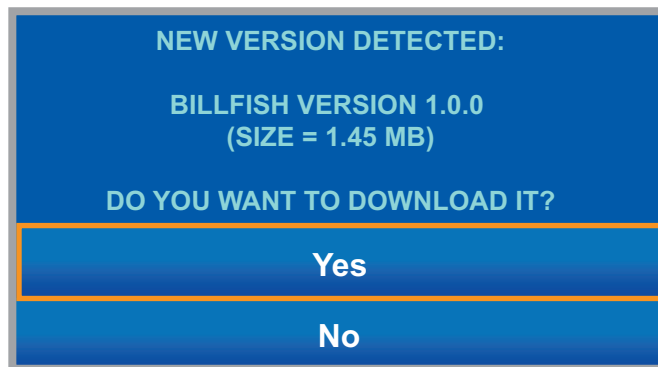


## 13.5 Software Update

You can update the software for this equipment via the internet. See section 1.18 for how to connect to the internet. It is recommended to back up stored data (waypoints, routes, etc.) to a micro SD card before updating the software, in case something should go wrong during the updating.

1. Open the home screen, then tap [Settings] - [General].
2. Tap [Check for Software Update]. The following messages appear.



3. Tap [Yes].

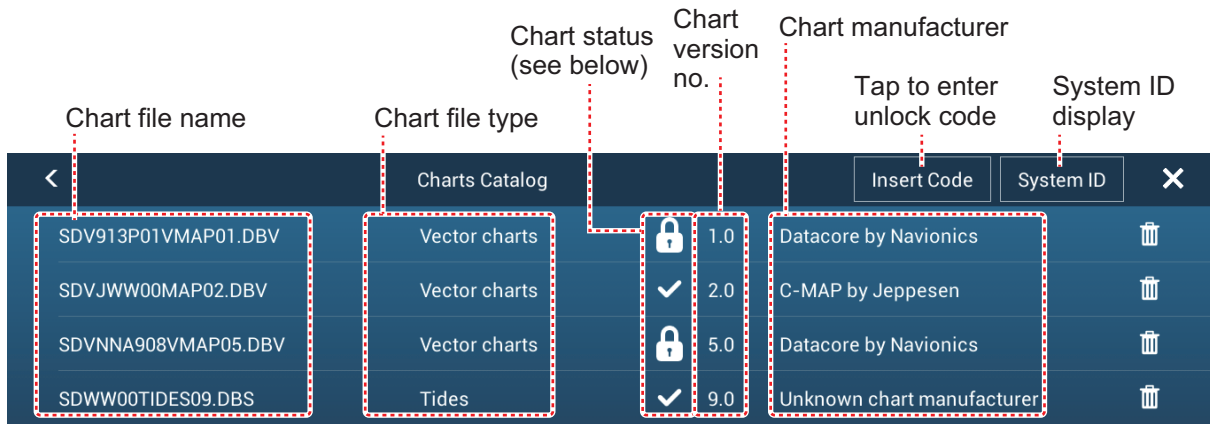
The system starts updating. Do not turn off the power during the updating. The power switch turns orange when the updating is completed.




## 13.6 How to Manage Your Charts

The NavNet TZtouch2 uses the same Mapmedia charts as NavNet 3D. Even though NavNet TZtouch2 is a master-less system in networking, for charts one NavNet TZtouch2 unit should be set as Chart Master to share the System ID, which will be necessary to obtain an unlock code of a chart from Mapmedia.

### 13.6.1 How to view your charts

Tap the Home icon to show the home screen, then tap [Catalog] to display your charts catalog.



| Icon  | Meaning   |
|---|---|
|  | Free chart. An unlock code is not necessary.  |
|  | Unlock code is necessary to use the chart. Tap the [Insert Code] button at the top of the [Charts Catalog]. Enter the unlock code then tap ✓ to finish. |
|  | Unlock code entered for the chart.  |

## 13.6.2 How to update or add charts

Free (USA and NOAA) and for-fee NavNet TZtouch2 compatible charts are provided by FURUNO and Mapmedia. Go to the URLs shown below to download chart data.

Download the chart file to your desktop. Unzip the file, then copy it to the root of a micro SD card. Insert the card into the SD card slot on the display unit, or the left card slot in the SD Card Unit (SD-001). For the detailed procedure, refer to the instructions on the FURUNO website.

A for-fee chart requires that you enter its chart unlock code. Go to the Home screen and tap [Catalog] to show the [Charts Catalog] display. Tap the [Insert Code] button then enter the chart unlock code from the software keyboard.

### Where to obtain chart data:

#### FURUNO

<http://www.furunousa.com/Products/Products.aspx?category=Products+%3a+NavNet+TZtouch+%3a+Charts+for+NavNet+TZtouch>

#### Mapmedia

<http://www.mapmedia.com/charts-catalog.html>

## 13.6.3 How to delete charts

Before replacing a chart you should delete the old chart data on every NavNet TZtouch2 unit. Only delete the chart data that you intend to replace or no longer require.

Open the charts catalog. Tap the trashcan icon of the chart to delete. You are asked "ARE YOU SURE YOU WANT TO DELETE THIS FILE?" Tap [OK] to delete the file.

13. OTHER FUNCTIONS

This page is intentionally left blank.

# 14. MAINTENANCE, TROUBLE-SHOOTING

This chapter has information about maintenance and troubleshooting that the user can follow to care for the equipment.

## WARNING

**ELECTRICAL SHOCK HAZARD**  
Do not open the equipment.

Only qualified persons can work inside the equipment.

## NOTICE

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

Those items contain products that can damage plastic parts and equipment coating.


## 14.1 Maintenance

Routine maintenance helps keep your equipment in good condition and prevents future problems. Check the items shown in the table below on a regular basis to help keep your equipment in good condition for years to come.

| Check item    | Check point                           | Remedy  |
|---------------|---------------------------------------|---|
| Cables        | Cable connection, corrosion           | Connect the cables that have loosened. Replace any damaged cables.  |
| Cabinet       | Dust on the cabinet                   | Remove dust with a dry clean cloth. Do not use commercial cleaners to clean the equipment - they can remove paint and markings.   |
| LCD           | Dust on the LCD                       | Wipe the LCD carefully to prevent scratching, using tissue paper and an LCD cleaner. To remove dirt or salt deposits, use an LCD cleaner, wiping slowly with tissue paper so as to dissolve the dirt or salt. Change paper frequently so the salt or dirt will not scratch the LCD. Do not use solvents such as thinner, acetone or benzene for cleaning. Also, do not use degreaser or antifog solution, as they can strip the coating from the LCD. |
|               | Waterdrops on the LCD                 | Waterdrops on the LCD can slow touch response. Wipe the LCD with a dry cloth to remove the water.   |
| Radar antenna | Foreign material on the radar antenna | Foreign material can reduce sensitivity. Clean the antenna with a cloth wetted with freshwater. Do not use commercial cleaners to clean the radiator - they can remove paint and markings.  |
| Transducer    | Transducer face                       | Marine growth on the transducer face can reduce sensitivity. Remove any growth with a wooden stick or fine grade sandpaper.   |

