# NAVnet
## TZ touch2

# New Black Box

## Model: TZT2BB

# INDEX

# 1. TZT2BB

The **TZT2BB** is a New Black Box for NavNet TZtouch2 series, which offers versatile operational and installation options with unique features. This document highlights advanced features, basic specifications, and installation of the TZT2BB.

## 1.1. Powerful Dual Processors for Dual Monitors with Independent Resolutions

The TZT2BB consists of **dual processors** in one box for powerful performance and the ability to support independent resolutions on dual monitors. In the TZT2BB configuration with dual monitors, **each monitor shows independent images, and you can operate each monitor independently and simultaneously**. This is a big advancement from the Extended Mode of the NavNet 3D MFDBB. The following table briefly summarizes the difference in image output among TZT2BB, TZTBB, and MFDBB. See **Section 4.3** for details of TZT2BB screen resolutions.

| TZT2BB (NavNet TZtouch2) | TZTBB (NavNet TZtouch) | MFDBB (NavNet 3D) |
|---|---|---|
| Different Images + Different Resolution / Different Images + Different Resolution | Same Image + Same Resolution / Same Image + Same Resolution | Different Images + Same Resolution / Different Images + Same Resolution |
| Dual outputs in different resolutions are supported. | Only the Clone mode is supported for dual outputs. The same image in the same resolution is output. | Different images in the same resolution are output from the processor in the Extended mode. |

## 1.2. Multi Touch Operation in Consistent GUI with TZTL12F/15F

The TZT2BB supports **multi touch operation** over multi touch monitors connected via HDMI (for images) and USB (for touch) cables. The intuitive GUI on the screen is consistent with the TZTL12F/15F. See **Section 3.1** for basic GUI and **Section 4.1** and **4.2** for multi touch monitor requirements and tested monitors.

## 1.3. MCU-005 for Full Keyboard Operation

The **MCU-005** is a new, full keyboard with multiple keys. When monitors are located away from the main helm or not compatible with multi touch, the MCU-005 fully supports the operation of the TZT2BB.

**Note:**

(1) The **TZTL12F/15F are also compatible with the MCU-005** with the **version 6.21** and later.

(2) See **Section 3.2** and **5.4** for details of MCU-005.

## 1.4. HDMI Input

In addition to conventional analog video inputs (RCA), the TZT2BB is equipped with **one (1) HDMI input** port. An external device with HDMI output can be connected to the TZT2BB HDMI port to show the image on one of the TZT2BB screens. See **Section 5.5** for details and example cases utilizing the HDMI input.

## 1.5. USB Output

The TZT2BB is equipped with multiple USB ports for multi touch operation on multi touch monitors. One of the USB ports (Micro-B) **outputs multi touch signals** to an external device. As an example, when the Wassp WMB-1320F is connected to the TZT2BB USB output and HDMI input ports, images from the WMB-1320F are shown on a multi touch monitor to control it over the touch screen. See **Section 5.6** for details and example cases utilizing the USB output.

## 1.6. Easy Access to I/Os with Pigtail

The TZT2BB has two (2) sets of pigtail cables to support a variety of input and output ports. Each cable is labeled with its signal type in order to easily plug into required ports. See **Section 5.2** for details on pigtail cables.



Pigtal cables for Ethernet, HDMI, USB, analog cameras, NMEA0183 output, etc.
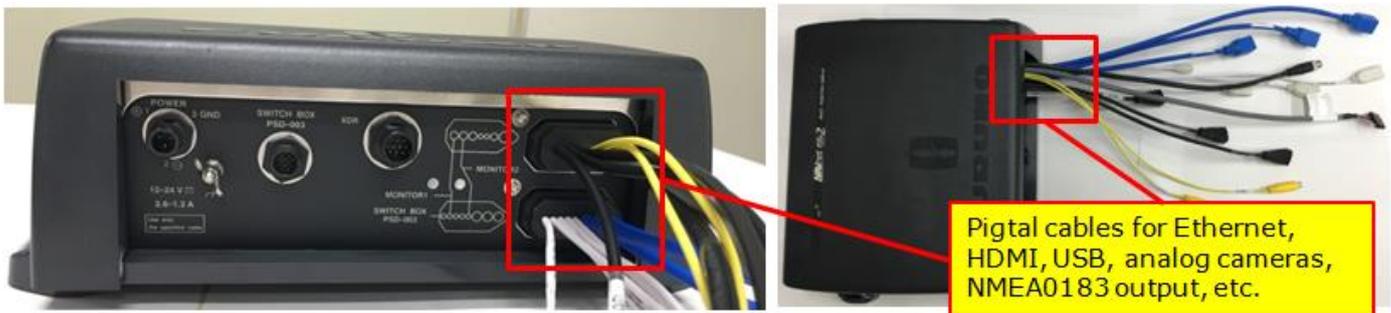
## 1.7. Built-in Wireless LAN and Fish Finder

The TZT2BB has **built-in wireless LAN** and **Fish Finde**r compatible with RezBoost™. The wireless LAN can be utilized to download weather and unlock codes and connect to iOS and Android™ devices for NavNet Remote, NavNet Viewer, and NavNet Controller apps.

**Notes:**

(1) The built-in wireless LAN of TZT2BB, TZTL12F/15F, and TZTBB is approved for use in the **US (FCC)**, **Canada (IC)**, **Europe (CE)**, **Australia/New Zealand**, and **Japan** only. For other areas, do NOT turn on the wireless LAN.

(2) A GPS receiver is **NOT** built in.

# 2. Specifications

## 2.1. Comprising

| BOM | Type | Standard Comprising |
|---|---|---|
| | TZT2BB | Processor unit MPU-004 (left), switch box PSD-003 (right), installation materials, spare parts, accessories, etc. |

| | | New Options |
|---|---|---|

| Code | Type | Descriptions |
|---|---|---|
| 00003509700 | MCU-005 | Control unit with full keyboard |
| 00150690000 | OP19-19 | MCU-005 modification kit to convert the MCU-001 to MCU-005 (See **Section 6.2**) |

Other options are common with the TZTL12F/15F.

| Model | TZT2BB | TZTL12F/15F | TZTBB | MFDBB |
|---|---|---|---|---|
| **General** | | | | |
| Resolution | 1920×1080 (FHD) <br> 1280×1024 (SVGA) <br> 1024×768 (XGA) | TZTL12F (12.1"-wide): 1280×800 (WXGA) <br> TZTL15F (15.6"-wide): 1366×768 (FWXGA) | 1280×720 (HD) <br> 1280×800 (WXGA) <br> 1280×960 (Quad-VGA) <br> 1280×1024 (SXGA) | 1280×1024 (SXGA) <br> 1024×768 (XGA) <br> 800×600 (SVGA) |
| Brilliance | (Up to connected monitors) | TZTL12F: 1300 cd/㎡ <br> TZTL15F: 1100 cd/㎡ | (Up to connected monitors) | (Up to connected monitors) |
| Multi Touch | Compatible, multi touch screen required | Compatible | Not compatible | Not compatible |
| Chart | Mapmedia mm3d format <br> (read through SD/HC/XC card slots) | Mapmedia mm3d format <br> (read through microSD/HC/XC card slots) | Mapmedia mm3d format <br> (read through SD/HC/XC card slots) | Mapmedia mm3d format <br> (installed to internal HDD via SD) |
| Wireless LAN *(1) | Built-in for Internet and iOS/Android™ apps | Built-in for Internet and iOS/Android™ apps | Built-in for Internet and iOS apps <br> (Android™ devices via external router) | N/A |
| GPS | Not built in | Built-in | Not built in | Not built in |
| Fish Finder | Built-in, 50/200 kHz (600 W or 1 kW with MB-1100) | | Not built in | Not built in |
| Connector | Pigtail cables with multiple connectors <br> Built-in connectors for power, transducer, and switch box | Pigtail cables with multiple connectors <br> Built-in connectors for power and transducer | Connectors at the I/O board | Connectors at one side of the box |
| **I/O** | | | | |
| Ethernet | 3 | 1 | 3 | 4 (2 for data, 2 for MCU-001/PoE) |
| NMEA0183 | 1×Output | 1×Output | N/A | 3×Input/Output |
| NMEA2000 | 1 | 1 | 1 | 1 |
| USB | 4×Type-A <br> 1×Micro-B (USB output) | 1×Type-A | 6×Type-A | 2×Type-A |
| Video Output | 2×HDMI | 1×HDMI (output to an external monitor) | 2×DVI-D (Clone) | 2×DVI-D |
| Video Input | 1 × HDMI (FHD, HDCP compliant, not compatible with interlace), audio to be compatible in the future update <br> 2×Analog (RCA) | 2×Analog (RCA) | 2×Analog (RCA) | 4×Analog (BNC) |
| Contact Signal | External buzzer <br> Event switch <br> External power switch | External buzzer <br> Event switch <br> Operator fitness <br> 12 VDC input for NMEA2000 backbone | External buzzer <br> Event switch <br> Speed alarm <br> 12 VDC input for NMEA2000 backbone | External buzzer/event swtich <br> Speed alarm <br> 12 VDC input for NMEA2000 backbone |
| Card Slot | 2×microSD/HC/XC (PSD-003) <br> 2×microSD/HC/XC (MPU-004) | 1×microSD/HC/XC (rear side) | 2×SD/HC/XC | 2×SD (max. 2 GB) |
| **Function** | | | | |
| IP Camera | Shown in 2 screens simultaneously | Shown in 1 screen only | Shown in 2 screens simultaneously | Shown in 4 screens simultaneously |

