchor alarm
	DPTH DEEP 020m Deep anchor alarm	ANG APP 150° High apparent wind angle	ANG APP 180° Low apparent wind angle
MIDDLE	WSPD TRU MAX 5.1kt Max. true wind speed alarm	WSPD TRU LO 5.1kt Low true wind speed alarm	

.

Alarm description

Alarm	Alarms released when;	Setting range
Shallow alarm	depth is shallower than this threshold.	0.0-303 m
Deep alarm	depth is deeper than this threshold.	0.1-304 m
Shallow anchor alarm	anchor depth is shallower than this threshold.	depth is shallower than this threshold.
Deep anchor alarm	anchor depth is greater than this threshold.	depth is deeper than this threshold.
Max. true wind speed alarm	max. true wind speed is greater than this threshold.	0-999 kt
Low true wind speed alarm	true wind speed is greater than this threshold.	0.-998 kt
HIgh apparent wind angle alarm	apparent wind angle is greater than this threshold.	S 0°-180° (S=Starboard)
Low apparent wind angle alarm	apparent wind angle is lower than this threshold.	P 1°-179° (P=Port)

2. If the selected alarm page shows "Off," press and hold down the **SELECT/CLEAR** key until an alarm setting appears.

3. Press the **LOWER** and **SELECT/CLEAR** keys together to enable adjustment. The alarm setting starts flashing.

4. Press the **LOWER** key to lower the setting; the **SELECT/CLEAR** key to raise it.

   Note: A low alarm cannot be set higher than its affiliated high (max.) alarm.

5. Press the **LOWER** and **SELECT/CLEAR** keys together to confirm setting and restore normal operation.

When an alarm is violated, the buzzer sounds and the alarm icon ( ) flashes. You can silence the buzzer with the **SELECT/CLEAR** key. The icon continues flashing until the offending alarm is disabled.

While the icon is flashing you can switch between alarm display and current display alternately by pressing the **UPPER** and **SELECT/CLEAR** keys together.

1.7 Timers

Three timers are provided on the lower display:

• Count-up timer (stopwatch)
• Count-down timer (two provided)

Time is displayed in seconds or minutes, depending on counter values.

Once you have set a timer, you can leave that page and select any other display. The counter continues to run in the background.

Count-up timer

The count-up timer functions like a stop watch, counting time upward, to 99 minutes and 59 seconds.

Count-down timers

The two count-down timers count down from a time between 15 minutes and one minute. When these timers have counted down to zero, they then start counting up. These timers beep at preset intervals to alert you to specific points in time.

• Two beeps every minute
• Three beeps at the start of the last 30 seconds
• One beep/second for each of the last 10 seconds
• Two-second beep at zero

How to set the timers

1. Press the **LOWER** key to show the desired timer display.

TIMER **00.0**	TIMER **15:00.0**	TIMER **15:00.0**
Count-up timer	Count-down timer 1	Count-down timer 2

2. Do one of the following depending on timer type selected:

   Count-up timer:
   Press the **SELECT/CLEAR** key to start the timer. A long beep sounds and the timer starts counting upward.

   Count-down timer:
   To start the timer from the time shown, press the **SELECT/CLEAR** key. To set a different start time, press the **LOWER** and **SELECT/CLEAR** keys together to enable adjustment. Use the **LOWER** key to lower the value; **SELECT/CLEAR** key to raise it. Press the **LOWER** and **SELECT/CLEAR** keys together to confirm setting. Press the **SELECT/CLEAR** key to start the timer.

To stop or restart the timer, press the **SELECT/CLEAR** key momentarily. A short beep sounds when the timer is stopped or restarted.

To stop and reset the timer to start value, press the **SELECT/CLEAR** key until you hear a long beep. The timer is stopped and reset to start value.

The timer settings are reflected on any timer-equipped instrument in the network which is set up for synchronization. (For how to synchronize units, see page 24.)

1.8   Resetting Counters and Indications

You can reset the following counters and indications:

- Trip
- Average speed
- Maximum speed
- Average speed over ground
- Maximum speed over ground
- Maximum true wind speed

To reset a counter or indication, first select applicable display. Press and hold down the **SELECT/CLEAR** key. A short beep sounds, the counter or indication flashes twice and then a long beep sounds to indicate resetting is completed.

The corresponding counter or indication is reset on all synchronized units. (For how to synchronize units, see page 24.)

2. MAINTENANCE, TROUBLESHOOTING

This chapter provides the information necessary for keeping your equipment in good working order.

⚠ WARNING
Do not open the equipment. Only qualified personnel should work inside the equipment.

2.1 Preventive Maintenance

Following the recommended procedures below will help maintain performance.

Check item	Check point	Remedy
Cabling	Check that all cabling is securely fastened and is free or rust and corrosion.	Reconnect if necessary. Replace if damaged.
Cabinet	Dust on cabinet	Remove dust with a soft, lint-free cloth. **NOTICE** **Do not apply paint, anti-corrosive sealant or contact spray to coating or plastic parts of the equipment.** Those items contain organic solvents that can damage coating and plastic parts, especially plastic connectors.

2.2   Troubleshooting

If you feel the equipment is not functioning properly, follow the procedures in the table below to try to restore normal operation. If normal operation cannot be restored, do not attempt to check inside the cabinet. There are no user-serviceable parts inside.

Troubleshooting

Problem	Possible cause	Remedy
Display is blank. Panel is not lit.	• Power supply • Cabling disconnected or damaged.	• Check power supply. • Check cabling.
Power is on but no or some data.	Sensor is turned off. Cable from sensor is disconnected or damaged.	• Turn on sensor. • Check cabling.
Inaccurate data	• Electromagnetic field generating equipment is in operation. • Cabling from sensor is damaged. • Sensor is improperly aligned (where applicable).	• Turn off all electromagnetic field generating equipment. Turn them on and off one by one. Check the display. Relocate offending equipment or this instrument as appropriate. • Check cabling. • Check installation. If sensor is properly aligned, you can apply offsets to certain data to correct them. For further details, see the installation chapter.

3. INSTALLATION

<div style="border: 2px solid black; padding: 10px; text-align: center;">

NOTICE

Do not apply paint, anti-corrosive sealant or contact spray to coating or plastic parts of the equipment.

Those items contain organic solvents that can damage coating and plastic parts, especially plastic connectors.

</div>

3.1 Equipment Lists

Standard supply

Name	Type	Code No.	Qty	Remarks
Display Unit	FI-503	-	1	
Installation Materials	CP26-00600	000-011-744	1 set	See packing list at end of manual for details.

Optional supply

Name	Type	Code No.	Qty	Remarks
Cable Assy.	FI-50-DROP-6M	001-105-810-10	1	
	FI-50-CHAIN-0.3M	001-105-820-10	1	
	FI-50-CHAIN-5M	001-105-840-10	1	
	FI-50-CHAIN-1M	000-166-950-11	1	
	FI-50-CHAIN-10M	001-105-850-10	1	
	FI-50-CHAIN-20M	001-105-860-10	1	
Flush Mount Kit	FI-50-FLUSH-KIT	000-010-619	1 set	
Junction Box	FI-5002	000-010-765	1 set	

3.2 Mounting

The display unit can be installed two ways: surface mount (fixed at front panel or fixed from rear panel) and flush mount (optional kit required). This section covers surface mounting. For flush mounting, see the flush mounting instructions, issued separately.

Surface mount 1: Fix instrument from front panel

1. Using the template at the back of this manual, open a mounting hole in the installation site.
2. Detach the front panel together with the keypad assy. Attach sponge (supplied) to rear of display unit.
3. Set the display unit to the mounting hole, and fix it with four self-tapping screws (3x20, supplied).
4. Attach the front panel and keypad assy. to the display unit.

Keypad Assy.

