

**BFD**

## **PRODUCT USER GUIDE**

For software version 2.22 or higher

The A+T Big Format Display (BFD) is a high specification full-colour large format display. Very high contrast and toughened glass provides superb viewability under the harshest conditions.

Supplied as either an Ethernet-based unit for use with an A+T ATP processor, CANbus for N2k systems such as B&G H5000 and WTP3 or Fastnet bus for older systems including B&G H3000, H2000 and WTP2/3. The BFD has the same outline of existing 40/40 displays that it may be replacing.

### **Specifications:**

Input voltage	10-40 Vdc, internal self resetting fuse
Power consumption	@max brightness 26W
Weight incl 7m cable	2.53 kg
Environmental	IP68, tested at 1m submersion for 24hr
Operating temperature	-10 to +70 deg C
Display resolution	1280 x 800
Backlighting	Max 1500cd/m <sup>2</sup> , ajustable levels

### **Warranty:**

The A+T BFD is warranted against manufacturing defects for five years from date of shipping from factory on a return to factory basis. Warranty is void if opened. An integral tamper sensor is fitted.

The warranty specifically excludes physical damage, lightning strike to the vessel, overvoltage on supply or signal lines and use outside the normal operating environment of a yacht.

### **Trademarks:**

A+T is a registered trademark of A+T Instruments Ltd. B&G, H2000, H3000, WTP, WPT2 & WPT3 are product names or trademarks of Navico UK Ltd whose use here is acknowledged.



### Conformity.

This display complies with the CE EMC directive 2004/108/EC and Level 2 of the Radio communications (Electromagnetic Compatibility) standard 2008



## **BFD functionality**

- The BFD allows the display of any data available on the instrument databus.
- Up to 6 fully custom layout pages are available that can be scrolled through via push button
- Pages may be set to switch based on a race timer and sailing modes
- Configuration and setup is via web-server
  - Fastnet and CANbus displays have built-in WiFi to access the webserver from any WiFi-enabled device
  - Ethernet displays are accessed from an ATP1 or ATP2 webserver

### **Remote button control**

Any momentary normally open push button may be used to scroll through the pages or change lighting levels.

### **Setup and configuration**

The BFD web-server has several functions:

- Customise display pages
- Manage lighting, including fine tuning lighting to match other displays
- Save and reload display configurations
- Upload firmware updates and system diagnostics

## **Display Wiring**

The Fastnet and Ethernet BFD is supplied with a 7-metre cable. This cable may be shortened without affecting the unit or warranty. Custom cable lengths are available, as are IP68 rated in-line connectors. Contact A+T for CANbus connectivity or for custom cable requirements.

The BFD requires a protected power supply of minimum 26W, independent of the data bus power. The 5-way ATJB junction box is ideal for connecting Fastnet and CANbus BFD's to the data bus. A network switch should be used for Ethernet BFD's.