| Model | TZT2BB | TZTL12F/15F | TZTBB | MFDBB |
|---|---|---|---|---|
| Memory Capacity | Point: 30,000<br>Route: 200 (500 points per route)<br>Track: 30,000 points | Point: 30,000<br>Route: 200 (500 points per route)<br>Track: 30,000 points | Point: 30,000<br>Route: 200 (500 points per route)<br>Track: 30,000 points | Point: 2,000<br>Route: 200 (100 points per route)<br>Track: 10,000 points |
| Language | English (USA/UK), French, Spanish, Germany, Italian, Portuguese, Swedish, Danish, Norwegian, Finish, Greek, Russia (v5.01 and later), Japanese | English (USA/UK), French, Spanish, Germany, Italian, Portuguese, Swedish, Danish, Norwegian, Finish, Greek, Russia (v5.01 and later), Japanese | English (USA/UK), French, Spanish, Germany, Italian, Portuguese, Swedish, Danish, Norwegian, Finish, Greek, Japanese | English (USA/UK), French, Spanish, German, Italian, Portuguese, Swedish, Danish, Norwegian, Finish, Dutch, Japanese |
| **Others** | | | | |
| Installation | Bulkhead or flat surface (desktop) | Standard: Flush-mount, Option: Bracket | Bulkhead or flat surface (desktop) | Bulkhead or flat surface (desktop) |
| Environment | -15 to +55℃ | -15 to +55℃ | -15 to +55℃ | Processor: 0 to +45℃<br>MCU-001: -15 to +55℃ |
| Protection Level | Processor: IP22<br>Switch box: IP56 (front) / IP22 (rear) | IP56 (both front and rear sides) | Processor: IP22<br>Switch box: IP56 (front) / IP22 (rear) | Processor: IP20<br>MCU-001: IP56 (front) / IP20 (rear) |
| Power/Consumption | 12-24 VDC (2.6-1.3 A), 31.2 W | TZTL12F: 12-24 VDC (3.0-1.5 A), 36 W<br>TZTL15F: 12-24 VDC (3.6-1.8 A), 43.2 W | 12-24 VDC (3.6-1.8 A), 43.2 W | 12-24 VDC (8.7-4.4 A), 104.4 W |
| Processor Dimension | 383 x 299 x 130 (wxDxH) | - | 395 x 350 x 209 (wxDxH) | 430 x 411 x 184 (wxDxH) |
| Weight | 3.9 kg | TZTL15F: 3.7 kg (3.8 kg with bracket)<br>TZTL15F: 4.9 kg (5.5 kg with bracket) | 8 kg | 15 kg |

**Note:**

(1) The built-in wireless LAN of TZT2BB, TZTL12F/15F, and TZTBB is approved for use in the **US (FCC)**, **Canada (IC)**, **Europe (CE)**, **Australia/New Zealand**, and **Japan** only. For other areas, do NOT turn on the wireless LAN.

# 3. Operating TZT2BB

## 3.1. Basic User Interface

TZT2BB can be operated in the consistent GUI with the TZTL12F/15F. The appearance on the screen and multi touch operational flows are identical among the TZTL12F/15F and TZT2BB.
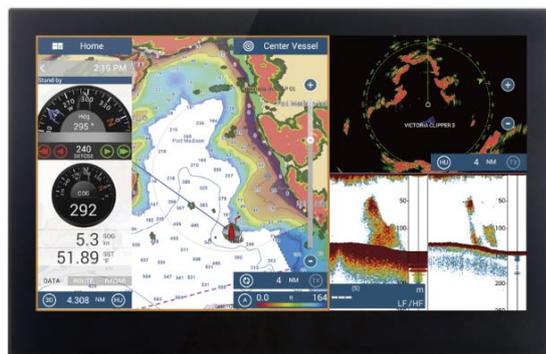


## 3.2. Operating with MCU-005

The **MCU-005** is a new control unit for NavNet TZtouch2 MFDs. It consists of **full keys** that can operate the TZT2BB without using multi touch. The following illustration and table shows the keyboard component and available functions of the MCU-005 keyboard.



| No | Key | Descriptions |
|----|-----|-------------|
| 1 | Power status | The LED shows the status of MCU-005 power. |
| 2 | SCROLLING | Chart, Radar, and Fish Finder screens are scrolled. |
| 3 | SHIP/3D | Short press: The screen goes back to the vessel position, i.e. Center Vessel, Center Radar, Cancel History. Long press: The chart screen goes into the 3D mode. |
| 4 | RANGE | Chart, Radar, and Fish Finder ranges are adjusted. |
| 5 | RotoKey™ | Chart, Radar, and Fish Finder ranges are adjusted by rotating the knob. Menu items can be selected by rotating and pushing the knob. |
| 6 | STBY/AUTO | Short press: The AUTO mode of NAVpilot-700/300 is activated. Long press: The AUTO mode of NAVpilot-700/300 is deactivated (STBY). |

| 7 | PONTS/ROUTE | Short press: A point is entered at the cursor position. |
|---|---|---|
| | | Long press: A route is created from the cursor position. |
| 8 | CURSOR | The cusor can be moved. |
| 9 | Left Click | Clicking the left-click key pops up a contextual menu or select a menu item. |
| 10 | Right Click | The righ-click key activates the Function Gesture. |
| 11 | Edge Swipe | The Edge Swipe function is activated: Press this key and press left/right/top/bottom arrows on the CURSOR key to activate one of the Edge Swipe functions. |
| 12 | CTRL | An operational screen is switched from one to another when multiple screens are connected to the TZT2BB or multiple TZTL12F/15F and TZT2BB are networked. |
| 13 | CANCEL/MOB | Short press: Current operation is cancelled. |
| | | Long press: An MOB point is entered. |
| 14 | HOME/BRILL | Short press: The HOME page opens. |
| | | Long press: The Brilliance control window opens. |
| 15 | MENU | The Settings page opens. |
| 16 | GAIN/TX | Short press: Gain/Sea/Rain of Radar and Gain of Fish Finder are adjusted in combination with the RotoKey™. |
| | | Long press: Radar or Fish Finder is set to TX or STBY. |
| 17 | EVENT | An event is entered to the own ship position. |

**Note:**

The **TZTL12F/15F** is also compatible with the MCU-005 from software **version 6.21** or later.

## 3.3. What Can You Do with a Mouse/Trackball with Wheel?

When the TZT2BB is connected with a generic HID-mouse (USB mouse) or a trackball that has a wheel, each component works as follows.

| Components | | Functions |
|---|---|---|
| (Sample shot: LTSX50 from NSI) | 1. Wheel | Acts as the RotoKey™ of MCU-005 and rotary knob of MCU-004.<br>(1) Rotate to zoom in/out<br>(2) Push to [ENT]<br>(3) Select menu or contextual menu items |
| | 2. Left-click | **Single tap**, **drag/scroll** with trackball |
| | 3. Right-click | Same as left-click |
| | 4. Trackball | **Select a spot** to be tapped<br>**Drag/scroll** with left-click |

| Accessible Screen with One (1) Mouse/Trackball |
|---|

Multiple USB ports are available on the TZT2BB. **One (1) mouse/trackball can control one (1) screen only** even when two (2) monitors are connected. You **CANNOT** access two (2) monitors with one trackball/mouse. (The MCU-004 and MCU-005 can access multiple screens in the network with the [Switch Disp.] key.)

**USB ports for mouse/trackball**

**USB for HDMI OUT1:**
**USB for HDMI OUT2:**
These USB ports are used to **connect USB cables for multi touch monitors**. With a mouse/trackball connected to these ports, one of the screens can be controlled with the trackball/mouse.

**USB1:**
This USB port is usually used to connect the MCU-002/004 or conenct a USB memory to copy screenshots, import/export settings, etc. With a mouse/trackball connected to the USB1, the monitor connected to the HDMI OUT1 port can be controlled.

| Example 1 | Example 2 |
|---|---|
| The mouse/trackball is connected to the USB for HDMI OUT1 or USB1 port. It **CANNOT** access Monitor 2 connected to the HDMI OUT2 port. | The mouse/trackball is connected to the USB for HDMI OUT2 port. It **CANNOT** access Monitor 1 connected to the HDMI OUT1 port. |

Although most operations are available only with a mouse/trackball and wheel, take the following limitations and notes.

**(1) Limitation in <u>3D Mode</u> – Pan/Tilt**

You can turn the screen mode into the 3D mode by selecting [3D Mode] from the context. However, **you <u>CANNOT</u> pan/tilt the chart with a mouse/trackball** because sliding the screen with two fingers is the only way to pan/tilt it. The chart in 3D is always in the default angle as shown at right. Or if you have paned/tilted the chart with two fingers before, the screen will be in the previously-set angle. This is the only inaccessible function with a mouse/trackball.

**(2) Note on <u>Cursor Operation and Touch Operation</u>**

While a cursor is in motion, touch operations are not available. When you switch to the touch operation, ensure to stop the mouse/trackball cursor operation.

# 4. About Monitors and Supporting Resolutions

## 4.1. Required Specifications of Multi Touch Monitors for TZT2BB

When arranging multi touch monitors locally for the TZT2BB, make sure to meet the following specifications.

**(1) Compatible with <u>HDMI</u> (or <u>DVI-D</u>) input**

The TZT2BB outputs images via HDMI. When the monitor is compatible with DVI-D, connect via a DVI/HDMI adapter.

**(2) "<u>Capacitive</u>" type recommended for multi touch compared to "Optical" type.**

The capacitive type offers better sense of multi touch than the optical type.

**(3) Android compatible driver and <u>USB</u> interface for <u>multi touch</u>**

Android compatible monitors can be connected for multi touch interface.

Multi touch commands are communicated via USB between the TZT2BB and a monitor.

**(4) <u>No dedicated driver installation required</u> for multi touch function**

The TZT2BB, as well as TZTL12F/15F, do not accept an external driver to be installed. No dedicated driver can be installed locally. When arranging a multi touch monitor, make sure to confirm that **<u>the multi touch interface is available without installing a dedicated driver</u>**. Some monitors may require dedicated drivers to be installed for the multi touch interface. If you connect such a monitor to the TZT2BB, multi touch capabilities will <u>NOT</u> work although images are shown.