Sponge

Mounting Hole

Front Panel

Self-tapping screw (3x20)
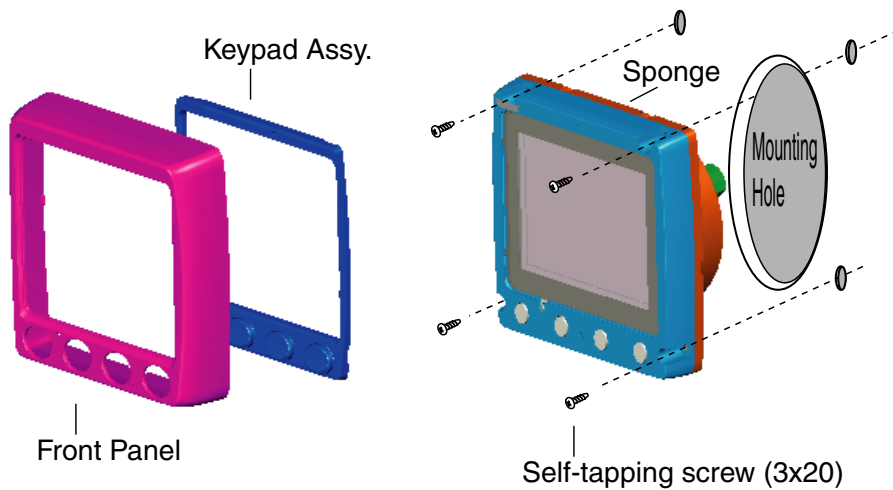
Surface mount 2: Fix instrument from rear panel

1. Using the template at the back of this manual, open a mounting hole in the installation site.

2. Insert studs (M3x40, 2 pcs., supplied) in the holes shown below. (Use only the studs supplied.)

Insert stud here.
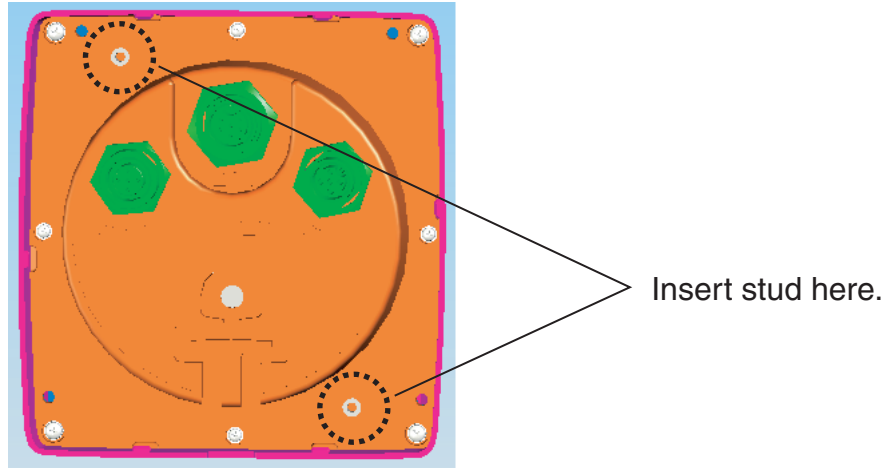
3. Set the display unit to the mounting hole, inserting studs through respective holes. Fix the display unit with wing nuts (M3, supplied).
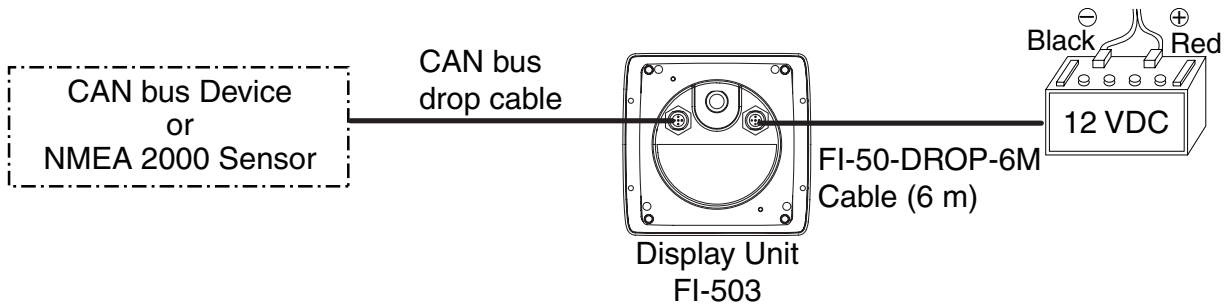

Mounting Hole

Stud (M3x40)

Wing Nut (M3)
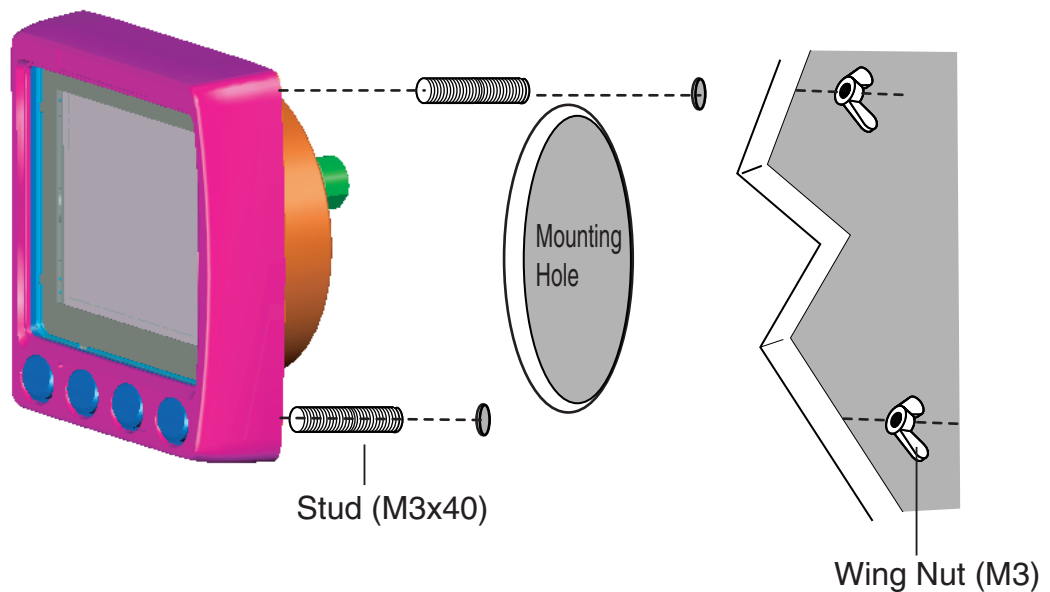
3.3 Wiring

For the service technician, detailed information about CAN bus wiring is on the FURUNO Tech-Net. See "Furuno CAN bus Network Design Guide" (TIE-00170-*).
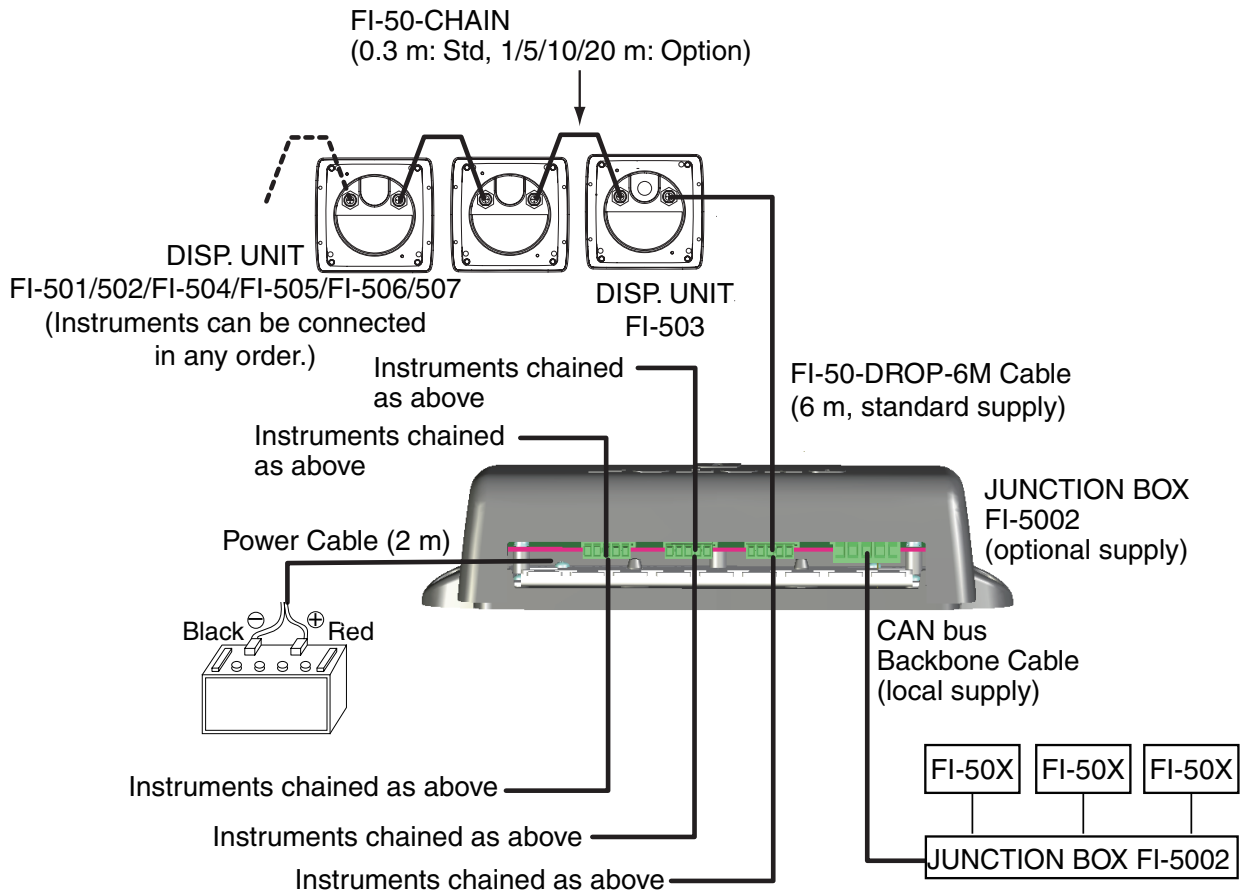
3.3.1 Standalone configuration