## 14.2 Fuse Replacement

The fuse in the fuse holder in the power cable protects the equipment from high electric current and equipment fault. If you cannot turn on the power, check the fuse to see if it has blown. Find the reason for the blown fuse before you replace the fuse. If the fuse blows again after the replacement, contact your dealer for information.

|   |                |
|---|----------------|
|  | <b>WARNING</b> |
| <b>Use the proper fuse.</b>   |                |
| A wrong fuse can damage the equipment and cause fire.                             |                |

| Name | Type               | Code No.       | Remarks        |
|------|--------------------|----------------|----------------|
| Fuse | FGBO-A 125V 5A PBF | 000-155-853-10 | 12 VDC, 24 VDC |

## 14.3 Life of the Parts

### Magnetron

When a magnetron reaches the end of its life, targets do not appear on the radar display. If long-range performance appears to have decreased, contact your dealer about replacement of the magnetron.

| Radar Sensor  | Magnetron   | Code No.       | Approx. Life         |
|---------------|-------------|----------------|----------------------|
| DRS2D         | E3590       | 000-164-574-11 | 2,000 hours          |
| DRS4D, DRS4DL | E3571       | 000-146-867-11 | 2,000 hours          |
| DRS4A         | MAF1421B    | 000-158-786-11 | 3,000 hours          |
| DRS6A         | MAF1422B    | 000-158-788-12 | 3,000 hours          |
| DRS12A        | MAF1565N    | 000-174-559-10 | 3,000 hours          |
| DRS25A        | MG5436(E2V) | 000-140-762-10 | 2,000 to 3,000 hours |

The total time of power-on ("ON TIME") and transmission ("TX TIME") are displayed on the radar screen during the stand-by mode.

### LCD

The life of the LCD is approximately 18,000 hours for the TZTL15F, and 25,000 hours for the TZTL12F. The actual number of hours depends on ambient temperature and humidity. When the brilliance cannot be raised sufficiently, contact your dealer about replacement of the LCD.

### Fan

The life of the fan is shown in the table below, and the actual life depends on ambient temperature. When the fan does not rotate sufficiently, an applicable message appears. Turn off the power and contact your dealer about replacement of the fan.

| Item      | Type            | Code No.       | Estimated Life       |
|-----------|-----------------|----------------|----------------------|
| FAN MOTOR | MFB52A-12HA-002 | 000-175-998-10 | Approx. 21,000 hours |

## 14.4 Troubleshooting

This section provides simple troubleshooting procedures that the user can follow to restore normal operation. If you cannot restore normal operation, do not check inside the unit. Have a qualified technician check the equipment.

### 14.4.1 General troubleshooting

| Problem   | Remedy   |
|---|--|
| You can not turn on the power.                                  | <ul style="list-style-type: none"> <li>• Check for blown fuse.</li> <li>• Check that the power connector is fastened.</li> <li>• Check for corrosion on the power cable connector.</li> <li>• Check for damaged power cable.</li> <li>• Check battery for correct voltage output.</li> </ul> |
| Picture is not displayed properly.                              | Turn off and on the power. If the picture is still improper, contact your dealer for instructions.   |
| Nothing appears on the screen after you press the power switch. | Check if the unit is plugged in.   |
| The display has frozen.   | Push the power switch until the screen goes blank. Turn the power on again.  |

### 14.4.2 Radar troubleshooting

| Problem   | Remedy  |
|---|---|
| You tapped the [TX] icon on the radar display to transmit but nothing happens.                                    | <ul style="list-style-type: none"> <li>• Tap the [TX] icon again. (The icon is filled in white when the radar is in transmit state.)</li> <li>• Check that the antenna cable is fastened.</li> <li>• Check if the radar source is correct.</li> </ul> |
| Marks and characters appear, but echoes do not appear.  | Check that the antenna cable is fastened.   |
| Picture is not updated or the picture freezes.  | <ul style="list-style-type: none"> <li>• Check antenna cable.</li> <li>• If the picture has frozen, turn the power off and on again.</li> </ul>   |
| You tuned the receiver, but the sensitivity is weak.  | The magnetron may have reached its life. Have a technician check the magnetron.   |
| You changed the range, but the radar picture does not change.   | <ul style="list-style-type: none"> <li>• Try to change the range again.</li> <li>• Turn the power off and on again.</li> </ul>  |
| Poor discrimination in range.   | Adjust the sea control.   |
| Range rings are not displayed.  | Check if [Range Rings] is turned on in the [Layers] menu.   |
| You tapped the [TX] icon to transmit. The "TX screen" appears momentarily, but the radar soon goes into stand-by. | This problem indicates that the overload protection has activated. To restore normal operation, turn off all equipment in the network. Wait a few seconds then turn on all the equipment.   |