## 4.2. Tested Monitors

Several monitor models have been tested.

| Manufacturer | Model |
|---|---|
| Hatteland Display | HD17T21/T22 (17") |
| | HD 19T21/T22 (19") |
| | HD 24T21/T22 (24" Wide) |
| Boening | AHD1119G |
| | AHD1115 |
| KEP (US) | KMGB-19 |
| Furuno | HD170T and HD175T |
| | HD190T and HD195T |
| | HD240T and HD245T |

## 4.3. TZT2BB Supporting Resolutions

The TZT2BB has the following native resolutions, supporting both **wide** and **non-wide** resolutions.

| No | Pixels | Aspect Ratio |
|---|---|---|
| 1 | 1920×1080 (FHD) | Wide – 16:9 |
| 2 | 1280×1024 (SVGA) | Non-Wide – 5:4 |
| 3 | 1024×768 (XGA) | Non-Wide – 4:3 |

The TZTBB **automatically** selects either one of the resolutions above and **outputs images to the monitor by scaling** according to the monitor's resolution. If the automatic selection does not work, the monitor resolution can be **manually** set up in [Settings] – [Initial Setup] – [**Adjust Display Resolution**].
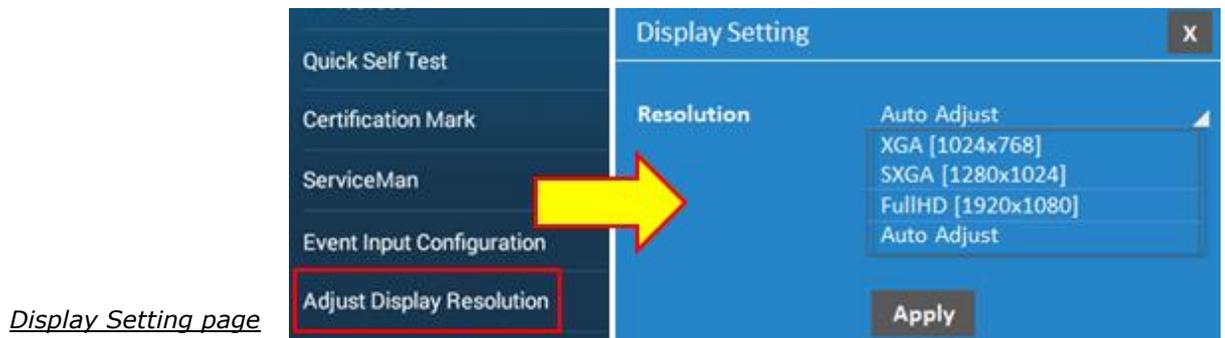


*Display Setting page*

The following screenshots compare wide and non-wide resolutions. Different aspect ratios between wide and non-wide resolutions provide slightly different screen layouts.

| Native Wide Resolution<br>1920×1080 (16:9)<br>Displayed on 24" wide monitor (1920 x 1080) | Native Non-Wide Resolution<br>1280×1024 (5:4)<br>Displayed on 19" monitor (1280 x 1024) |
|---|---|
|  |  |
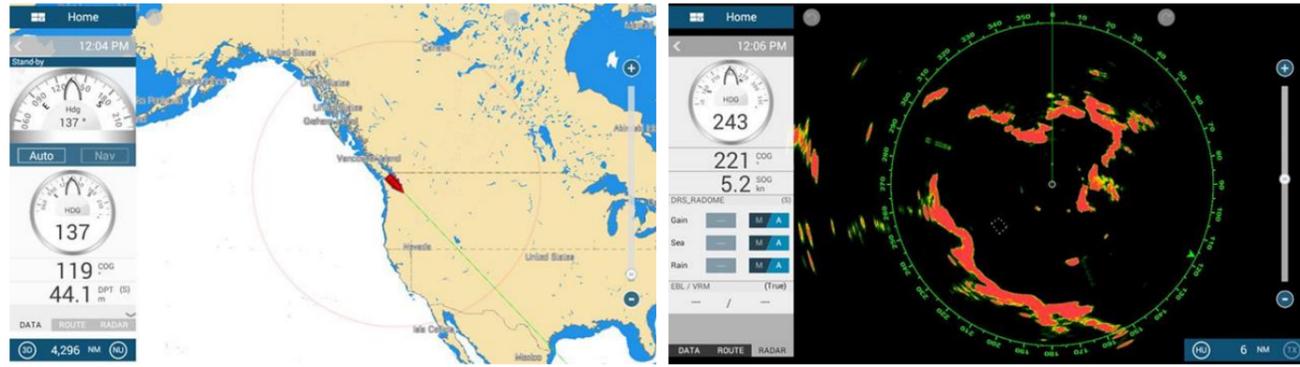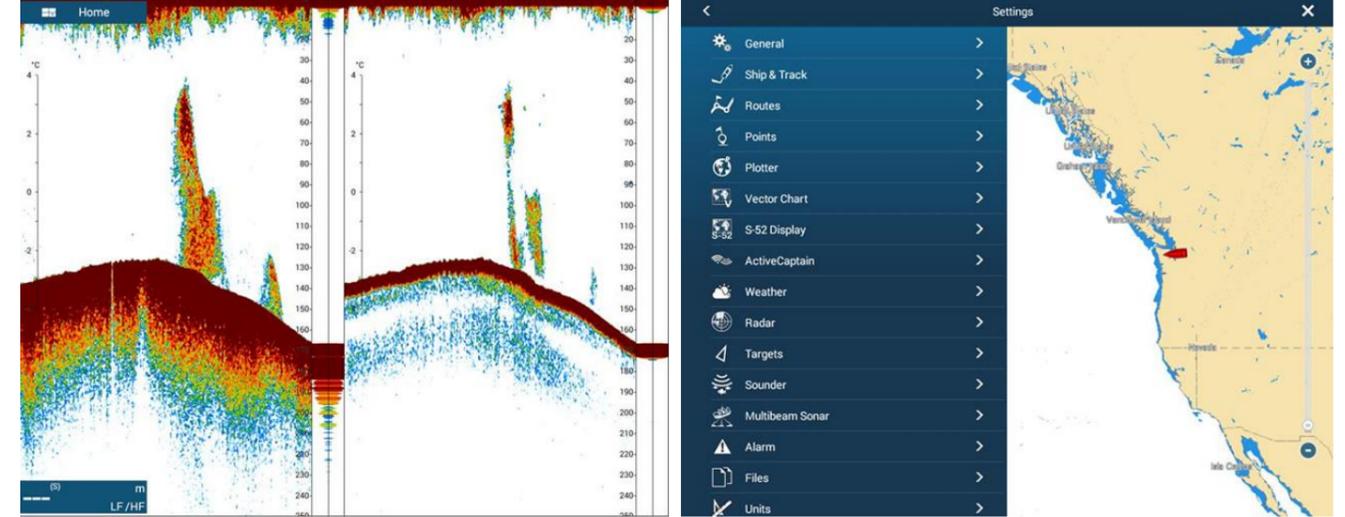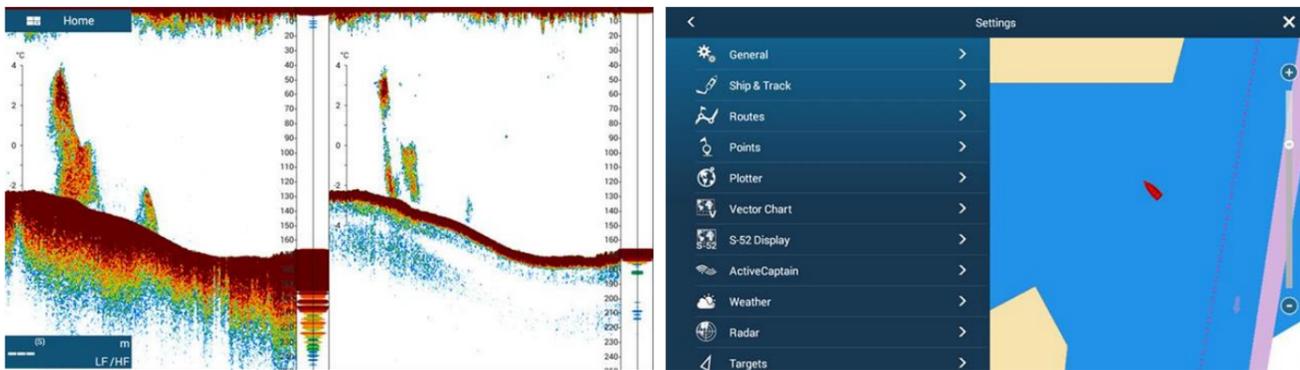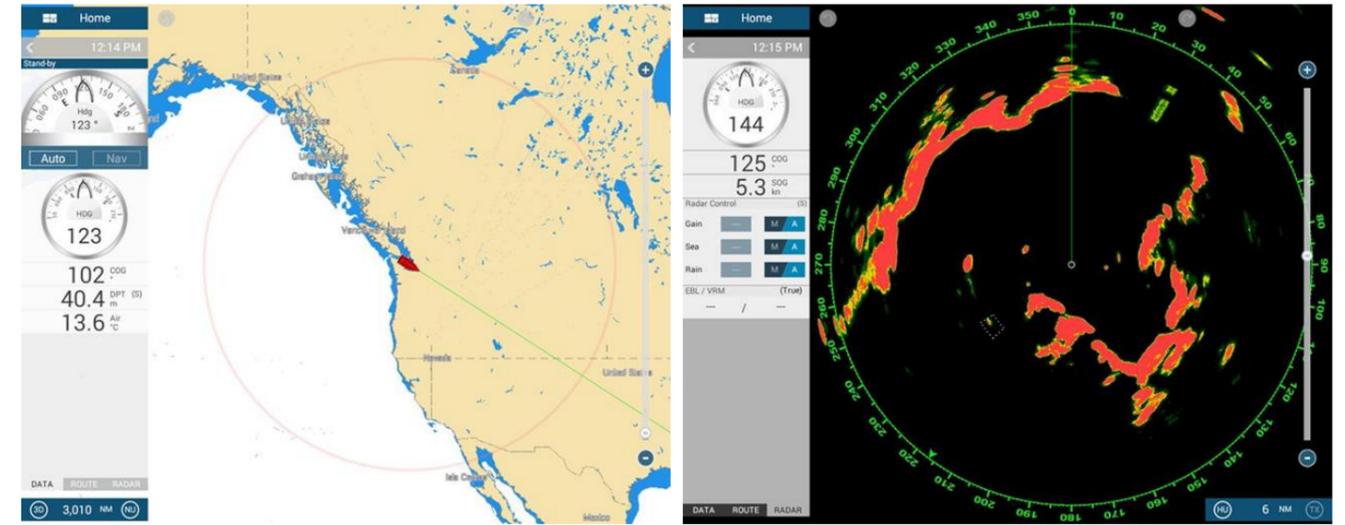
# 5. Installing TZT2BB