### Fastnet BFD:

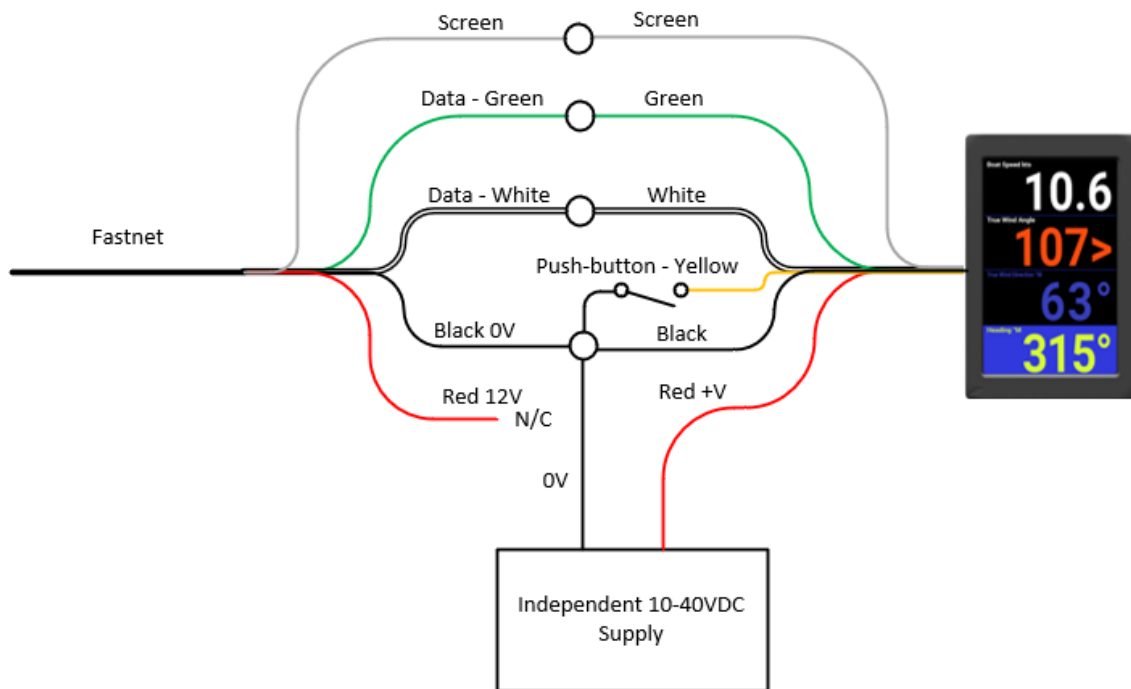
The colour codes in the cable are:-

Colour	Function	Comment
Black	0v	**See note below
Red	+V Power	10-40VDC 26W fused supply
White	Fastnet A	Connect to B&G Fastnet White
Green	Fastnet B	Connect to B&G Fastnet Green
Brown		Not used (isolate)
Blue		
Violet		
Yellow	Push-button	When contacted with 0v will step to the next page or change the lighting level
Bare	Screen	

\*\*The 0v of the independent power supply should be connected common to the 0v (black wire) of the Fastnet bus.

The normal requirements for Fastnet bus apply in that two terminator resistors, each of 100  $\Omega$ , at either end of the network. The resistance measured across green and white with no power should be close to 50  $\Omega$ .

### Fastnet Wiring:



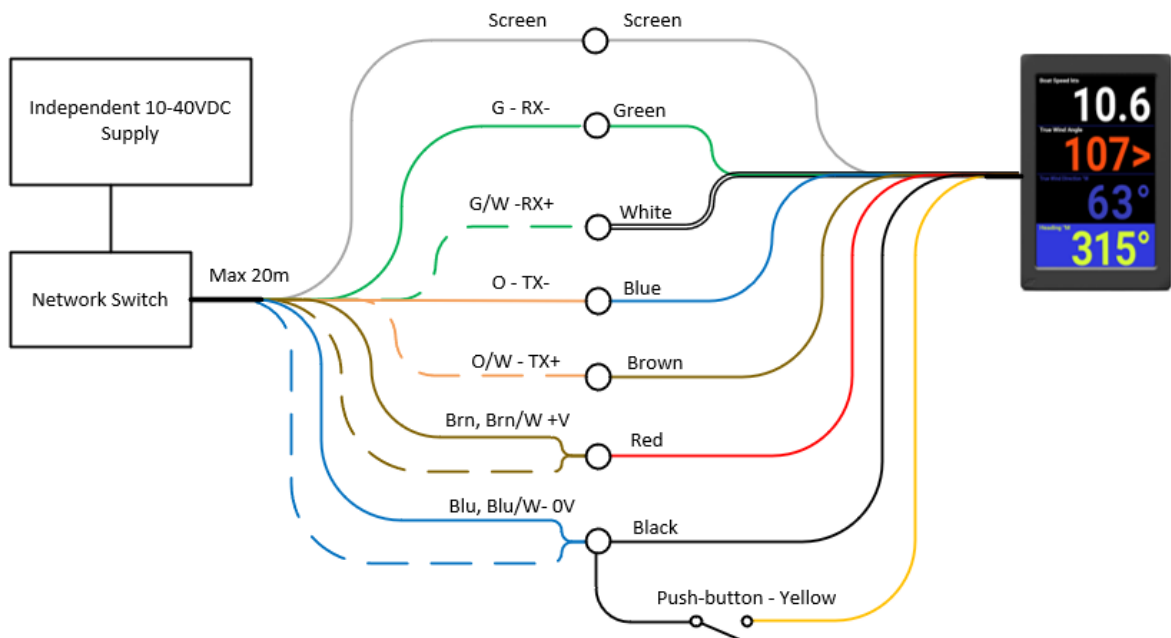
## Ethernet BFD:

The colour codes in the cable are:-

A+T Colour	CAT5 colour	Function	Comment
Black	White/Blue & Blue	*0V	
Red	White/Brown & Brown	*+V Power	10-40 VDC 26W fused supply
White	White/Green	RX+	
Green	Green	RX-	
Brown	White/Orange	TX+	
Blue	Orange	TX-	
Violet			Not used (isolate)
Yellow		Push-button	When contacted with 0v will step to the next page or change the lighting level
Bare		Screen	

\*The +V and 0v connections use spare wires within cat5e cable. Twist together the White/Brown and Brown pair, and the White/Blue and Blue pair for connection to the +V and 0V terminals.

## Ethernet Wiring:



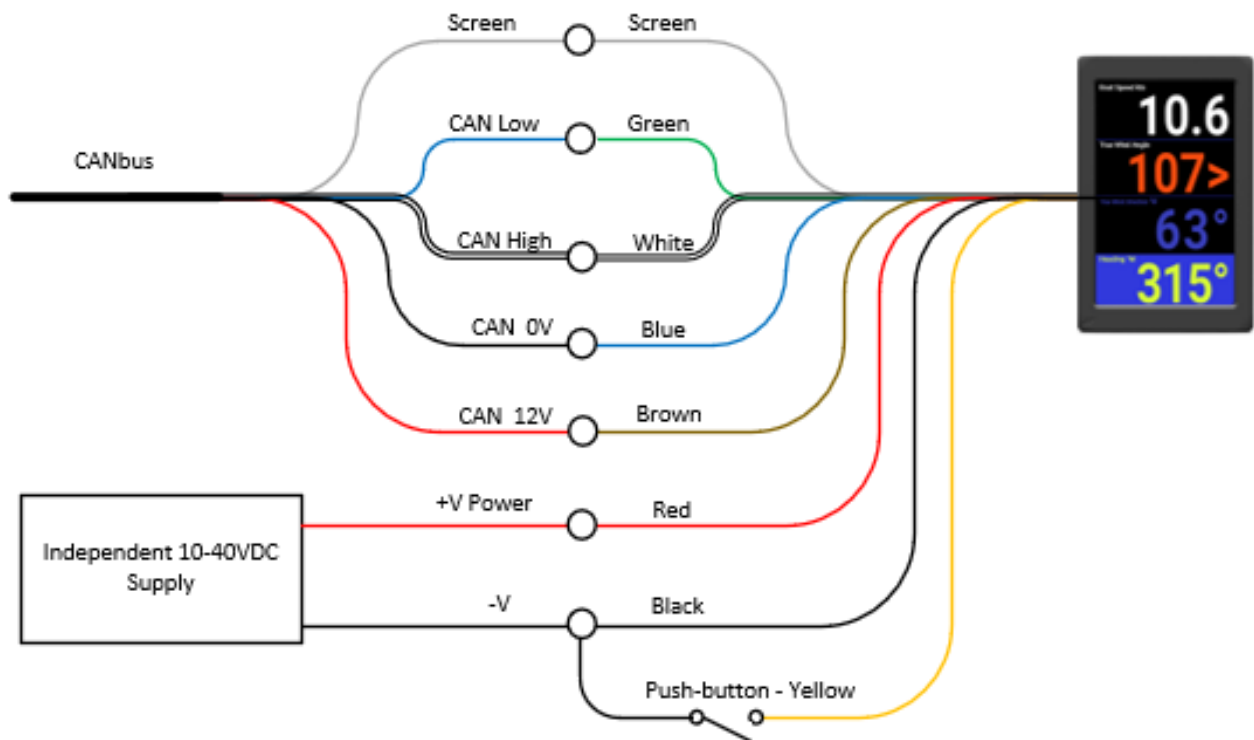
### CANbus BFD:

Contact A+T for connection requirements.

The colour codes in the cable are:-

A+T CANbus Colour	N2k Colour	Function	Comment
Black		0V	
Red		+ve power	10-40VDC 26W fused supply
Screen	Screen	Shield	
Brown	Red	NET S/+ve	
Blue	Black	NET C/-ve	
White	White	CAN H/NET +	
Green	Blue	CAN L/NET -	
Yellow		Push-button	When contacted with 0v will step to the next page or change the lighting level

### CANbus Wiring:





## Connect to the BFD with Wi-Fi

The BFD WiFi is always on.

SSID: [Unit serial number]  
WiFi Password: instruments

The BFD has an internal DHCP server.

Once connected to the BFD, open your web browser and enter the BFD IP address in the address bar to load the home page.

IP Address: 200.0.0.1

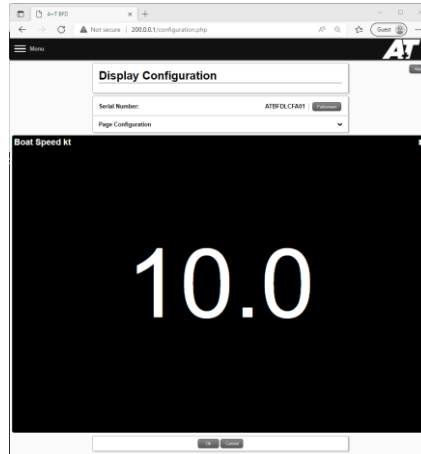
You may edit the BFD SSID in **Menu > Diagnostics > Network Settings** once you are connected to the display.

The default Wi-Fi channel is channel 6, you may edit this if you have a poor or unstable Wi-Fi connection.

## Web-server setup and configuration

These instructions are common to all BFDs.

Ethernet BFD pages may be set up or changed from the ATP web-server, but does not have access to Display Settings or Diagnostics. See the ATP1 and ATP2 manual for instructions.



*Display configuration page*

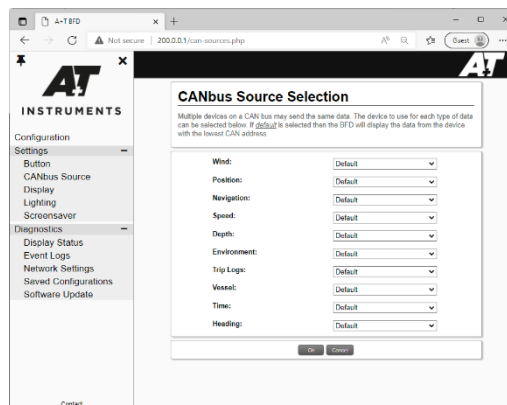
Logging in to the web-server will reveal the Display Configuration page. On this page you may:

- Set the web-server to display data in full screen making your PC/tablet/phone a data display
- Control the current page data fields, colours and rules
- Access the **Menu** to setup and control the display

### **CANbus**

The CANbus menu is only available on CANbus version displays and the sources must be selected before proceeding.