For standalone configuration the junction box is not necessary; connect the instrument directly to the power supply

Display Unit
FI-503

NOTICE: Turn on the terminal resistor in the instrument. For the procedure, see the section on setting up in this chapter.

3.3.2   Multi-instrument configuration

FI-50-CHAIN
(0.3 m: Std, 1/5/10/20 m: Option)

DISP. UNIT
FI-501/502/FI-504/FI-505/FI-506/507
(Instruments can be connected
in any order.)

DISP. UNIT
FI-503

Instruments chained
as above

Instruments chained
as above

FI-50-DROP-6M Cable
(6 m, standard supply)

Power Cable (2 m)

Black ⊖   ⊕ Red

JUNCTION BOX
FI-5002
(optional supply)

CAN bus
Backbone Cable
(local supply)

Instruments chained as above

Instruments chained as above

Instruments chained as above

| FI-50X | FI-50X | FI-50X |

JUNCTION BOX FI-5002

NOTE: The total length of drop cables and backbone cables must be within 80 m.

Junction box (option)

The junction box is required when connecting CAN bus network. This section covers wiring of the junction box. For how to mount the junction box, see its installation instructions, issued separately.
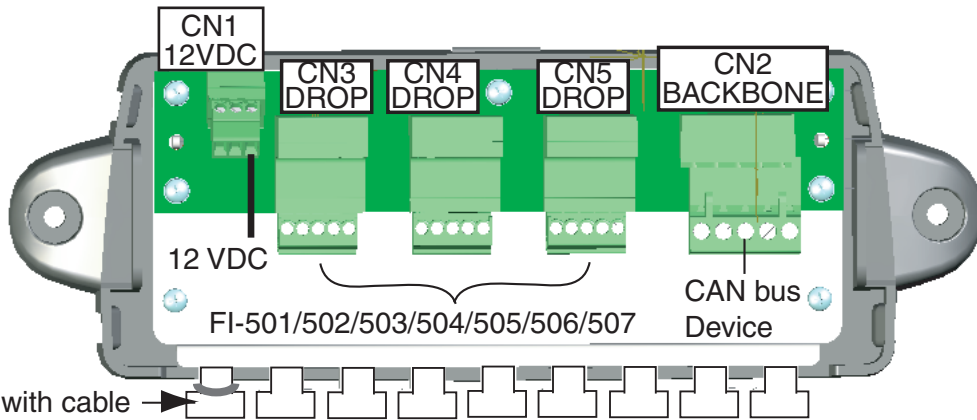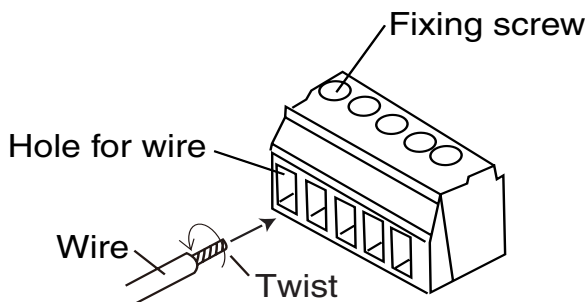

CN3 DROP - CN5 DROP and BACKBONE are socket-and-plug-type terminal blocks. Detach plug to connect wiring to it, by rocking it back and forth with your fingers. Remove approx. 6 mm of the sheath from the end of wires and twist wires. Loosen fixing screw in the plug, insert wire into hole and tighten fixing screw. Set plug to socket.
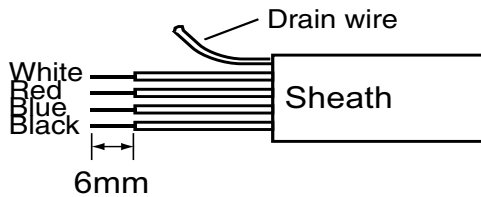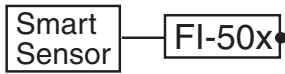

How to fabricate cable
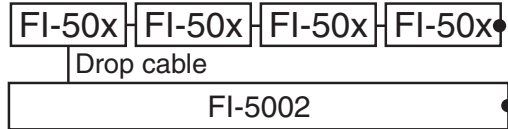

How to insert wire

Terminal resistor

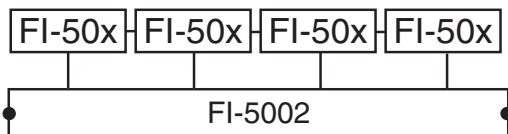The illustration below show various system configurations and what units to activate the terminal resistor.
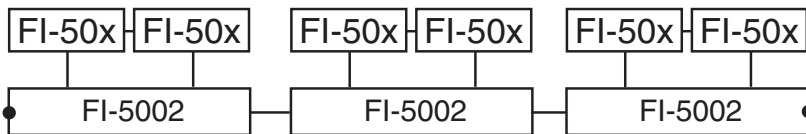
Smart sensor+FI-50x

Smart Sensor — FI-50x●

Multiple FI-50 series instruments, FI-5002, drop cabling

FI-50x | FI-50x | FI-50x | FI-50x●
Drop cable
FI-5002●

Multiple FI-50 series instruments, FI-5002

FI-50x | FI-50x | FI-50x | FI-50x
●FI-5002●

Multiple FI-50 series instruments, multiple FI-5002

FI-50x | FI-50x   FI-50x | FI-50x   FI-50x | FI-50x
●FI-5002 — FI-5002 — FI-5002●

Multiple FI-50 series instruments, FI-5002, smart sensor

Smart Sensor — FI-50x | FI-50x | FI-50x●
●FI-5002
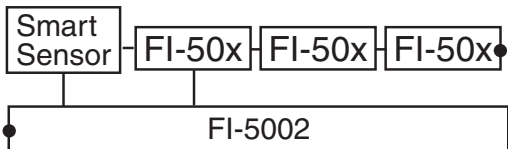
Multiple FI-50 series instruments, FI-5002, heading sensor, smart sensor