## 5.1. Dimensions

MPU-004

PSD-003

MCU-005
Same dimension
as MCU-001
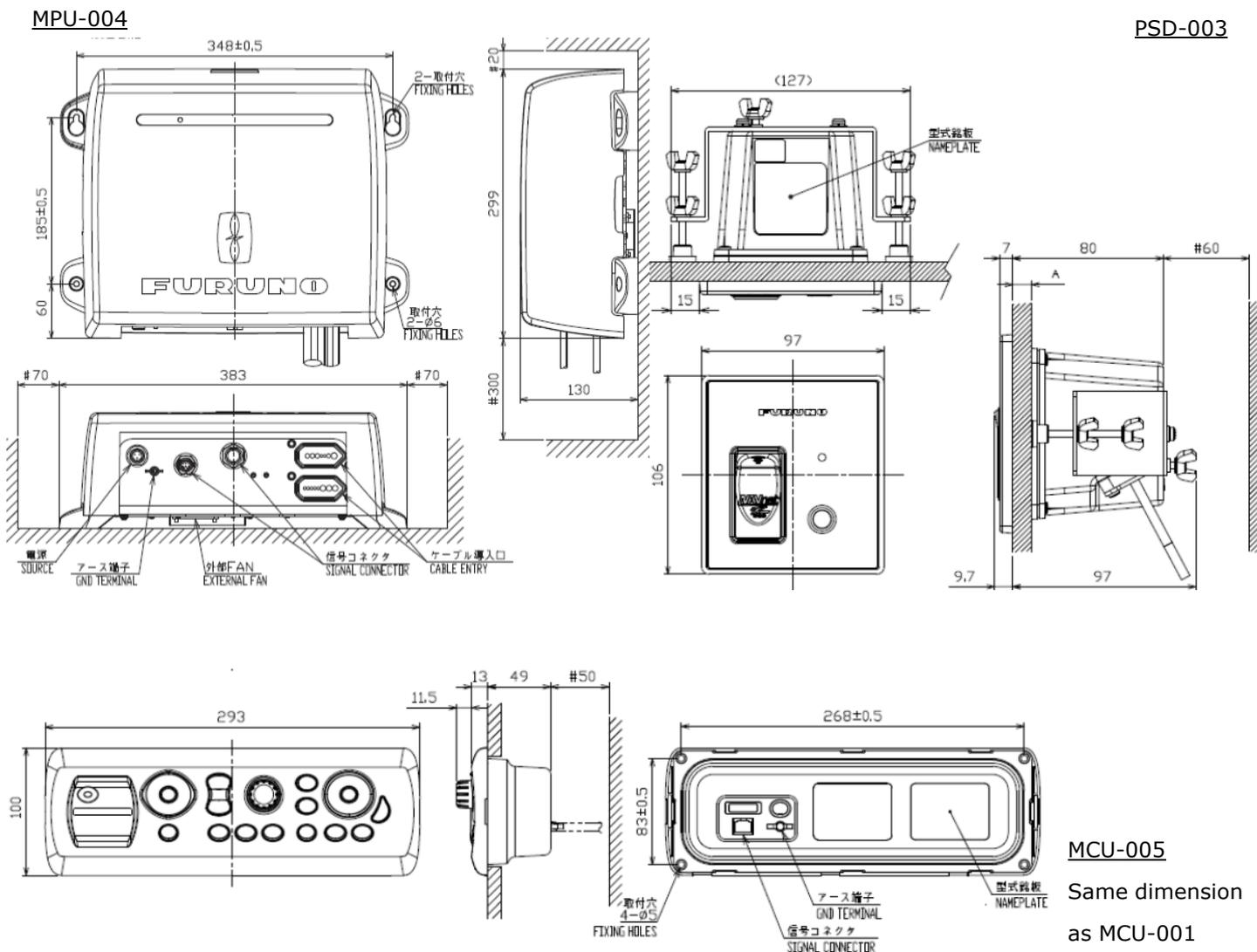
## 5.2. Interconnection

The processor unit MPU-004 consists of connectors and pigtail cables for wiring. The switch box PSD-003 is fit with two (2) cables.
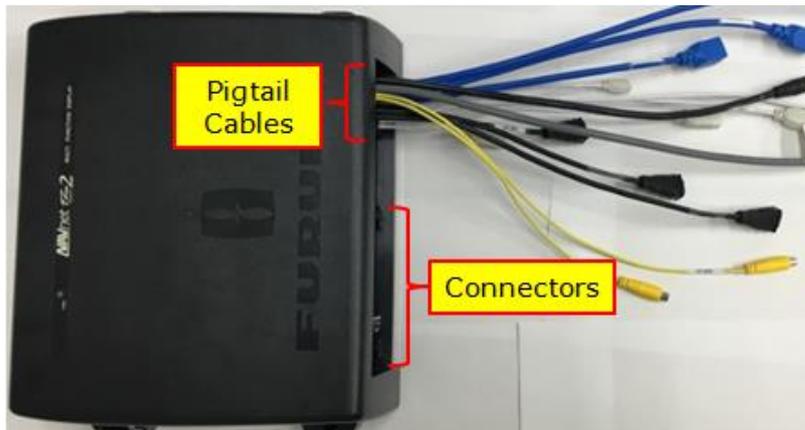
*Left – MPU-004*

*Right – PSD-003*



*Left – Connectors and pigtails*
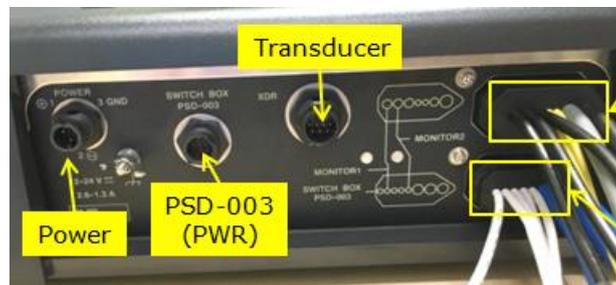
*Bottom Left – Pigtail 1*

*Bottom Right – Pigtail 2*
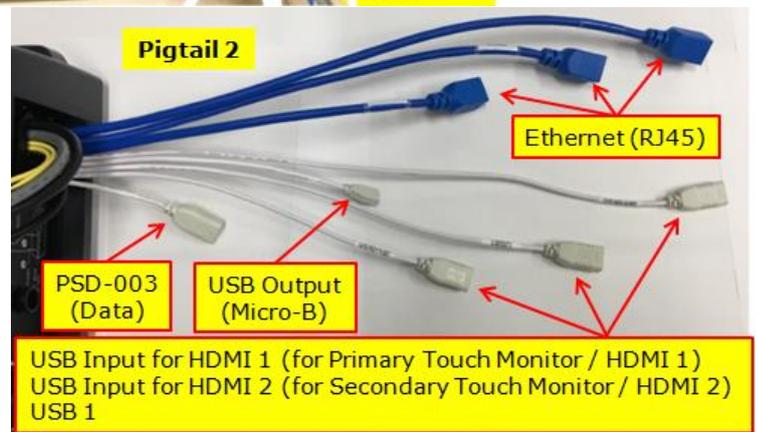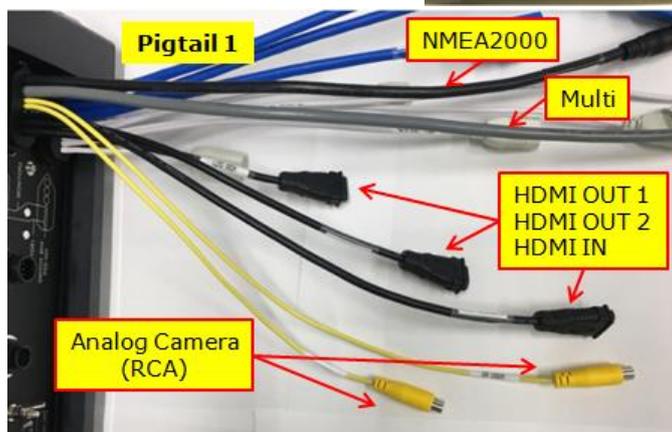


The following drawing shows an example of configuration of one processor with dual monitors.

(1) One processor generates independent images to HDMI OUT1 and HDMI OUT2 ports to show and control at each monitor independently and simultaneously.

(2) The **MCU-005** is connected via a **PoE hub (Alternative A / Type-A)**, **max. 10 m from the PoE hub**. Or via a POE injector supplied with the MCU005 and with the MCU001 mode kit. See **Section 5.4** for details.

(3) The MCU-002 and MCU-004 can also be connected to one or two of the USB ports.
For a summary of all the remote control units, MCU-002/004/005 available for NavNet TZtouch2, click here.

(4) The PoE hub is networked with a non-PoE hub for sensor network.

Monitor 1 / Primary (connected to HDMI OUT1)

Monitor 2 / Secondary (connected to HDMI OUT2)

Switch Box: PSD-003

Compact Control Unit:

MCU-004    MCU-002

Full Keyboard Control Unit: MCU-005

Processor: MPU-004

Analog Camera (Max. 2)

Transducer

12-24 VDC

Ethernet

HDMI: 2×OUT 1×IN

USB: 4×IN 1×OUT

External System

NMEA2000 Devices

* Max. 10 m

**PoE** port(s)

Ethernet Hub

Ethernet Sensors

| | |
|---|---|
| | HDMI |
| | USB |
| | Ethernet |
| | NEMA2000 |
| | NMEA0183 |
| | Others |

PoE Hub (Alternative A / Type-A)

**Non-PoE** port(s) for sensor network

**Note:**

An HDMI splitter should be used to show clone images on dual monitors because the HDMI OUT1 and 2 ports output independent images.