### 14.4.3 Plotter troubleshooting

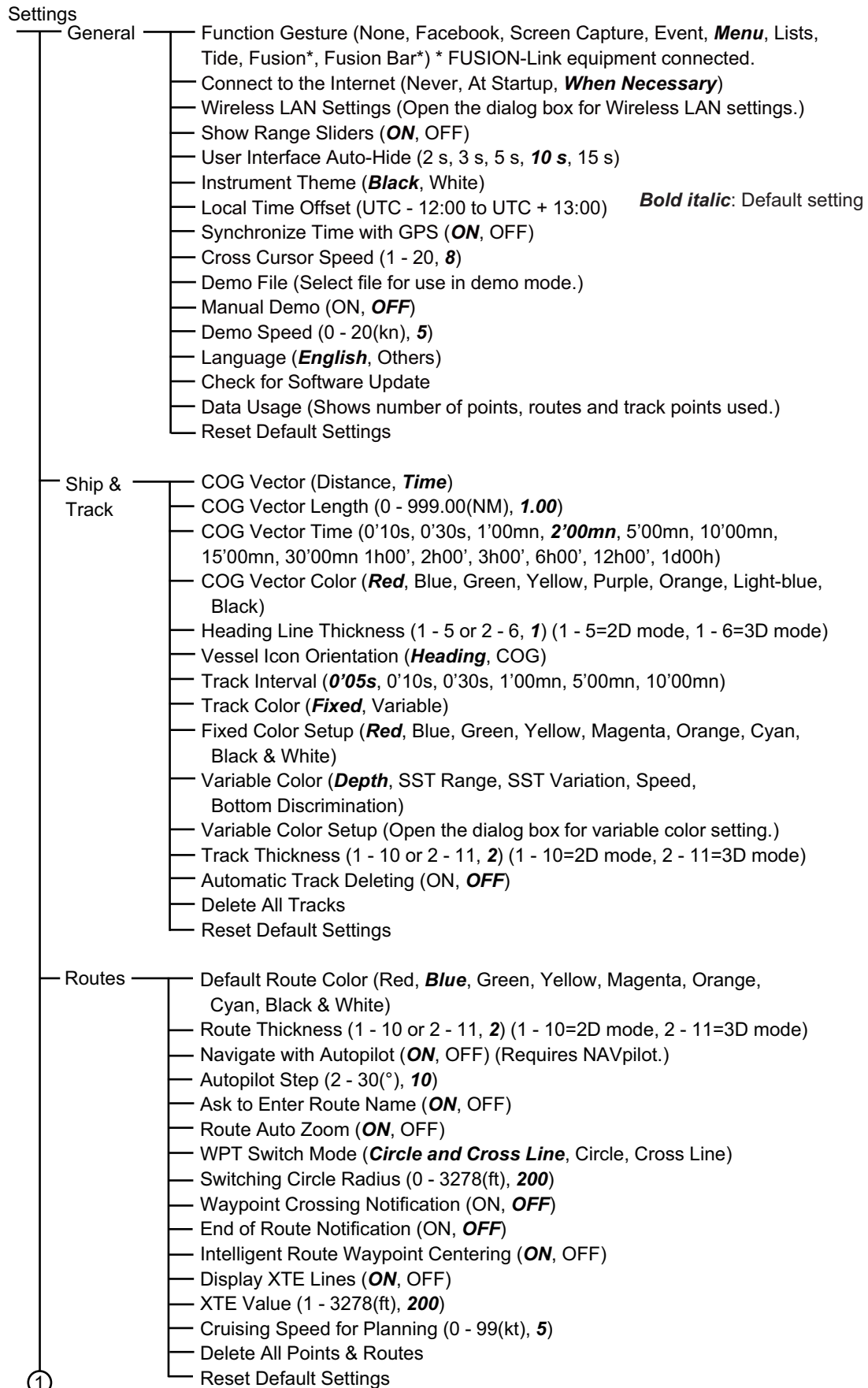
| Problem                                | Remedy  |
|--|---|
| Position is not fixed.                 | Check for interfering objects near the display unit that might be blocking reception.   |
| The track of your ship is not plotted. | The track display may be disabled. Check if [Tracks] is turned on in the [Layers] menu. |

**14.4.4 Fish finder troubleshooting**

| <b>Problem</b>  | <b>Remedy</b>  |
|---|--|
| You selected a fish finder display, but no picture appears. | <ul style="list-style-type: none"> <li>• Check that the transducer cable is fastened.</li> <li>• Check that the fish finder source is correct.</li> <li>• If you are using a network fish finder, check that it is properly connected.</li> </ul>  |
| Marks and characters appear, but no picture appears.        | Check if the transducer cable is connected.  |
| Picture appears but zero line does not appear.              | <ul style="list-style-type: none"> <li>• The picture is shifted. Check the shift setting.</li> <li>• Check if draft is set to zero or higher.</li> </ul>   |
| The picture sensitivity is too low.                         | <ul style="list-style-type: none"> <li>• If you are in the manual mode, check the gain setting.</li> <li>• Check the transducer face for marine life or air bubbles.</li> <li>• Bottom is too soft to return an acceptable echo.</li> </ul>  |
| The depth indication does not appear.                       | <ul style="list-style-type: none"> <li>• For manual operation, adjust gain and range to display the bottom echo (in reddish-brown).</li> <li>• Adjust bottom level HF/LF.</li> </ul>   |
| Noise or interference shows on the display.                 | <ul style="list-style-type: none"> <li>• Make sure the transducer cable is not near the engine.</li> <li>• Check the ground.</li> <li>• Check if another fish finder in the vicinity of your boat has the same frequency as your fish finder.</li> <li>• Try to reject the interference with [Interference Rejection] in the [Settings] - [Sounder] menu.</li> </ul> |

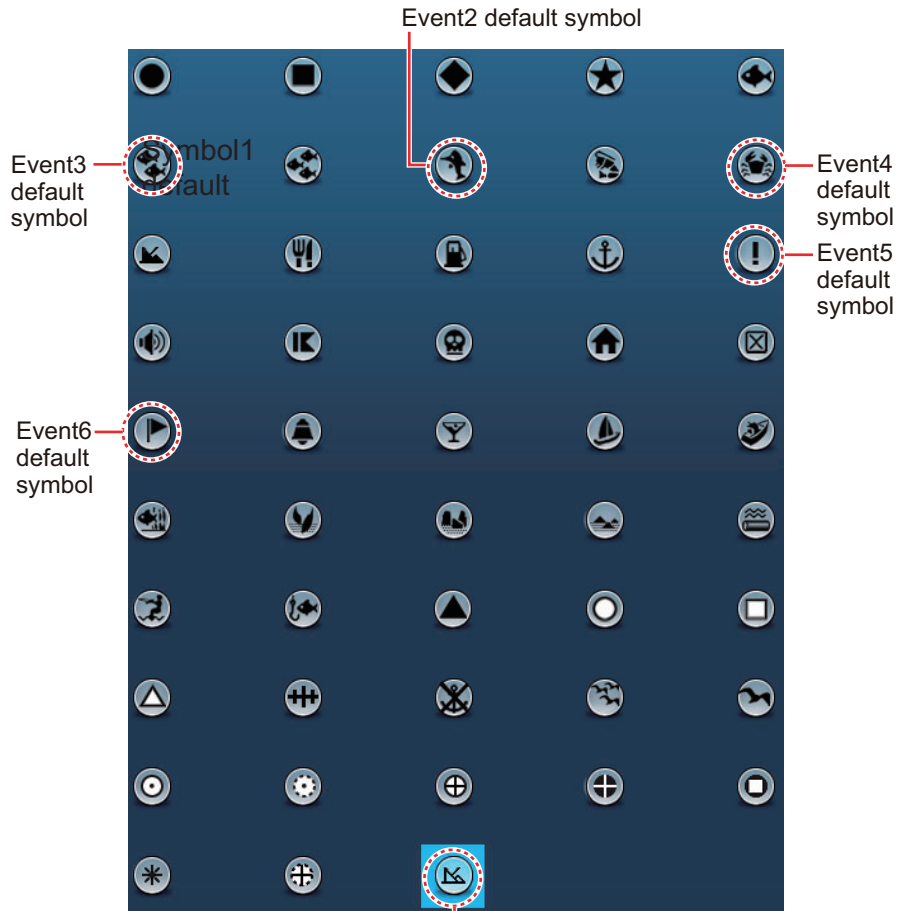


# APPENDIX 1 MENU TREE



①

- Points
  - Display Points Names (**ON**, OFF)
  - Default Point Symbol (Select the default icon for point.)
  - Default Point Color (Red, Blue, Green, **Yellow**, Magenta, Orange, Cyan, Black & White)
  - Point Size (50 - 200(%), **100**)
  - Icons Set (Classic, **Modern**)
  - Data to Be Recorded in Event Comment (**None**, Date, SST, Date And SST)
  - Record Event1 Automatically (ON, **OFF**)
  - Default Event 1 - 6 Symbol