NMEA 2000 Sensor   Heading Sensor (ex. SC-30)   Smart Sensor

FI-50x | FI-50x

Terminator   Terminator

T-connector   FI-5002   T-connector   T-connector
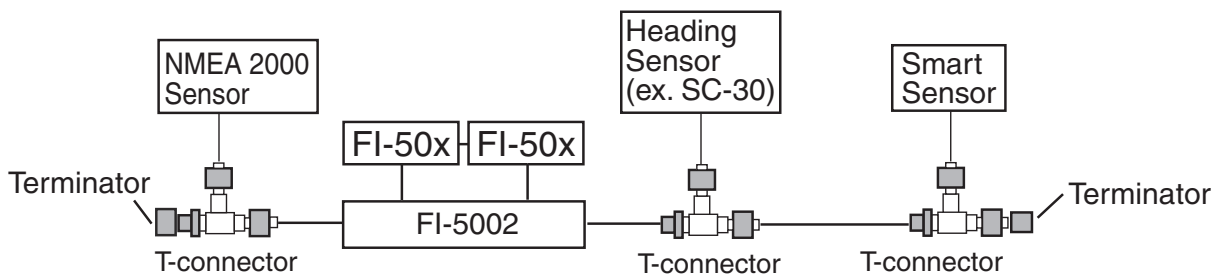
Multiple FI-50 series instruments, FI-5002, NMEA 2000, CAN bus sensors

CAN bus Device or NMEA 2000 Sensor   CAN bus Device or NMEA 2000 Sensor

FI-50x | FI-50x

Terminator

●FI-5002

T-connector   T-connector

● = Terminal resistor ON

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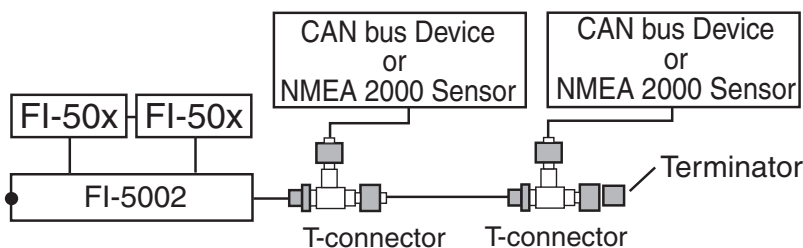
Turn on the terminal resistor in the junction box when the NMEA 2000 sensor(s) connected to it do not have a terminal resistor.
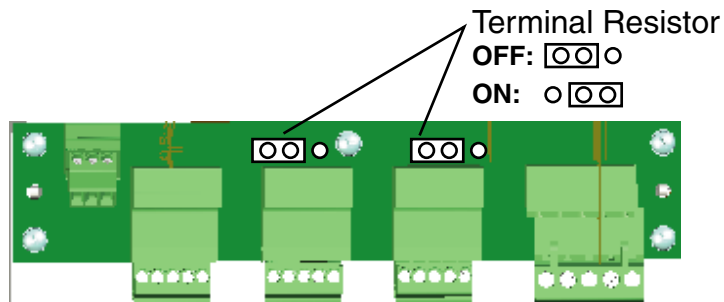
For how to turn on the terminal resistor in a FI-50 series instrument, see page 24.
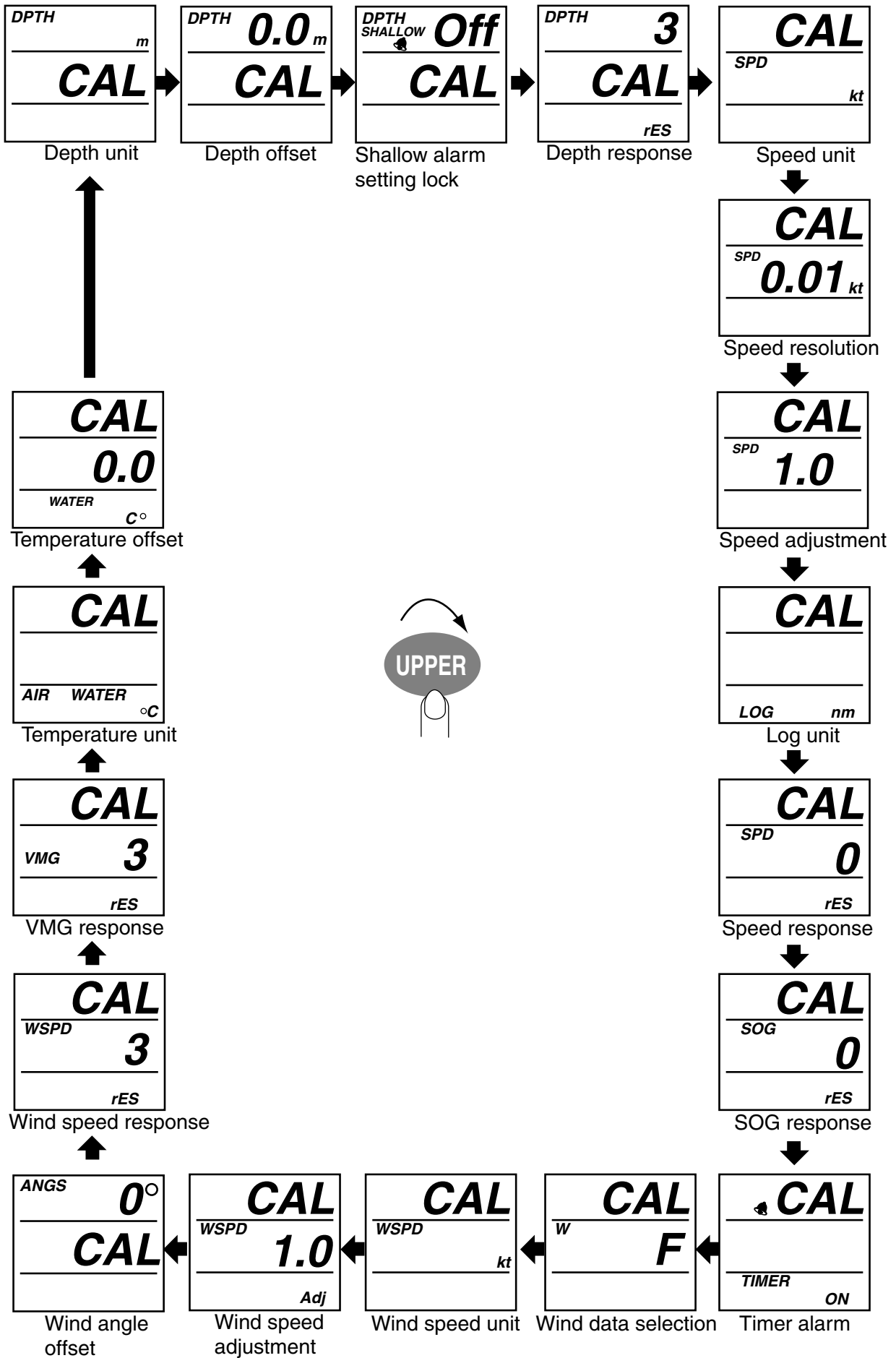
3.4   Setting Up

Your instrument is pre-programmed with factory default settings, which may or may not be suited to your vessel. Therefore, it is necessary to initialize the instrument for use with your vessel. This should be done immediately after completion of the installation.

Two sets of setup menus are provided: setup1 and setup2. The setup1 menu provides system parameters and the setup2 menu has user settings. The items provided in each menu are shown below.

3.4.1   Setup1 menu

The setup1 menu optimizes the instrument for use on your vessel. Follow the procedure below to access and set parameters.
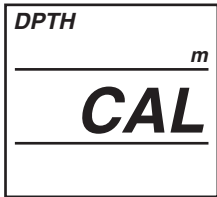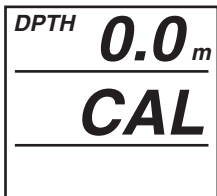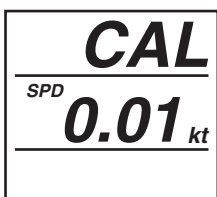
1. Press the **LOWER** and **SELECT/CLEAR** keys momentarily to enable the setup1 menu. The Depth units screen appears, with current setting flashing.