Monitor 1 / Primary    Monitor 2 / Clone

Switch Box: PSD-003

Processor: MPU-004

HDMI Splitter

HDMI
USB
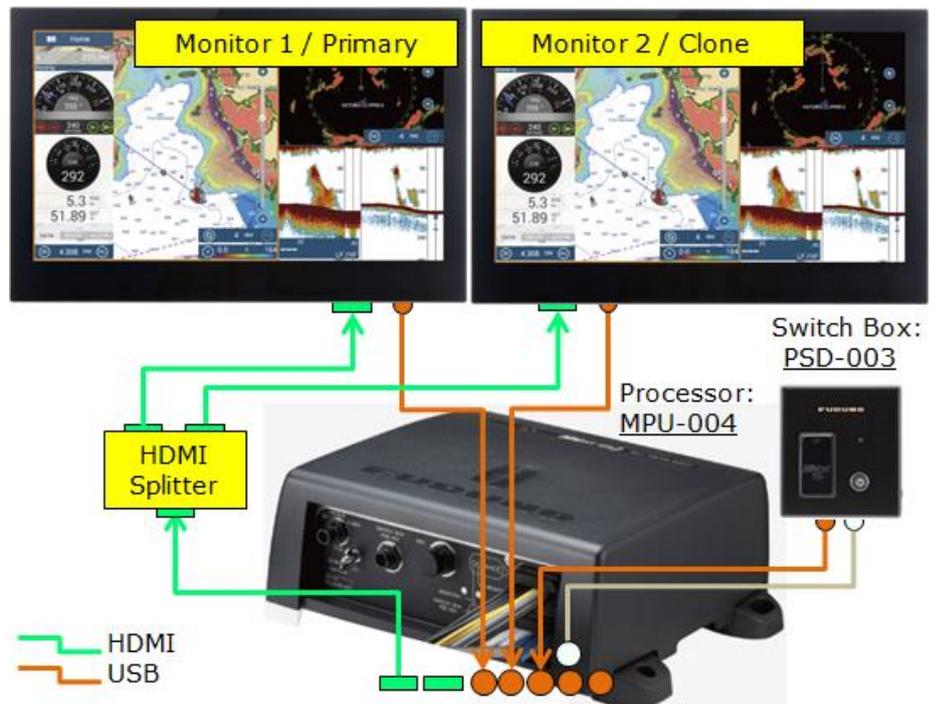
**Note on Networkable MFD Series:**

The TZT2BB can be networked with NavNet TZtouch/2 MFDs, **NOT** with NavNet 3D (MFD8/12/BB).

## 5.3. MCU-004

In this example, the TZT2BB with MCU-004 and TZTL12F/15F are networked. **Make sure that the TZTL12F/15F version is 6.21 or later** in order to switch the controllable display with the [**Switch Disp.**] key on the MCU-004. The controllable display will **NOT** be switched from the TZT2BB to the TZTL12F/15F if the version is 5.03 or earlier.
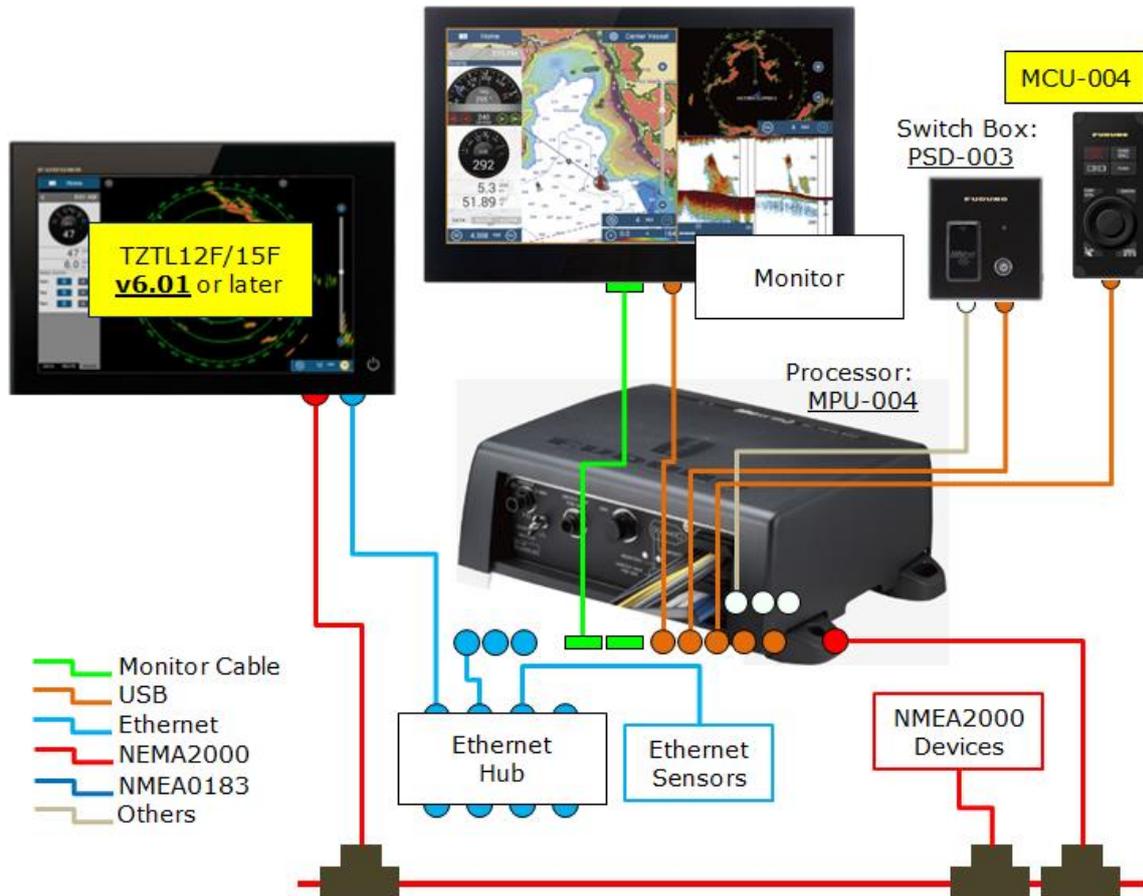


## 5.4. MCU-005

The full keyboard unit **MCU-005** supports the complete operation of the TZT2BB by hardware key operation. The **TZTL12F/15F** is also compatible with the MCU-005 from the **version 6.21 or later** software. While one (1) MCU-005 can control multiple displays, the MCU-005 can also be customized to control displays in a specified group only. In the following example, one (1) TZT2BB processor is connected with dual displays and networked with two (2) TZTL12F/15F v6.21. Two (2) MCU-005 units are installed at port and starboard sides and customized to control the displays at the port and starboard side respectively.

**Legend:**
- HDMI
- USB
- Ethernet
- NEMA2000
- NMEA0183
- Others

TZTL12F/15F **v6.01** or later

Group for **Port**

To NMEA2000 backbone

MCU-005

Monitor 1 / Primary (connected to HDMI OUT1)

Monitor 2 / Secondary (connected to HDMI OUT2)

TZTL12F/15F **v6.01** or later

Group for **Starboard**

MCU-005

Processor: MPU-004

Switch Box: PSD-003

12-24 VDC

NMEA2000 Devices

From TZTL12F/15F (Port)

* Max. 10 m

Ethernet Hub

Ethernet Sensors

**PoE** port(s)

PoE Hub (Alternative A / Type A)

**Non-PoE** port(s) for sensor network

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**PoE Hub Requirement (if not using supplied POE injector)**

**A PoE hub for the MCU-005 should be compatible with Alternative A (Type A).**

**PoE** stands for **Power over Ethernet**. In additon to data comunication, power is supplied through an Ethernet cable. Power feeding of PoE has two (2) types: **Alternative A (Type A)** or **Alternative B (Type B)**.

**Alternative A (Type A):**

**Alternative A** is also described as **Type A**. While pins #1/2/3/6 of Ethernet cable are used for data communications, the same pins are used to feed the power to a connected device. **The MCU-005 is compatible with this type.**

E.g.

Manufacturer : **NETGEAR**

Model : **GS108PE**



URL: https://www.netgear.com/business/products/switches/web-managed/GS108PE.aspx#tab-techspecs

**Alternative B (Type B):**

**Alternative B** is also described as **Type B**. While pins #1/3/4/6 of Ethernet cable are used for data communications, the other pins #4/5/7/8 are used to feed the power to a connected device. The MCU-005 is **NOT** compatible with this type.

The MCU005 and MCU001-MCU005 mod kit are supplied by Furuno USA with a Mode A POE injector.

## 5.5. Utilizing HDMI Input

In addition to conventional analog video input, the TZT2BB is compatible with **HDMI input**. **A high resolution camera** with HDMI output, **external equipment** with HDMI output or DVI/VGA (RGB) output converted to HDMI, **TV**, and **DVD player** can be input the the TZT2BB HDMI input port to show images on one of the screens. With a HDCP compatible monitor connected, the content with copyright protection such as movies can be shown.

**Example of HDMI Input – CSH-8L MARK-2 on TZT2BB**

In the following example, the CSH-8L MARK-2 images are input to the TZT2BB HDMI input port. While the full component of CSH-8L MARK-2 is installed, the VGA (RGB) output from the processor is converted to HDMI to input to the TZT2BB HDMI input port. While showing CSH-8L MARK-2 images on one of the screens, the control unit is used to operate the CSH-8L MARK-2 in front of the TZT2BB screen.
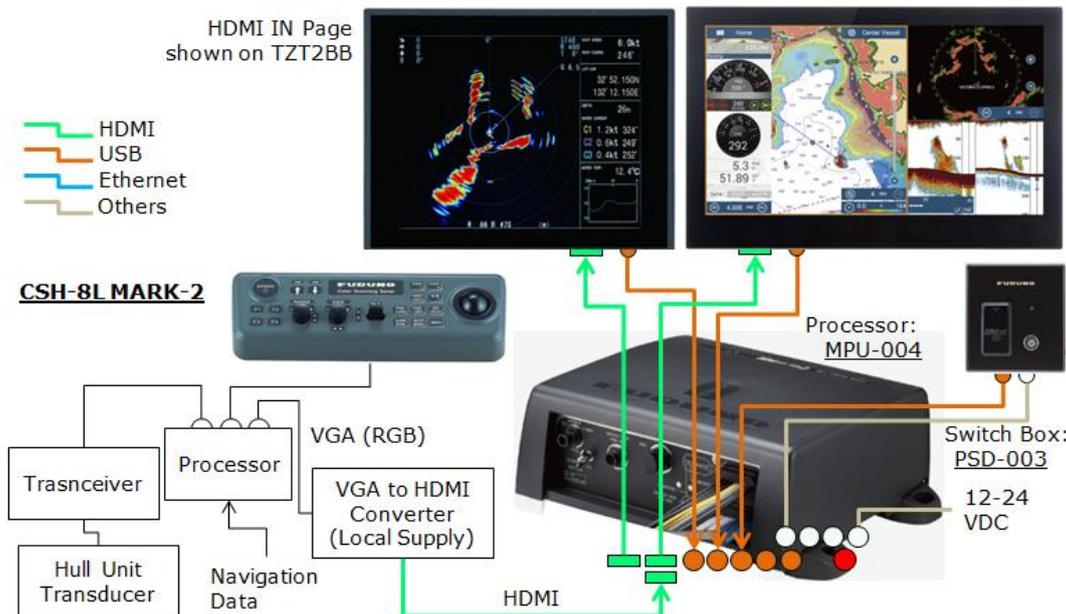