#### **Menu > Settings > CANbus Source**



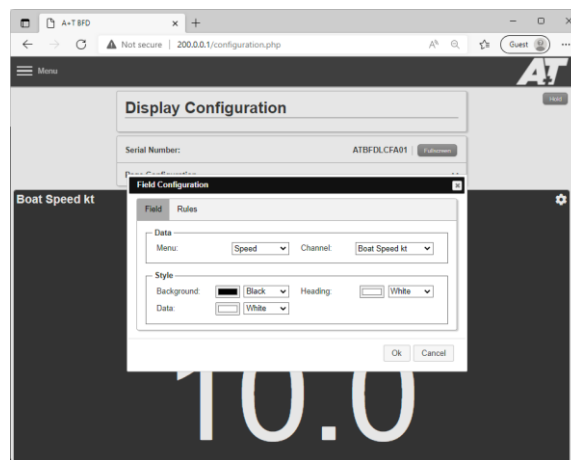
## Configuration

The configuration page allows you to edit any of the pages you have set in **Menu > Settings > Display**.

If you edit a page that is currently displayed on the BFD, the changes will be made upon clicking OK at the bottom.

To configure a data field, click in the data field to reveal the Field Configuration window to:

- Set the data variable to display
- Change the colour scheme of the field to standard or a custom colour palette



*Field Configuration*

Any changes made must be sent to the BFD by pressing **Ok** at the bottom of the window.

You may create up to 3 Data Rules to change colour of the data, title or background using logical operators.

For example, if you wish to set conditions to indicate colour for safe depth, caution depth, and hazardous depth:

- Edit the first rule to display the data in **RED** when depth <5m
- Press + to add a new rule and edit to display the data in **AMBER** when depth >5m
- Press + to add a new rule and edit to display the data in **WHITE** when depth >10m

Where conditions overlap, the bottom, or most recently added, rule will apply. In this example the last two rules apply for depth > 15 metres however the last rule has priority so the depth text is **WHITE**.





## **Settings > Button**

Set the button behaviour to either cycle through the pages or the lighting levels.

## **Settings > Display**

Change the display orientation.

Select the number of pages (1 to 6) to use

Set/change the currently displayed page

Change the data text header size for all fields

## **Settings > Lighting**

Each lighting level may be tuned to match other display lighting levels, and to set the lighting behaviour to operate either with the system lighting commands or independently

## **Settings > Network**

Change the Display WiFi SSID or channel

## **Settings > Night Mode**

The BFD can be set to an alternate mode when the lighting level falls below a certain threshold. This is triggered by the lighting level selected.

For example the digit colours can be set to change from White to Red when the lighting level is set below Low-Medium.

Each page of the BFD may be set up for this mode. Switching to Night Mode on the Configuration page will allow setup of a night mode option.

## **Settings > Screensaver**

The BFD may display a custom \*.png or \*.jpeg image such as a boat logo or name of up to a resolution of 1280 x 800.

This may be set to display after the last page and selected by a connected push button.



## **Context Switching**

Each BFD may switch to one of four predefined pages based on a race timer or TWA.

The A+T system timer may be triggered by an A+T MFD, or by ethernet connected Expedition Navigation Software.

You may set the TWA threshold for transitions between the TWA modes and the prestart mode will be triggered by the ATP system timer set from an MFD.

When context switching is enabled:

Page 1 = Upwind mode

Page 2 = Reaching mode

Page 3 = Downwind mode

Page 4 = Prestart mode

## **Diagnostics**

Diagnostics menu items are used to monitor the performance of the BFD, update software and save backups of the BFD.

BFD backups can be saved to the BFD or exported to a PC/tablet/phone for restoring after a factory reset or copying settings to other BFDs



## Mounting instructions and dimensions

The BFD may be mounted in either conventional landscape, or portrait orientation.

**Landscape:** When viewed from the rear the cable should exit vertically down.

**Portrait:** When viewed from the rear, rotate the display from landscape to portrait 90 deg clockwise. The cable should exit horizontally to the left.

DO NOT USE Acetone or any alcohol based solvent agents for cleaning. These may damage the plastic materials on the display.

DO NOT OVERTIGHTEN THE FASTENINGS. Overtightening could lead to distortion of the display body and consequential loss of watertight/airtight integrity or break the glass or the mounting lugs. None of these occurrences are covered by warranty.