2. Use the **UPPER** key to select a menu item. Each press of the key changes the menu item in the sequence shown at the top of the next page.
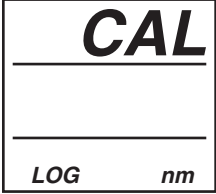
DPTH $\quad$ m $\quad$ **CAL**	DPTH $\quad$ **0.0** m $\quad$ **CAL**	DPTH SHALLOW **Off** **CAL**	DPTH $\quad$ **3** $\quad$ **CAL** rES	**CAL** SPD $\quad$ kt
Depth unit	Depth offset	Shallow alarm setting lock	Depth response	Speed unit

CAL SPD **0.01** kt
Speed resolution

CAL SPD **1.0**
Speed adjustment

CAL LOG $\quad$ nm
Log unit

CAL SPD **0** rES
Speed response

CAL SOG **0** rES
SOG response

CAL **0.0** WATER C°
Temperature offset

CAL AIR WATER °C
Temperature unit

CAL VMG **3** rES
VMG response

CAL WSPD **3** rES
Wind speed response

UPPER

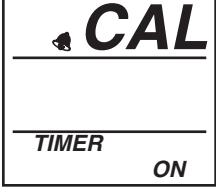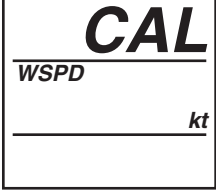| ANGS **0°** **CAL**	**CAL** WSPD **1.0** Adj	**CAL** WSPD kt	**CAL** W **F**	**CAL** TIMER ON
Wind angle offset	Wind speed adjustment	Wind speed unit	Wind data selection	Timer alarm

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3. Use the **LOWER** and **SELECT/CLEAR** key to set value or select option.
   LOWER key: Decrement value.
   SELECT/CLEAR key: Increment value or select option.

4. To continue, press the **UPPER** key to select another menu item.

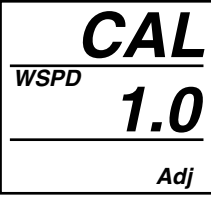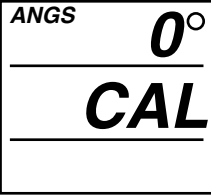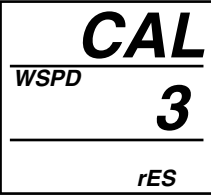5. To save settings and restore normal operation, press the **LOWER** and **SELECT/CLEAR** keys together.
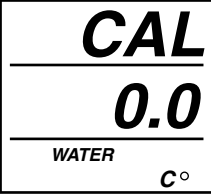
Setup1 menu items

Display	Function	Setting range or options	Default setting
DPTH m **CAL**	Select depth unit.	m (meter), ft (feet)	m
DPTH **0.0** m **CAL**	Set depth offset.	-99 - +99 (m or ft)	0.0
DPTH SHALLOW **Off** **CAL**	Luck/unlock shallow alarm setting.	On, OFF	OFF
DPTH **3** **CAL** rES	Set response to depth change. The lower the setting the faster the response.	0 - 12	3
CAL SPD kt	Select speed unit.	kt (knot), mph (mile per hour), kmh (kilometer per hour)	kt
CAL SPD **0.01** kt	Select speed resolution. Select number of places to show after decimal point.	0.01, 0.1	0.01

Setup1 menu items

Display	Function	Setting range or options	Default setting
CAL SPD 1.00	Set speed adjustment. (STW only)	0.30 - 2.50	1.00
CAL LOG nm	Select log unit.	sm (statute mile), km (kilometer), nm (nautical mile)	nm
CAL SPD 0 rES	Set response to speed change. The lower the setting the faster the response.	0 - 12	0
CAL SOG 0 rES	Set response to SOG change. The lower the setting the faster the response.	0 - 12	0
CAL TIMER ON	Enable/disable the timer alarm's audio alarm.	On, OFF	OFF
CAL W F	Select source of wind data. Select "r" for second unit.	F: FI-5001, r: repeater	F
CAL WSPD kt	Select wind speed unit.	kt, m/s (No unit indication shown on display)	kt

Setup1 menu items

Display	Function	Setting range or options	Default setting
CAL WSPD **1.0** Adj	Set wind speed adjustment.	0.3 - 2.5	1.0
ANGS **0°** **CAL**	Set wind angle offset.	S 0° - 180° P 1° - 179°	0
CAL WSPD **3** rES	Set wind speed response. The lower the setting the faster the response.	0 - 12	3
CAL VMG **3** rES	Set VMG response.	0 - 12	3
CAL AIR WATER °C	Select temperature unit.	°C, °F	°C
CAL **0.0** WATER C°	Set temperature offset.	-99° - +99°	0.0

3.4.2 Setup2 menu

The setup2 menu contains items which once preset do not require frequent adjustment. These are
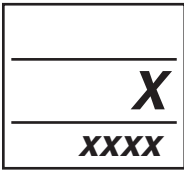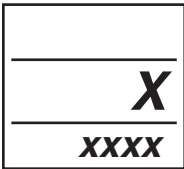
1. Press the **LOWER** and **SELECT/CLEAR** keys together (about 5-6 seconds) to enable the user settings menu. The software version of CPU1 screen appears. (See the illustration below.)

2. Use the **UPPER** key to select a menu item. Each press of the key changes the menu item in the sequence shown below.

X* *xxxx**	**X*** *xxxx**	**CAL** **ON** *beep*	**CAL** **ON** *brill*	**CAL** **Off** *SEtUP*
Software ver. no of CPU1	Software ver. no of CPU2	Key beep	Auto brilliance	Setup1 menu

* Xxxxx = program and program ver. nos.

UPPER

CAL **Off** *rESEt*	**CAL**DEMO **Off**	**CAL** **Syc** **Off**	**CAL** **rES** **Off**
Restore default settings	Demo display	Synchronization	Terminal resistor
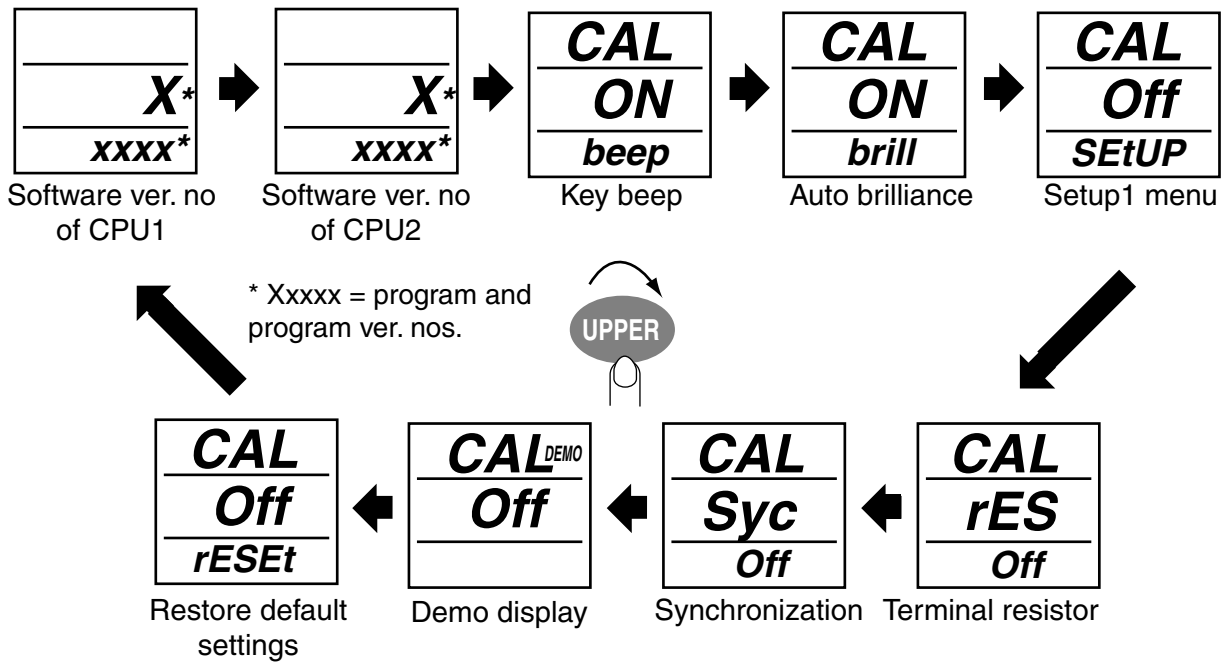
3. Use the **SELECT/CLEAR** key to select ON or OFF as applicable.