- Event1 default symbol
- Default Event 1 - 6 Color
 

|                      |                      |                      |                      |                      |                      |            |       |
|----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|------------|-------|
| Red                  | Blue                 | Green                | Yellow               | Purple               | Orange               | Light-blue | Black |
|                      |                      |                      |                      |                      |                      |            |       |
| Event1 default color | Event2 default color | Event3 default color | Event4 default color | Event5 default color | Event6 default color |            |       |
- Delete All Points & Routes
- Reset Default Settings

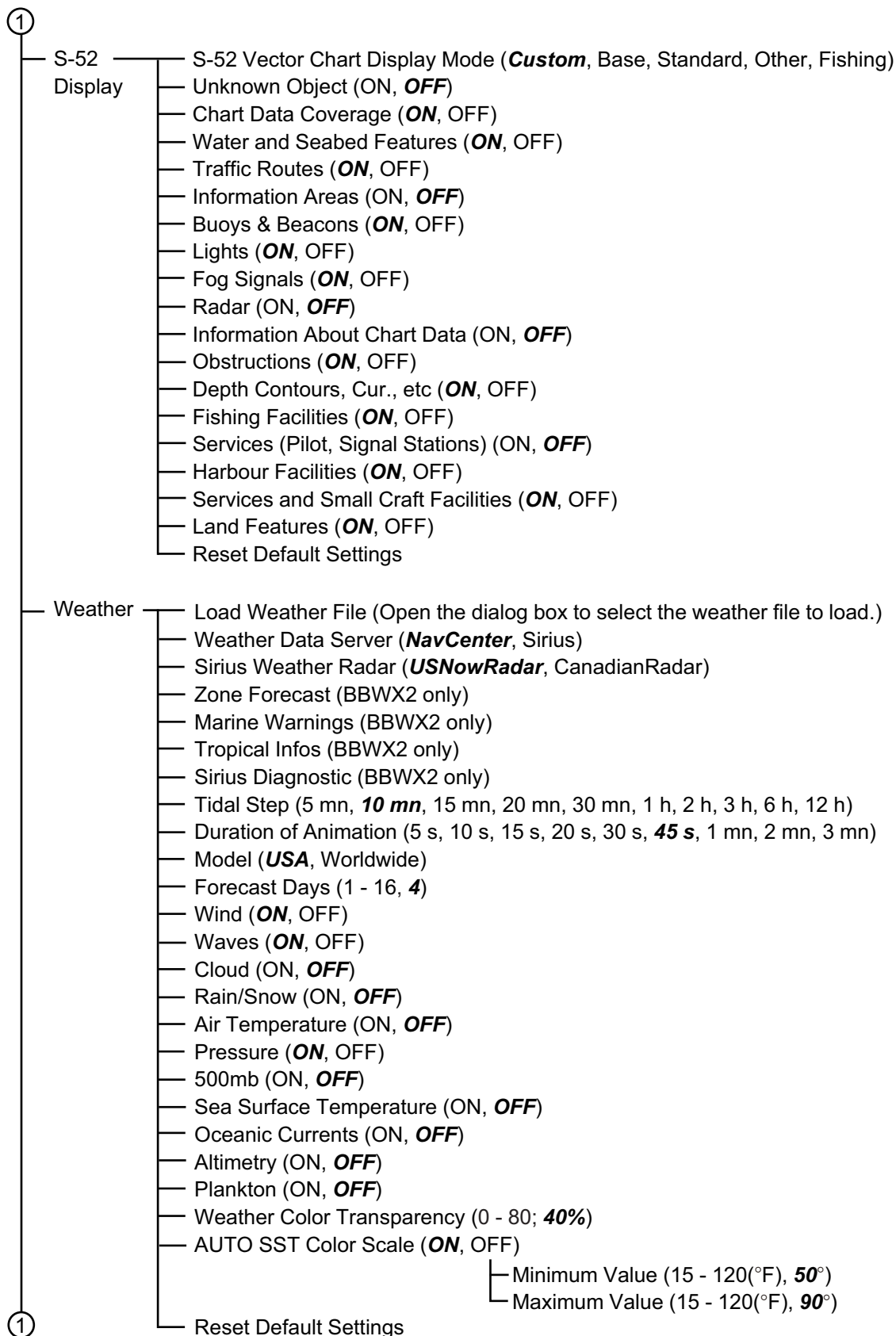
①

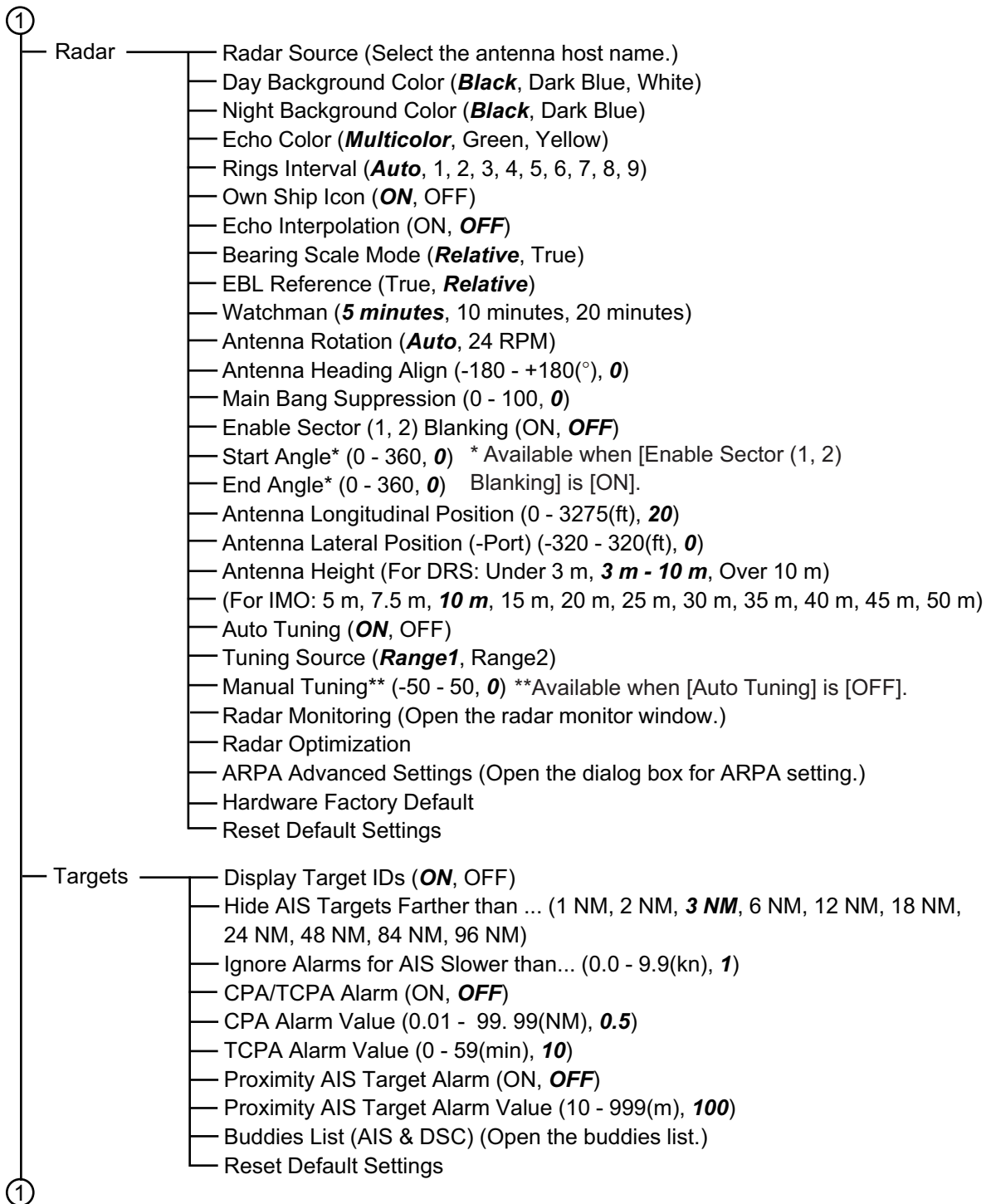