**Screen Assignment**

The **HDMI input page can be assigned to one of the screens** when the dual monitors are connected to the processor.
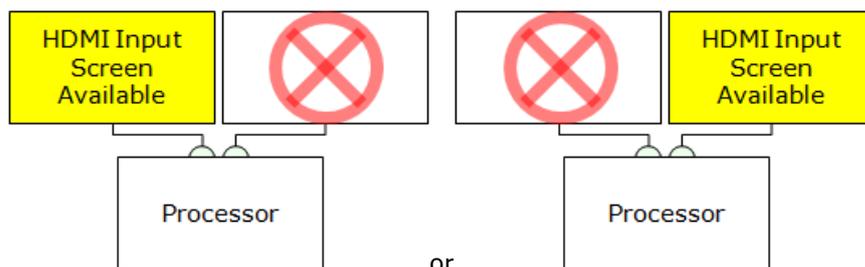


The HDMI input page is available in full screen or quarter (1/4-split) screen modes.
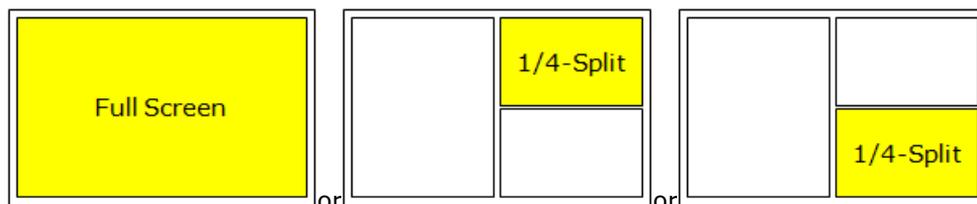
The TZT2BB HDMI input port is compatible with the following HDMI signals. Note that it is **NOT** compatible with **interlace**.

| Input Resolution | Vertical Frequency | Horizontal Frequency | Pixcel Clock Frequency |
|---|---|---|---|
| 1920×1080 | 60 Hz | 67.5 kHz | 148.5 MHz |
| 1280×1024 | 60 Hz | 64.0 kHz | 108.0 MHz |
| 1280×720 | 60 Hz | 45.0 kHz | 74.25 MHz |
| 1024×768 | 60 Hz | 48.4 kHz | 65.0 MHz |

**Notes**

(1) **HDCP:** Some video contents are protected with **HDCP** (High-bandwidth Digital Content Protection system). The content with copyright protection such as movies can be shown on HDCP compatible monitors only. Note that most marine monitors are not compatible with HDCP.

(2) **Audio Input:** The audio input through HDMI is **NOT** available. This is planned for a future software update.

(3) **IP conversion:** Images input to the HDMI IN port are **NOT** output to the Ethernet.

## 5.6. Utilizing USB Output

The TZT2BB **USB output port** (**USB2: Micro-B, female**) enables you to control an external device by multi touch control over the primary TZT2BB monitor. In the following example, a WASSP Mulit-beam Sonar is connected to the TZT2BB: HDMI input and USB output ports. While the WASSP images are shown on the TZT2BB screen, touch commands are transferred from the monitor to WASSP through the USB output port to operate the unit on the TZT2BB screen.
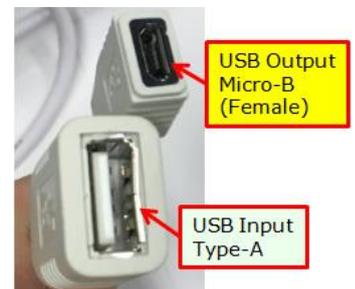
**Note:**

The USB output port is available with the **primary monitor only**, i.e. connected to the HDMI OUTPUT1 port.
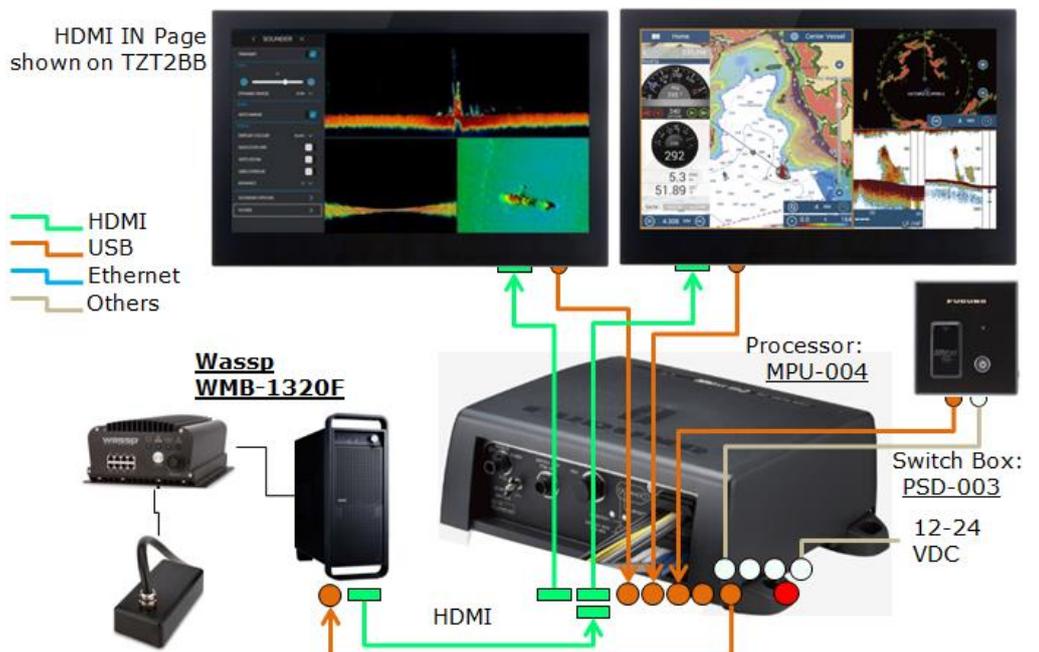
# 6. Retrofitting from Previous NavNet Series Black Box

The following table summarizes compatible and incompatible items and necessary actions when retrofitting from previous navNet series black boxes to the TZT2BB.

| No | Item | From NavNet vx2: GD-1920C-BB to TZT2BB | From NavNet 3D: MFDBB to TZT2BB | From NavNet TZtouch: TZTBB to TZT2BB |
|---|---|---|---|---|
| 1 | Points Routes Tracks | The data format of NavNet vx2 can be converted to NavNet TZtouch2 format with the conversion menu on TZTL12F/15F and TZT2BB as described in Sales Bulletin **FSB15-0018**. Points, routes, and tracks from the GD-1920C-BB can be imported to the TZT2BB after conversion. | Points, routes, and tracks can be utilized on the TZT2BB. (1) Insert an SD card to one of the card slots of MFDBB. (2) Export the data to the SD card (CSV format only). (3) Insert the SD card via an SD/USB adapter to an USB por of TZT2BB. (Or copy the data from SD card to a USB memory before inserting it to the USB port of TZT2BB.) (4) Import the data to the TZT2BB. | Points, routes, and tracks can be utilized on the TZT2BB. (1) Insert an SD card to one of the card slots of TZTBB. (2) Export the data to the SD card. While TZ, CSV, GPX, and KLM formats are available, [TZ] (TimeZero) is recommended. (3) Insert the SD card via an SD/USB adapter to a USB port of TZT2BB. (Or copy the data from SD card to an USB memory before inserting it to the USB port of TZT2BB.) (4) Import the data to the TZT2BB. |
| 2 | Settings | Setting data cannot be transferred to the TZT2BB (NavNet TZtouch2). Set each menu and other items on the TZT2BB. | Setting data cannot be transferred to the TZT2BB (NavNet TZtouch2). Set each menu and other items on the TZT2BB. | Setting data cannot be transferred to the TZT2BB (NavNet TZtouch2). Set each menu and other items on the TZT2BB. |
| 3 | Charts | Charts on NavNet vx2 (C-MAP NT MAX or Navionics Gold) are not compatible with NavNet TZtouch2. Use MapMedia charts (mm3d format). | NavNet 3D models including the MFDBB and NavNet TZtouch2 can use the same MapMedia chart format (mm3d format). | NavNet TZtouch models including the TZTBB and NavNet TZtouch2 can use the same MapMedia chart format (mm3d format). |
| 4 | Processor | Replace with the TZT2BB processor MPU-004 and switch box PSD-003. | Replace with the TZT2BB processor MPU-004 and switch box PSD-003. | Replace with the TZT2BB processor MPU-004 and switch box PSD-003. |
| 5 | Processor Dimensions | The TZT2BB processor dimension (W383×D299×H130 mm) is larger than the GD-1920C-BB (W275×D270×H64 mm). Reserve the space for the TZT2BB processor unit. | The TZT2BB processor dimension (W383×D299×H130 mm) is smaller than the TZTBB (W430×D411×H184 mm). | The TZT2BB processor dimension (W383×D299×H130 mm) is smaller than the TZTBB (W395×D350×H209 mm). |
| 6 | Processor Power Cable | The power cable with a unique connector is not compatible with the TZT2BB. Use the standard TZT2BB processor power cable. | The power cable is arranged locally to connect to the terminal board on the MFDBB. Use the standard TZT2BB processor power cable. | The power cable with a unique connector is not compatible with the TZT2BB. Use the standard TZT2BB processor power cable. |
| 7 | Control Unit | The control unit RCU-017 is not compatible with the TZT2BB. | Replace it with MCU-005 or convert MCU001 to MCU005 using conversion kit part # 001-506-900-00 Install the supplied POE injector to feed power to the MCU-005. If a multi touch monitor is installed for full operation by touch, the MCU-005 is not mandatory. | Optional compact remote controllers MCU-002 and MCU-004 can be utilized with the TZT2BB. If a larger keyboard is required, install the MCU-005 connected via a PoE hub or injector. If a multi touch monitor is installed for full operation by touch, the MCU-002/004/005 is not mandatory. |
| 8 | Control Unit Dimensions | The MCU-005 dimension is slightly larger than the RCU-017 (NN1/VX2BB control unit) and slightly narrower than the RCU-017. **Dimensions:** MCU-005: W293×H100×D123.5 (incl. service space) mm RCU-017: W290×H90×D134.6 (incl. service space) mm **Cutout Hole Size:** MCU-005: W268×H83 mm RCU-017: W280×H80 mm | The dimension and cutout hole size of MCU-001 and MCU-005 are identical. When a new MCU-005 is installed, just mount the MCU-005 at the place of MCU-001. | - |
| 9 | Monitor(s) | Existing monitors are connected via **VGA** (RGB) cable for the GD-1920C-BB. | Existing monitors are connected via **DVI-D** cable for the MFDBB. Connect to the TZT2BB processor MPU-004 with a DVI-HDMI adapter. | Existing monitors are connected via **DVI-D** cable for the TZTBB. Connect to the TZT2BB processor MPU-004 with a DVI-HDMI |