4. To continue, press the **UPPER** key to select another item.

5. To save settings and restore normal operation, press the **LOWER** and **SELECT/CLEAR** keys together.

Setup2 menu items

Display	Function	Options	Default setting
X *xxxx*	Software version of CPU1. X=program and xxxx=program version no.	For display only.	
X *xxxx*	Software version of CPU2. X=program and xxxx=program version no.		
CAL **ON** *bEEP*	Key beep on/off.	ON, OFF	ON

Setup2 menu items

Display	Function	Options	Default setting
CAL **ON** *brILL*	Adjust brilliance automatically with environment.	ON, OFF	ON
CAL **ON** *SEtUP*	Enable/disable access to the setup1 menu.	ON, OFF	ON
CAL **rES** *OFF*	Terminal resistor on/off. .	ON, OFF	OFF
CAL **Syc** *ON*	Turn on/off synchronization of FI-50 series instruments.	ON: Synchronize all FI-50 instruments having this setting. A: Synchronize FI-50 instruments having this setting. b: Synchronize FI-50 instruments having this setting. OFF: Turn off synchronization.	ON
CAL *DEMO* **OFF**	Demo mode. To enable, press the **SELECT/CLEAR** key. Depth, speed and water temperature are shown. To disable and return to this menu, press and hold down the **SELECT/ CLEAR** key.	ON, OFF	OFF
CAL **OFF** *rESEt*	Restore factory defaults. To restore factory defaults, press and hold down the **SELECT/ CLEAR** key to show ON. Press the key again. A beep sounds upon completion.	ON, OFF	OFF

SPECIFICATIONS OF
FI-503 DIGITAL

1   GENERAL
1.1   Display   Segment LCD
1.2   Display Content   Depth, speed, wind angle, wind speed,
                                                      timer, environmental, nav data,
                                                      rudder angle
1.3   I/O Port   CAN bus, 2 ports

2   JUNCTION BOX (OPTION)
2.1   No. of I/O ports
        CAN bus Device   6 ports
        CAN bus Backbone   2 ports

3   POWER SUPPLY AND POWER CONSUMPTION
3.1   Display Unit   12 VDC, less than 0.1 A
3.2   Junction Box   12 VDC, less than 1 A, max. 2A connectable

4   ENVIRONMENTAL CONDITIONS
4.1   Useable Temperature Range   -15°C - +55°C
4.2   Relative Humidity   Less than 95% (+40°C)
4.3   Waterproofing
        Display Unit   IP56
        Junction Box   IPX0
4.4   Vibration   - 2 Hz-5 Hz and up to 13.2 Hz with an
                                                        excursion of ±1 mm ±10% (7 m/s^2
                                                        maximum acceleration at 13.2 Hz);
                                                      - above 13.2 Hz and up to 100 Hz with a
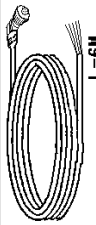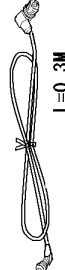   constant maximum acceleration of 7 m/s^2
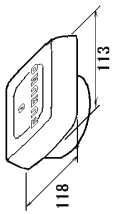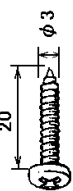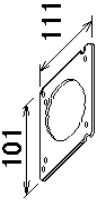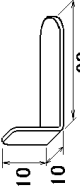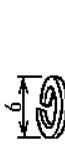
5   COATING COLOR
5.1   Display Unit   N2.5
5.2   Junction Box   N2.5

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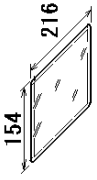# PACKING LIST FI-503
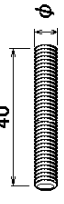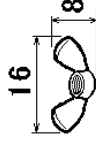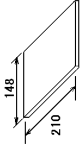
NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
ユニット UNIT			
表示部 MONITOR UNIT	113 / 118	FI-503 / 000-011-743-00	1
工事材料 INSTALLATION MATERIALS		CP26-00600	
＋十ナベタッピンネジ 1シュ SELF-TAPPING SCREW	20 / φ3	3X20 SUS304 / 000-163-884-10	4
ケーブル組品 CABLE ASSEMBLY	L=6M	FI-50-DROP-6M / 001-105-810-10	1
ケーブル組品0.3M CABLE ASSEMBLY 0.3M	L=0.3M	FI-50-CHAIN-0.3M / 001-105-820-10	1
サーフェスマウントスポンジ SPONGE	101 / 111	TZ7583002A0 / 000-167-832-10	1
パネルリムーバー PANEL REMOVER	10 / 10 / 30	19-028-3124-1 / 100-340-471-10	1
バネ座金 SPRING WASHER	6	M3 SUS304 / 000-167-404-10	2
ミガキ丸平座金 FLAT WASHER	φ7	M3 SUS304 / 000-167-453-10	2

NAME	OUTLINE	DESCRIPTION/CODE No.	Q'TY
寸切ボルト BOLT	40 / φ3	M3X40 SUS304 / 000-167-804-10	2
蝶ナット WING NUT	16 / 8	M3 SUS304 / 000-167-826-10	2
図書 DOCUMENT			
取扱説明書 OPERATOR'S MANUAL	148 / 210	OME-72680-* / 000-167-329-1*	1
操作要領書 OPERATOR'S GUIDE	154 / 216	OS*-72680-* / 000-167-294-1* **	1
内部終端/設定 INTERNAL RESISTOR SETTING	105 / 148	C72-00705-* / 000-168-501-1*	1

コード番号末尾の[*]は、選択品の代表コードを表します。
CODE NUMBER ENDING WITH "*" INDICATES THE CODE NUMBER OF REPRESENTATIVE MATERIAL.
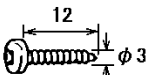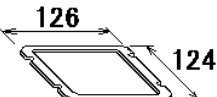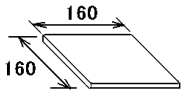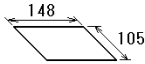
(略図の寸法は、参考値です。 DIMENSIONS IN DRAWING FOR REFERENCE ONLY.)

型式/コード番号が2段の場合、下段より上段に代わる過渡期品であり、どちらかが入っています。 なお、品質は変わりません。

TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM. THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT. QUALITY IS THE SAME.
26AA-X-9859

FURUNO

CODE NO.	000-010-619-00	26AA-X-9401 -4
TYPE	FI-50-FLUSH-KIT	1/1

フラッシュマウントキット
FLUSH MOUNT KIT.

INSTRUMENTS

FI-50

番号 NO.	名称 NAME	略図 OUTLINE	型名／規格 DESCRIPTIONS	数量 Q'TY	用途／備考 REMARKS
1	前面パネルF FRONT PANEL	125 129	TZ7580002A0 CODE NO. 000-167-885-10	1	※1
2	FURUNOロゴ H3 FURUNO STICKER H3	45 5	19-028-1502-0 CODE NO. 100-339-580-10	1	※1に貼付済み PRE-ATTACHED TO ※1.
3	ハードカバーF COVER	128 132	TZ7580007A0 CODE NO. 000-167-887-10	1	
4	フラッシュマウントツール FRAME	121 125	TZ7580008A0 CODE NO. 000-167-886-10	1	
5	+ナベ タッピンネジ 1シュ SELF-TAPPING SCREW	20 φ3	3X20 SUS304 CODE NO. 000-163-884-10	4	
6	+ナベ Pタイトネジ PAN HEAD P-TIGHT SCREW	12 φ3	3X12 SUS304 CODE NO. 000-167-827-10	4	
7	Fマウントスポンジ SPONGE	126 124	TZ7583001A0 CODE NO. 000-167-833-10	1	
8	取付要領書 INSTALLATION PROCEDURE	160 160	C72-00703-* ワ/エイ CODE NO. 000-167-323-1*	1	
9	ハードカバーハズシカタ HARD COVER DETACHMENT GUIDE	148 105	C72-00804-* CODE NO. 000-170-074-1*	1	