①

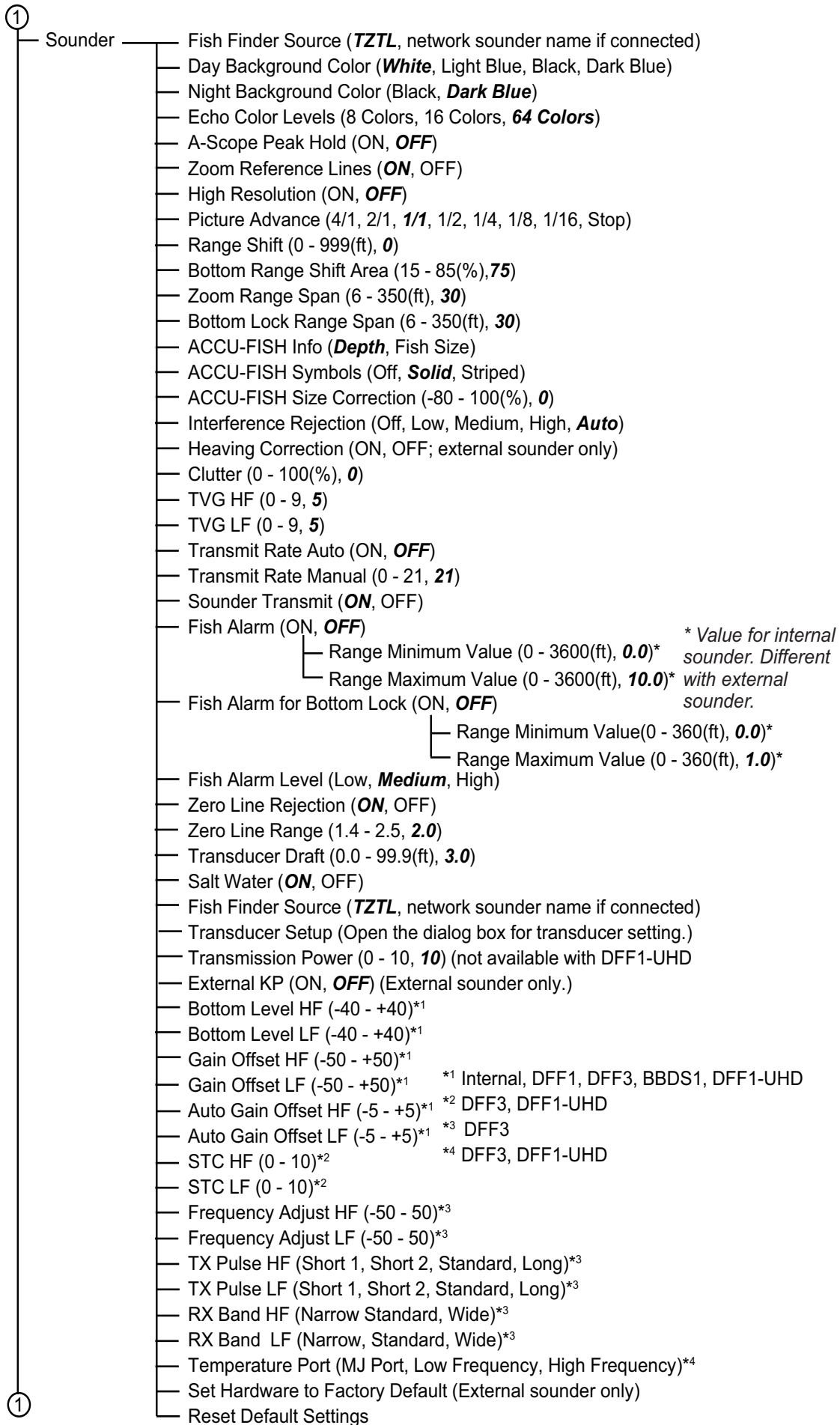
- Plotter
  - Grid Interval (**Off**, Very Small, Small, Medium, Large, VeryLarge)
  - Tide/Current Icons Size (50 - 150(%), **100**)
  - NavData Transparency (0 - 80(%), **10**)
  - PhotoFusion Transparency (0 - 80(%), **15**)
  - Tide Range for PhotoFusion (0.0 - 60(ft), **0**)
  - Tidal Currents Transparency (0 - 80(%), **25**)
  - Radar Transparency (0 - 80(%), **20**)
  - Range Link (ON, **OFF**)
  - Echo Color (**Multicolor**, Green, Yellow)
  - Depth Shading Transparency (0 - 80(%), **50**)
  - Auto Depth Shading Color Scale (**ON**, OFF)
  - Minimum Value\* (0000 - 33000(ft), **0**)
  - Maximum Value\* (00000 - 33000(ft), **200**)
  - Depth Color Shade (**Classic Hue**, Inverted Classic Hue, Red Hue, Blue Hue, Green Hue, Yellow Hue)
  - Auto Alti 3D Exaggeration (ON, **OFF**)
  - 3D Alti Exaggeration (1 - 20, **3**)
  - Reset Default Settings
  