| No | Item | From NavNet vx2: GD-1920C-BB to TZT2BB | From NavNet 3D: MFDBB to TZT2BB | From NavNet TZtouch: TZTBB to TZT2BB |
|---|---|---|---|---|
| | | **If the monitors are also compatible with HDMI…:**<br>Connect to the TZT2BB processor MPU-004 with an HDMI cable.<br>**If the monitors are also compatible with DVI-D…:**<br>Connect to the TZT2BB processor MPU-004 with a DVI-HDMI adapter.<br>**If the monitors are compatible with VGA (RGB) only:**<br>Replace with a monitor compatible with HDMI or DVI-D.<br>**IMPORTANT:**<br>Make sure that these monitors are compatible with the resolution of 1920×1080 (FHD), 1280×1024 (SVGA), and 1024×768 (XGA), which are output from the TZT2BB. | **If the monitors are also compatible with HDMI…:**<br>Connect to the TZT2BB processor MPU-004 with an HDMI cable.<br>**IMPORTANT:**<br>Make sure that these monitors are compatible with the resolution of 1920×1080 (FHD), 1280×1024 (SVGA), and 1024×768 (XGA), which are output from the TZT2BB. | adapter. Connect a USB cable for touch interface.<br>**If the monitors are also compatible with HDMI…:**<br>Connect to the TZT2BB processor MPU-002 with an HDMI cable.<br>**IMPORTANT:**<br>Make sure that these monitors are compatible with the resolution of 1920×1080 (FHD), 1280×1024 (SVGA), and 1024×768 (XGA), which are output from the TZT2BB. |
| 10 | Ethernet Cable | The Ethernet cable is fit with a unique connector, not RJ45, and cannot be used in the NavNet TZtouch2 (TZT2BB) network. | The Ethernet cable connected to the MFDBB Ethernet ports (RJ45) can be utilized for the TZT2BB. | The Ethernet cable (MOD-WPAS0001-030+) connected to the TZTBB Ethernet ports is equipped with waterproof cap. The connector with waterproof cap does not fit on the TZT2BB USB connector at the pigtail cable. Use the Ethernet cable with the RJ45 connector fitted. (If the Ethernet cable with the RJ45 connector, less waterproof cap, is used with the TZTBB, it can be utilized with the TZT2BB.) |
| 11 | Network Sensors (Ethernet) | DFF1, DFF3, FA-30, and FA-50 can be utilized in the NavNet TZtouch2 network. Radar antennas, BBFF1 (1 kW Fish Finder sensor), and BBFF3 (3 kW Fish Finder sensor) are **NOT** compatible with the NavNet TZtouch2 network. Replace with the latest series.<br>Radar: Replace with DRS series<br>BBFF1: Replace with DFF1 or BBDS1 or connect the transducer to the built-in transducer port of TZTL12F/15F or TZT2BB.<br>BBFF3: Replace with DFF3 | Ethernet sensors in the NavNet 3D network are compatible with NavNet TZtouch2.<br>**Note:**<br>The MFDBB has the DRS power port for the DRS2D/4D/4A/6A/12A, but the TZT2BB does not. Use the PSU-017 (supporting DRS2D/4D) and PSU-012 (supporting DRS2D/4D/DRS4A/6A/12A) to utilize the DRS series in the NavNet TZtouch2 network. | Ethernet sensors in the NavNet TZtouch network are all compatible with the NavNet TZtouch2 network. |
| 12 | NMEA2000 Devices | NavNet vx2 models including the GD-1920C-BB are not compatible with NMEA2000 interface. | NMEA2000 devices can be utilized. | NMEA2000 devices can be utilized. |
| 13 | NMEA0183 Devices | Input NMEA0183 sensors to the TZT2BB network via an NMEA converter or replace them with NMEA2000 sensors. | Input NMEA0183 sensors to the TZT2BB network via an NMEA converter or replace them with NMEA2000 sensors. | Input/output NMEA0183 sensors to/from the TZT2BB network via an NMEA converter or replace them with NMEA2000 sensors. |
| 14 | Video Input | The GD-1920C-BB has one (1) RCA port. An existing analog camera can be utilized on the TZT2BB. | The MFDBB has four (4) BNC ports. Connectors should be adapted to RCA for the TZT2BB. Note that the TZT2BB has two (2) RCA ports. | The TZTBB has two (2) RCA connectors. Existing analog cameras can be utilized on the TZT2BB. |
| 15 | Transducers for Fish Finders | 600 W and 1 kW transducers work with the built-in Fish Finder of TZTL12F/15F and TZT2BB. | - | - |

The following sections highlights changes in wiring and hardware components for retrofit.

## 6.1. Retrofitting from TZTBB (NavNet TZtouch) to TZT2BB

| New – TZT2BB Configuration | Previous – TZTBB Configuration |
|---|---|
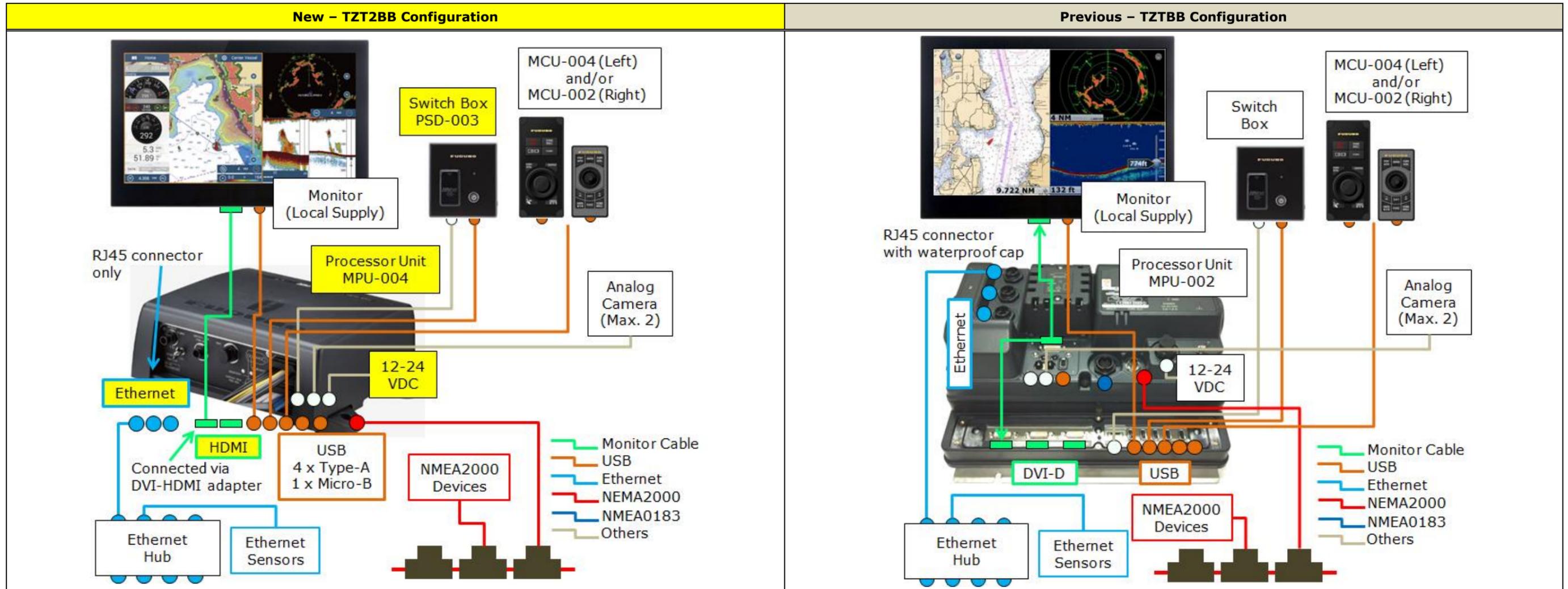


NavNet TZtouch (TZT9/14/BB) and TZtouch2 (TZTL12F/15F and TZT2BB) can share the common sensor data through Ethernet and NMEA2000, and the quantity of analog camera ports (RCA) is the same. While utilizing the existing devices, note the following points in wiring.

**Points:**

(1) In addition to installing the processor unit MPU-004 and switch box PSD-003, the **Ethernet cable to the processor should be replaced** with the cable without a waterproof cap in order to fit it on the RJ45 port.

(2) Use the standard power cable to the TZT2BB processor unit.

(3) If the monitor has the DVI-D interface only, connect the DVI cable to the processor unit via a DVI-HDMI adapter to fit on the HDMI port.

(4) **Make sure that these monitors are compatible with the resolution of 1920×1080 (FHD), 1280×1024 (SVGA), and 1024×768 (XGA)**, which are output from the TZT2BB.