型式/コード番号が2段の場合、下段より上段に代わる過渡期品であり、どちらかが入っています。　なお、品質は変わりません。

TWO TYPES AND CODES MAY BE LISTED FOR AN ITEM.   THE LOWER PRODUCT MAY BE SHIPPED IN PLACE OF THE UPPER PRODUCT.
QUALITY IS THE SAME.
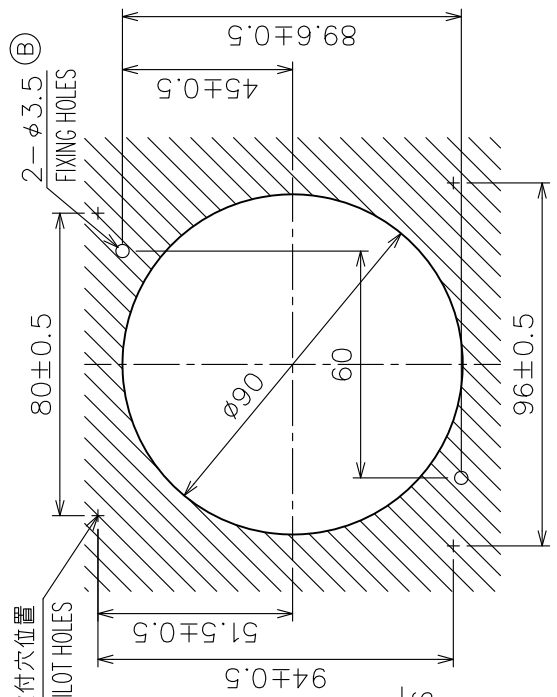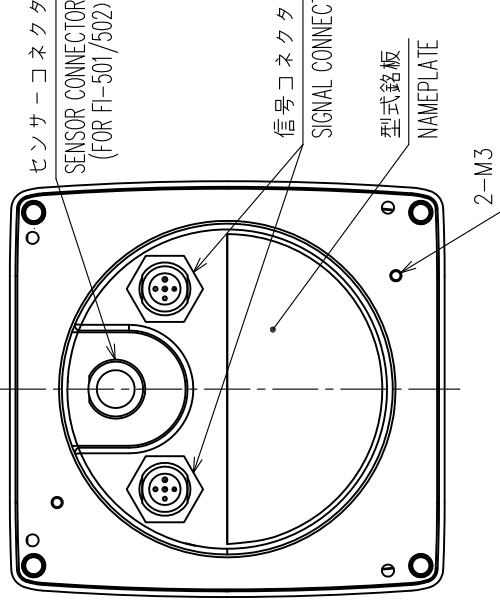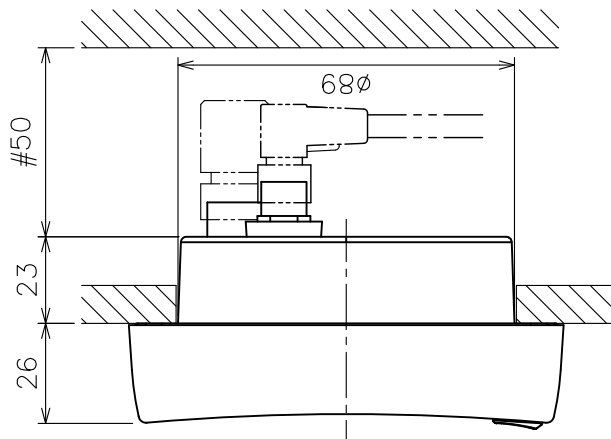（略図の寸法は、参考値です。　DIMENSIONS IN DRAWING FOR REFERENCE ONLY.）

FURUNO ELECTRIC CO., LTD.   26AA-X-9401

D-1

FURUNO ELECTRIC CO., LTD.

2-φ3.5 FIXING HOLES
89.6±0.5
45±0.5
80±0.5
φ90
60
51.5±0.5
94±0.5
96±0.5

Ⓐ 4-取付穴位置 PILOT HOLES
Ⓑ

センサーコネクタ SENSOR CONNECTOR (FOR FI-501/502)
信号コネクタ SIGNAL CONNECTOR
型式銘板 NAMEPLATE
2-M3

取付穴寸法図 CUTOUT DIMENSIONS

68φ
#50
23
26
110
115
38

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

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) 取付方法は次の2種類から選択する。
Ⓐ：ナベタッピンネジ呼び径3×20を使用のこと。
Ⓑ：M3×40寸切りボルト、M3平座金/バネ座金/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. SELECT FIXING METHOD FROM FOLLOWINGS;
Ⓐ: USE TAPPING SCREWS ø3x20.
Ⓑ: USE M3 STUD BOLT, P.W. / S.W. / WING NUT, SCREW LENGTH: 40.

DRAWN 30/Sep/09 T.YAMASAKI
CHECKED 30/Sep/09 T.TAKENO
APPROVED 26/Oct/09 R.Esumi
SCALE MASS 0.3 kg ±10%
質量はケーブルを含みます。 MASS W/O CABLE.
DWG.No. C7266-G02-C
REF.No. 26-001-102G-2

TITLE FI-501/502/503/504/505/506
名称 インスツルメント（サーフェスマウント）
外寸図
NAME INSTRUMENT (SERFACE MOUNT)
OUTLINE DRAWING

FURUNO

FURUNO ELECTRIC CO., LTD.

113±1

108±1

118±0.5

R5

センサーコネクタ
SENSOR CONNECTOR
(FOR FI-501/502)

信号コネクタ
SIGNAL CONNECTOR

型式銘板
NAMEPLATE

4-取付穴位置
PILOT HOLES

60±0.5

取付穴寸法
CUTOUT DIMENSIONS

表1 TABLE 1

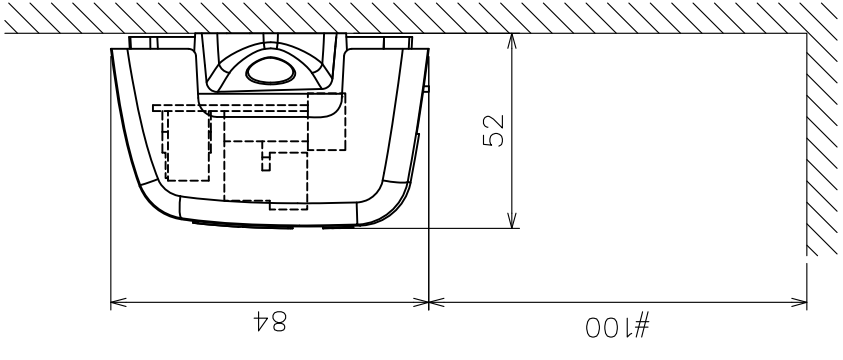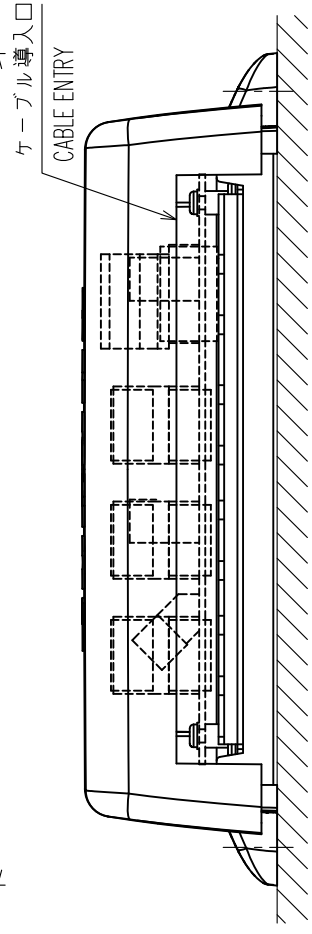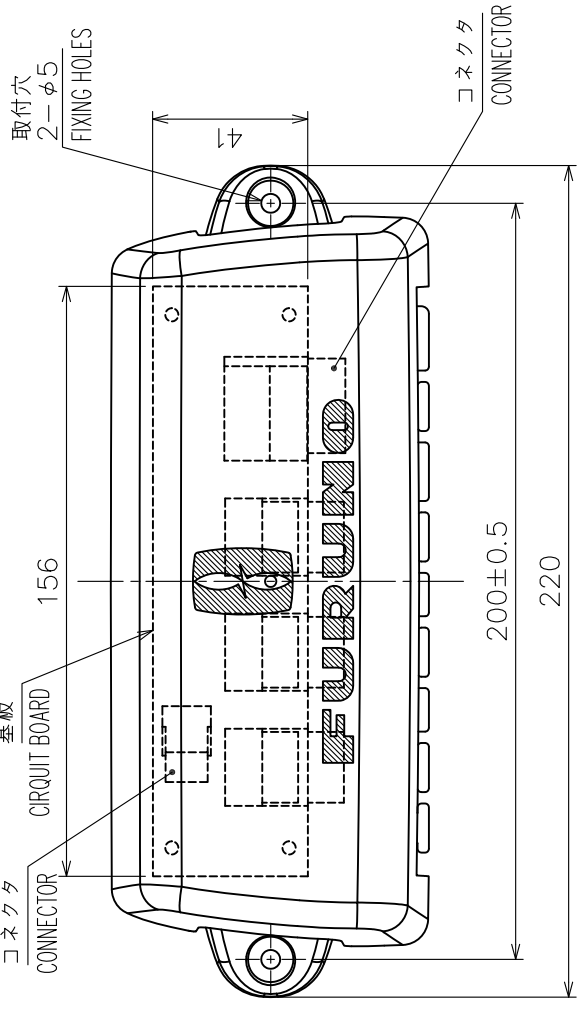| 寸法区分 (mm) DIMENSION	公差 (mm) TOLERANCE
L≤50	±1.5
50<L≤100	±2.5
100<L≤500	±3