- Vector Chart
  - Chart Object Size (50 - 200(%), **100%**)
  - Chart Color Palette (S-52, **Standard**, Sunlight)
  - Chart Symbols (**S-52**, International)
  - Shallow Contour (0.0, 3.0, **6.0**, 9.0, 12.0, 15.0, 18.0, 21.0, 24.0, 27.0, 30.0 (ft))
  - Safety Contour (0.0, 3.0, 6.0, 9.0, 12.0, **15.0**, 18.0, 21.0, 24.0, 27.0, 30.0, 50.0, 70.0, 100, 200 (ft))
  - Deep Contour (0.0, 3.0, 6.0, 9.0, 12.0, 15.0, 18.0, 21.0, 24.0, 27.0, **30.0**, 50.0, 70.0, 100, 200, 300, 500, 1,000, 2,000 (ft))
  - Text (Important) (**ON**, OFF)
  - Text (Other) (**ON**, OFF)
  - Display Buoy Names (**ON**, OFF)
  - Display Light Description (ON, **OFF**)
  - Display Light Sectors (ON, **OFF**)
  - Display Routes (**ON**, OFF)
  - Display Routes Bearings (ON, **OFF**)
  - Display Soundings (**ON**, OFF)
  - Display Soundings in Red (**ON**, OFF)
    - Shallower than... (0.0, 3.0, **6.0**, 9.0, 12.0, 15.0, 18.0, 21.0, 24.0, 27.0, 30.0, 50.0, 70.0, 100(ft))
  - Obs. Depth Below Safety (ON, **OFF**)
  - Display Seabed (ON, **OFF**)
  - Cautionary Areas (ON, **OFF**)
  - Reset Default Settings