## 6.2. Retrofitting from MFDBB (NavNet 3D) to TZT2BB

| New – TZT2BB Configuration | Previous – MFDBB Configuration |
|---|---|



**New – TZT2BB Configuration:**
- DVI Monitor 1024×768 (XGA)
- Control Unit MCU-005 (Converted from MCU-001)
- Switch Box PSD-003
- Analog Camera (Max. 2)
- Processor Unit MPU-004
- 12-24 VDC
- Ethernet
- HDMI
- Connected via DVI-HDMI adapter
- Connected via RCA connector
- USB 4 x Type-A 1 x Micro-B
- NMEA2000 Devices
- IF-NMEA2K2
- HUB-101
- Ethernet Sensors
- PoE Hub (Alternative A / Type-A)
- NMEA0183
- DRS2D/4D
- 12-24 VDC
- PSU-017
- To Ethernet hub
- DRS2D/4D4A/6A/12A
- DRS25A
- PSU-012
- PSU-013
- To Ethernet hub

Legend:
- Monitor Cable
- USB
- Ethernet
- NEMA2000
- NMEA0183
- Others

**Previous – MFDBB Configuration:**
- DVI Monitor 1024×768 (XGA)
- Control Unit MCU-001
- Ethernet 2 x MCU-001 2 x Network
- 12-24 VDC
- HUB-101
- NMEA 0183
- Ethernet Sensors
- NMEA2000 Devices
- Processor MPU-001
- Analog Camera (Max. 4)
- DVI-D
- Video Input (BNC)
- To Ethernet hub
- DRS2D/4D/4A/6A/12A
- DRS25A
- PSU-013

Legend:
- Monitor Cable
- USB
- Ethernet
- NEMA2000
- NMEA0183
- Others

**Points:**

(1) **Convert the MCU-001 to MCU-005 or install the new MCU-005** if the full keyboard operation is required, and **add the supplied POE injector** to supply power to the MCU-005.

(2) Input NMEA0183 data to the NMEA2000 backbone via a converter such as the IF-NMEA2K2, or replace the NMEA0183 devices with NMEA2000 ones.

(3) Ethernet sensors compatible with NavNet 3D work with NavNet TZtouch2. However, note one point on network with DRS series Radar: While the MFDBB has the DRS power port for the DRS2D/4D/4A/6A/12A, the TZT2BB has no power port.

    **DRS2D/4D** : Add the **PSU-017** to supply power.

    **DRS4A/6A/12A** (and DRS2D/4D) : Add the **PSU-012**. (The DRS2D/4D also works with the PSU-012.)

    **DRS25A** : It is already connected with the PSU-013. No additional wiring is necessary.

(4) While the **MFDBB has four (4) BNC** connectors for analog cameras, the **TZT2BB has two (2) RCA** connectors. When utilizing the existing cameras, connect two of cameras to the TZT2BB ports via a BNC-RCA adapter.

(5) Use the standard power cable to the TZT2BB processor unit.

(6) If the monitor has the DVI-D interface only, connect the DVI cable to the processor unit via a DVI-HDMI adapter to fit on the HDMI port.

(7) **Make sure that these monitors are compatible with the resolution of 1920×1080 (FHD), 1280×1024 (SVGA), and 1024×768 (XGA)**, which are output from the TZT2BB.

The conversion kit comes with a front cover, rubber key, slot hole cover, and an SD card for program update. **Make sure that the MCU-001 is converted to MCU-005 <u>before retrofitting to the TZT2BB</u>.**

(1) Insert the program SD card to the MCU-001 (upper slot).

(2) Turn the MFDBB on. The MCU-001 will also turn on and update will automatically start. It will take approx. one (1) minute to finish the update process. (The LED is lit while updating.)

(3) See that the power LED will flash after the update process finishes. The conversion is complete.

(4) Replace the front cover and rubber keys, as well as covering the SD slot hole.

**Integrated Network with "MFDBB and TZT9/14" – Changed to "TZT2BB and TZT9/14"**

In the integrated network of NavNet 3D (MFD8/12/BB) and NavNet TZtouch (TZT9/14/BB), the TZT9/14/BB is connected to the MFD8/12/BB network via Ethernet only. The following example shows the MFDBB networked with TZT14. The TZT14 is networked to the MFDBB via Ethernet only. When retrofitting the MFDBB to TZT2BB, **add the NMEA2000 drop cable for the TZT14**.
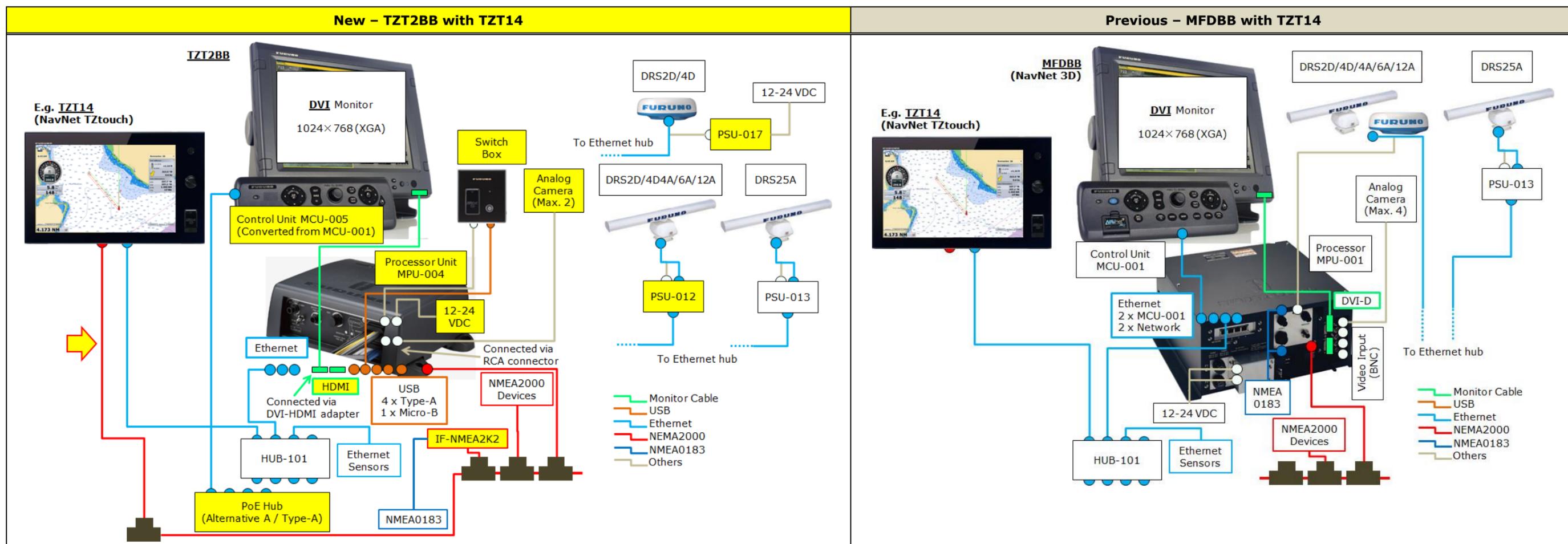
## 6.3. Retrofitting from GD-1920C-BB (NavNet vx2) to TZT2BB

| New – TZT2BB Configuration | Previous – GD-1920C-BB Configuration |
|---|---|



**New – TZT2BB Configuration:**

Monitor (**DVI-D/HDMI** compatible) 1024×768 (XGA)

Control Unit MCU-005

Switch Box PSD-003

DRS4DL/+ DRS4D-NXT DRS6A-NXT DRS6A/12A/25A X-Class

DRS4D

Analog Camera (Max. 2)

12-24 VDC — To Ethernet hub

To Ethernet hub

PSU-017

12-24 VDC

Processor Unit MPU-004

Monitor Cable
USB
Ethernet
NEMA2000
NMEA0183
Others

12-24 VDC

Ethernet

HDMI — Connected via DVI-HDMI adapter

Connected via RCA connector

USB 4 x Type-A 1 x Micro-B

NMEA2000 Devices

To Ethernet hub

Ethernet Hub (100BASE-TX)

DFF1/3

FA-30/50 — AIS

IF-NMEA2K2

ETR-6/10N ETR-30N — Fish Finder

PoE Hub (Alternative A / Type-A)

NMEA0183

**Previous – GD-1920C-BB Configuration:**

**VGA** Monitor 1024×768 (XGA)

Radar Dome or Open Array

Control Unit

Analog Camera (Max. 1)

RGB

Monitor Cable
USB
Ethernet
NEMA2000
NMEA0183
Others

12-24 VDC

NMEA0183

To Ethernet hub

Ethernet Hub (10BASE-T)

DFF1/3

FA-30/50 — AIS

ETR-6/10N ETR-30N — Fish Finder

**Points:**

(1) Install the new **MCU-005** if a full keyboard operation is required, and add the POE injector to supply power to the MCU-005. Input NMEA0183 data to the NMEA2000 backbone via a converter such as the IF-NMEA2K2, or replace the NMEA0183 devices with NMEA2000 ones.

(2) **Replace the Radar dome or open array with the latest DRS** series.

(3) The BBFF1 and BBFF3 are **NOT** compatible with the NavNet TZtouch/2 network.

    **BBFF1**     : Replace with the **DFF1**, **BBDS1**, or just **connect the existing transducer to the built-in Fish Finder port** of the TZT2BB.

    **BBFF3**     : Replace with the **DFF3**.

(4) The FA-30 and FA-50 can be utilized.

(5) While **NavNet vx2** MFDs support **10BASE-T** for Ethernet communications, **NavNet 3D, TZtouch, and TZtouch2** MFDs support **100BASE-TX**. If the existing hub is compatible with 10BASE-T, replace it with the one compatible with **100BASE-TX** or faster communications.

(6) Use the standard supplied power cable to the TZT2BB processor unit.

(7) If the monitor has the VGA (RGB) interface only, install a new monitor compatible with **HDMI (or DVI-D for connection via DVI-HDMI adapter)**.

(8) **Make sure that these monitors are compatible with the resolution of 1920×1080 (FHD), 1280×1024 (SVGA), and 1024×768 (XGA)**, which are output from the TZT2BB.

# 7. Other Notes

(1) With dual monitors connected to the HDMI OUT 1 (primary) and HDMI OUT 2 (secondary), the following settings are accessible on the primary (HDMI OUT 1) monitor only.

[Settings] – [Initial Setup] – [**Chart Master**] – [**ON**]/[**OFF**]:
Chart Master can be turnd on/off at the primary monitor only.

[Settings] – [General] – [**Wireless LAN Settings**]:
Set the Wireless LAN menu such as entering SSID to an access point at the primary monitor.

(2) With dual monitors connected to the TZT2BB processor unit, only one SD card for chart is required to show charts on both monitors.

(3) The **NavNet Remote**, **Viewer**, **Controller apps** are planned to be updated to be compatible with TZT2BB network.

(4) The brilliance of external monitors are adjusted at the monitor side.

# 8. Software Versions - TZTL12F/15F and TZT2BB

The TZT2BB is installed with the software version 6.21 at the factory. Insure that any connected TZtouch2 MFDs are updated to software version 6.21.

--- END ---

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