#50

68ø

111

39

10

106

54

129

125

注記
1) 指定外の寸法公差は表1による。
2) 取付用ネジはナベタッピンネジ呼び径3×20を使用のこと。

NOTE
1. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.
2. USE TAPPING SCREWS ø3x20 FOR FIXING THE UNIT.

DRAWN	30/Sep/09 T.YAMASAKI	TITLE	FI-501/502/503/504/505/506
CHECKED	30/Sep/09 T.TAKENO	名称	インスツルメント (フラッシュマウント)
APPROVED	26/Oct/09 R.Esumi		外寸図
SCALE	MASS 0.3 ±10% kg	NAME	INSTRUMENT (FLUSH MOUNT)
DWG.No. C7266-G01-B	REF.No. 26-001-101G-0		OUTLINE DRAWING

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

52

84

#100

取付穴 2-φ5
FIXING HOLES

コネクタ
CONNECTOR

41

ケーブル導入口
CABLE ENTRY

基板
CIRQUIT BOARD

コネクタ
CONNECTOR

156

200±0.5

220

注 記

1) #印寸法は最小サービス空間寸法とする。

2) 指定外の寸法公差は表1による。
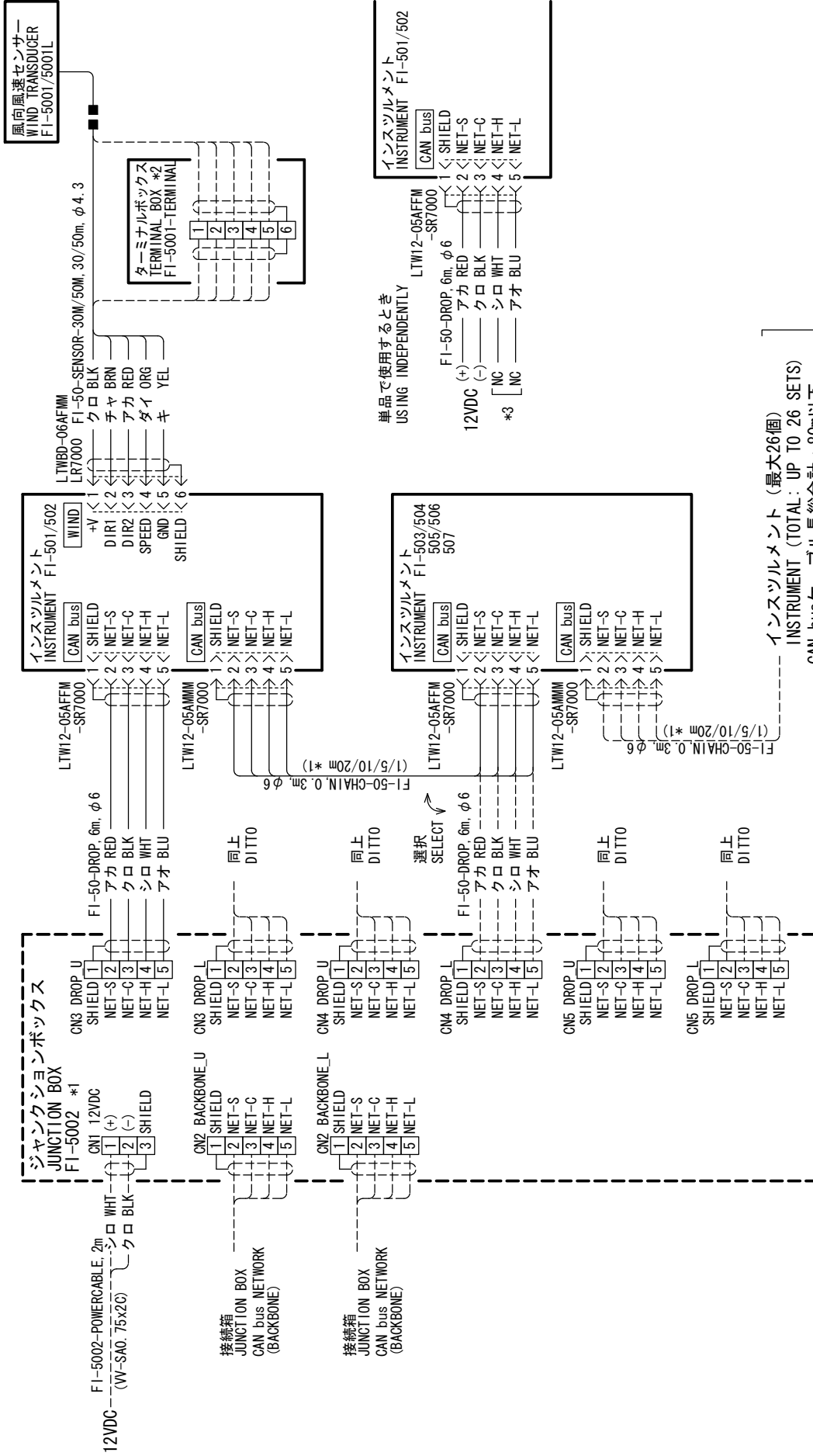
3) 取付用ネジはトラスタッピンネジ呼び径4×20を使用のこと。

NOTE

1. #: MINIMUM SERVICE CLEARANCE.

2. TABLE 1 INDICATES TOLERANCE OF DIMENSIONS WHICH IS NOT SPECIFIED.

3. USE TAPPING SCREWS φ4x20 FOR FIXING THE UNIT.

DRAWN	Jul. 19 '07	T.YAMASAKI
CHECKED	Jul. 19 '07	T.TAKENO
APPROVED	Jul. 24' 07	R Esumi

TITLE	FI-5002
名称	ジャンクションボックス
	外寸図
NAME	JUNCTION BOX
	OUTLINE DRAWING

MASS 0.3 ±10% kg

SCALE

DWG.No. C7268-G01- A

REF.No. 26-001-103G-0

FURUNO ELECTRIC CO., LTD.

S-1

FURUNO ELECTRIC CO.,LTD.

FURUNO

TITLE: FI-501/502/503/504/505/506/507 インスツルメント
名称: 相互結線図
INSTRUMENT
NAME: INTERCONNECTION DIAGRAM

DRAWN 28/Jan/'10 T. YAMASAKI
CHECKED 28/Jan/'10 T. TAKENO
APPROVED 8/Mar/'10 R. Esumi
SCALE | MASS | kg
DWG. No. C7266-C01- J | REF. No.

注記 NOTE
*1) オプション。
*1: OPTION.
*2) ケーブルを切断する場合は、ターミナルボックス（非防水）を使用のこと。
*2: USE A TERMINAL BOX (NO-PROTECTION) WHEN THE SUPPLIED CABLE IS CUT.
*3) 短絡しないように、端末を処理する。
*3: PROTECT CABLE ENDS TO PREVENT SHORT-CIRCUIT.

タッピンネジ用穴（4ヵ所）
For tapping screws（4 pcs.）

寸切りボルト用穴（2ヵ所）
For bolts（2 pcs.）

FI-50シリーズ 表示部　フラッシュマウント用型紙
FI-50 series Display unit Flush Mount Template