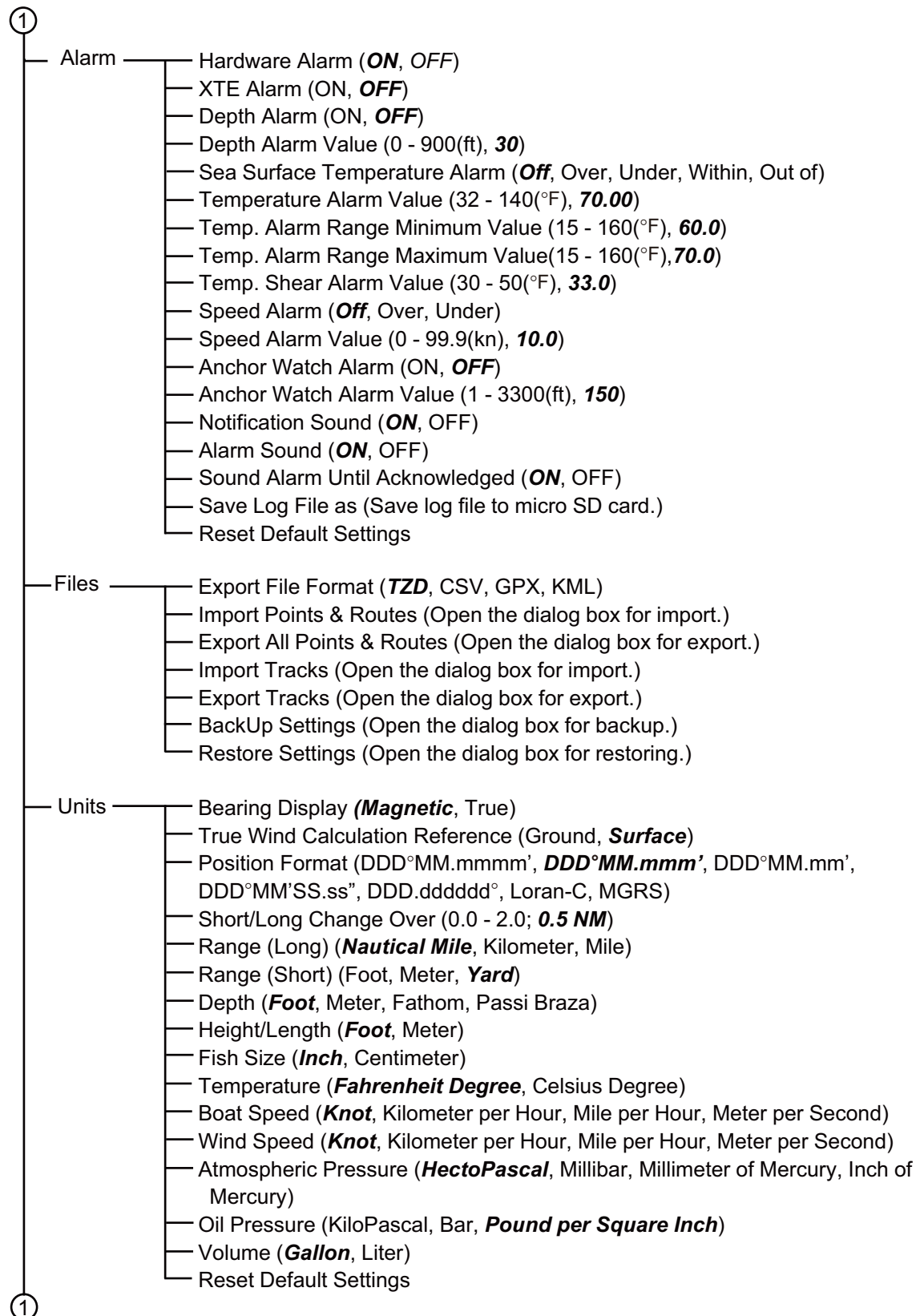
①

APPENDIX 1 MENU TREE

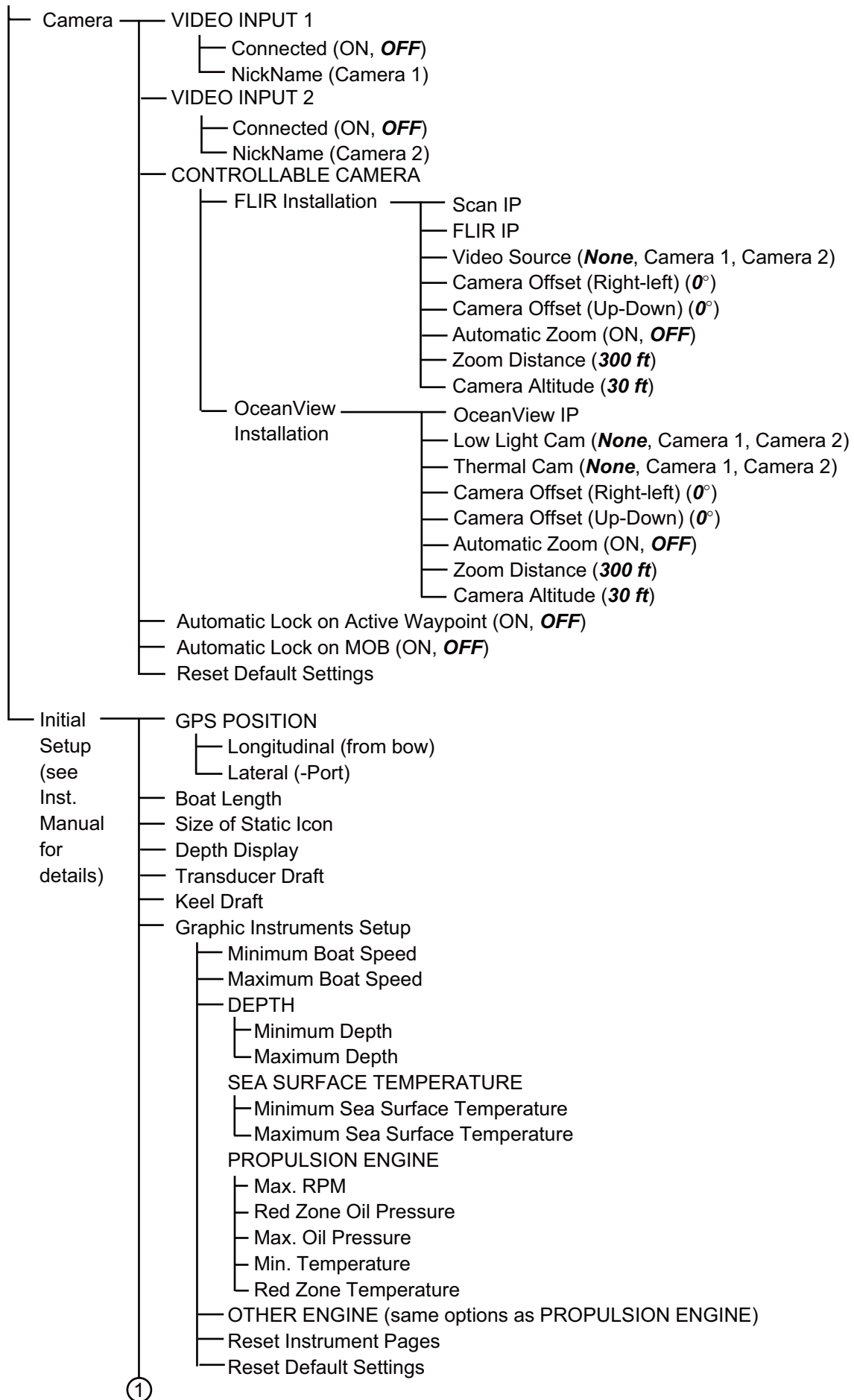




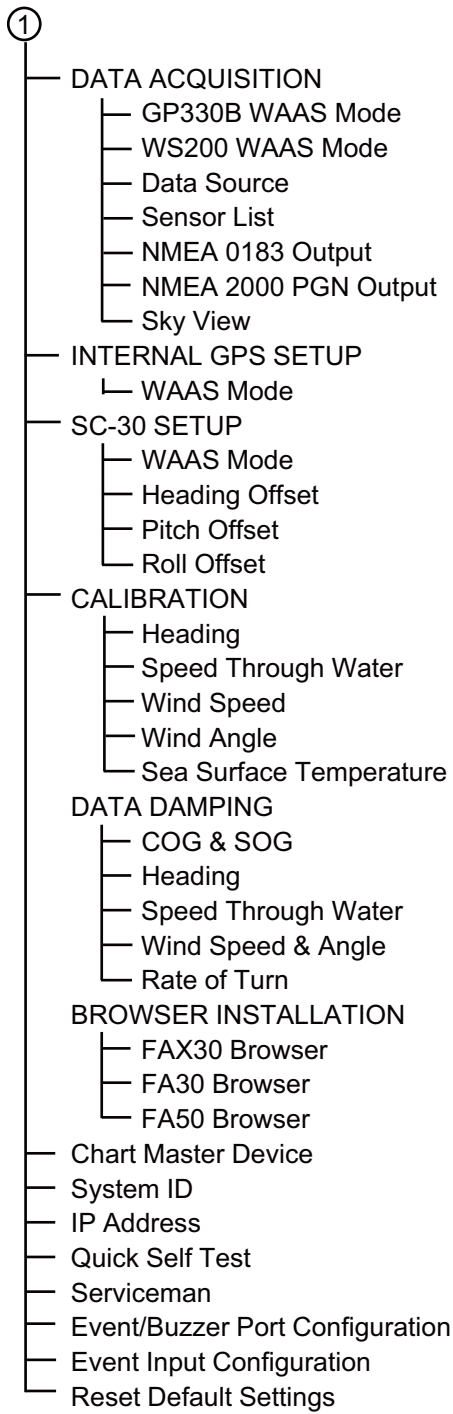




APPENDIX 1 MENU TREE







# APPENDIX 2 RADIO REGULATORY INFORMATION

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## Wireless Interoperability

This product is designed to be interoperable with any wireless LAN product that is based on direct sequence spread spectrum (DSSS) and orthogonal frequency division multiplexing (OFDM) radio technology and to comply with the following standards.

- IEEE Std 802.11b Standard on 2.4 GHz Wireless LAN
- IEEE Std 802.11g Standard on 2.4 GHz Wireless LAN
- IEEE Std 802.11n Standard on 2.4 GHz Wireless LAN

## Safety

This product, like other radio devices, emits radio frequency electromagnetic energy. The level of energy emitted by this device, however, is less than the electromagnetic energy emitted by other wireless devices such as mobile phones. This product operates within the guidelines found in radio frequency safety standards and recommendations. These standards and recommendations reflect the consensus of the scientific community and result from deliberations of panels and committees of scientists who continually review and interpret the extensive research literature. In some situations or environments, the use of this product may be restricted by the proprietor of the building or responsible representatives of the applicable organization. Examples of such situations include the following:

- Using this product onboard airplanes, or
- Using this product in any other environment where the risk of interference with other devices or services is perceived or identified as being harmful.

If uncertain of the policy that applies to the use of wireless devices in a specific organization or environment (an airplane, for example), ask for authorization to use this product before turning it on.

## Export Regulation

Radio wave certification is necessary at the export destination. The Wireless LAN of this product operates in the 2.4 GHz band, which does not require a license in most countries. However, the conditions for use of the wireless LAN depend on the country or the area.

## USA-Federal Communications Commission (FCC)

Below are descriptions for built-in Wireless LAN module.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy. If not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by tuning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the distance between the equipment and the receiver.
- Connect the equipment to outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

**Caution:** Exposure to Radio Frequency Radiation.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines in Supplement C to OET65.

This equipment should be installed and operated keeping the radiator at least 20cm or more away from person's body.

This device must not be co-located or operating in conjunction with any other antenna or transmitter.

Canada-Industry Canada (IC)

Below are descriptions for built-in Wireless LAN module.

This device complies with RSS 210 of Industry Canada.

Operation is subject to the following two conditions:

- (1) This device may not cause interference, and
- (2) This device must accept any interference, including interference that may cause undesired operation of this device.

L'utilisation de ce dispositif est autorisée seulement aux conditions suivantes:

- (1) il ne doit pas produire de brouillage et
- (2) l'utilisateur du dispositif doit être prêt à accepter tout brouillage radioélectrique reçu, même si ce brouillage est susceptible de compromettre le fonctionnement du dispositif.

**Caution:** Exposure to Radio Frequency Radiation.

This equipment complies with IC radiation exposure limits set forth for an uncontrolled environment and meets RSS-102 of the IC radio frequency (RF) Exposure rules. This equipment should be installed and operated keeping the radiator at least 20cm or more away from person's body.

Cet équipement est conforme aux limites d'exposition aux rayonnements énoncées pour un environnement non contrôlé et respecte les règles d'exposition aux fréquences radioélectriques (RF) CNR-102 de l'IC. Cet équipement doit être installé et utilisé en gardant une distance de 20 cm ou plus entre le dispositif rayonnant et le corps.

To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (EIRP) is not more than that required for successful communication.

**SPECIFICATIONS OF MULTI FUNCTION DISPLAY  
TZTL12F/15F**

**1 GENERAL**

- 1.1 Display
  - TZTL12F 12.1-inch wide TFT color LCD, 1280 x 800 (WXGA)
  - TZTL15F 15.6-inch wide TFT color LCD, 1366 x 768(XGA)
- 1.2 Indication system Raster-scan, non-interlace
- 1.3 Brightness 1000 cd/m2 typical (TZTL12F), 900 cd/m2 typical (TZTL15F)
- 1.4 Display colors 16,770,000 colors (plotter), 60 colors (echo), 16 colors (radar)

**2 PLOTTER FUNCTION**

- 2.1 Display mode Course plot, NAV data
- 2.2 Projection Mercator
- 2.3 Usable area 85° latitude or below
- 2.4 Memory capacity Track: 30,000 points, Route: 20,000 points
- 2.5 MOB 1 point
- 2.6 GPS receiver

**3 RADAR INDICATION**

- 3.1 Orientation mode Head-up, North-up (heading data required)
- 3.2 Echo trail 15/30s, 1/3/5/6/15/30 min. and continuous
- 3.3 Alarm Guard zone, Watchman, CPA/TCPA

**4 SOUNDER INDICATION**

- 4.1 Output 600 Wrms or 1 kWrms (MB-1100 required)
- 4.2 Frequency 50/200 kHz alternative output
- 4.3 Display mode Accufish™, A-scope, Auto (Fishing/ Cruising/ Manual),  
Temperature graph
- 4.4 Alarm Fish, Shear

**5 OTHER FUNCTIONS**

- 5.1 Instrument data display Weather sensor, Engine monitoring sensor or other instruments  
required
- 5.2 Camera monitor IP camera or NTSC/PAL data required
- 5.2.1 Language Chinese, Danish, Dutch, Finnish, French, German, Greek, Italian  
Japanese, Norwegian, Portuguese, Spanish, Swedish, Turkish,  
UK/US
- 5.3 AIS information AIS receiver required
- 5.4 DSC display Target data required
- 5.5 Alarm Proximity AIS targets, Ignore AIS target, DSC receiving

## 6 INTERFACE

|     |                                      |  |
|-----|--------------------------------------|--|
| 6.1 | Number of port                       |  |
|     | LAN                                  | 1 port, Ethernet 100Base-TX  |
|     | NMEA2000                             | 1 port (LEN=1)   |
|     | USB                                  | 1 port, USB2.0   |
|     | Video output                         | 1 port, HDMI (TZTL12F:WXGA, TZTL15F: )   |
|     | Video input                          | 2 ports, NTSC/PAL  |
|     | SD card slot                         | 1, micro-SDXC  |
|     | Contact closure                      | 1, operator fitness signal (normal open)   |
| 6.2 | Wireless LAN                         | IEEE802.11b/g/n  |
|     | Transmitting frequency               | 2.412 to 2.462 GHz   |
|     | Output power                         | 12 dBm max.  |
| 6.3 | NMEA0183 (V2.0) sentences (Ethernet) |  |
|     | Input/output                         | CUR, DPT, GGA, GSA, HDG, HDT, MDA, MTW, MWV, RSA, ROT, VDM, VHW, VTG, XDR, ZDA   |
| 6.4 | NMEA2000 PGN                         |  |
|     | Input                                | 059392/904, 060928, 061184, 065280, 126208/720/992/996, 127237/245/250/251/257/488/489/505, 128259/267, 129025/026/029/033/038/039/040/041/538/540/793/794/798, 129025/026/029/033/038/039/040/041/538/540/793/794/798, 129808/809/810, 130306/310/311/312/313/314/577/578 |
|     | Output                               | 059392/904, 060928, 061184, 126208/464/720/992/996, 127250/251/257/258, 128259/267, 129025/026/029/033/283/284/285, 130306/310/312/313/314   |

## 7 POWER SUPPLY

|     |                        |                                       |
|-----|------------------------|---------------------------------------|
| 6.1 | Multi function display |                                       |
|     | TZTL12F                | 12-24 VDC: 2.6-1.3 A                  |
|     | TZTL15F                | 12-24 VDC: 3.2-1.6 A                  |
| 6.2 | Rectifier (option)     | 100-115/220-230 VAC, 1 phase, 50/60Hz |

## 7 ENVIRONMENTAL CONDITIONS

|     |                      |                      |
|-----|----------------------|----------------------|
| 7.1 | Ambient temperature  | -15°C to +55°C       |
| 7.2 | Relative humidity    | 95% or less at +40°C |
| 7.3 | Degree of protection | IP56                 |
| 7.4 | Vibration            | IEC 60945 Ed.4       |

## 8 UNIT COLOR

N2.5 (fixed)

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