Analogue Display

PRODUCT USER GUIDE

The A+T Analogue is a classically styled and highly engineered display designed to complement all instrument systems. With a crystal clear, scratch resistant, domed glass front the Analogue displays provide superb viewability under the harshest conditions.

A wide range of interfacing is available, to connect to almost any instrument system. The display is electronically and aesthetically compatible with existing A+T and B&G systems and fits the cut-out and fastening holes of existing B&G H2000, H3000 and H5000 Analogue displays.

Specifications:

Power	Supply:	10-40 VDC
	Consumption:	0.7 to 1.1 W
	N2k LEN (for CANbus displays): 2	
Environmental	IP68, tested at 1m submersion for 24hr	
Operating temperature	-10 to +70 deg C	
Backlighting	Red or Green, tunable brightness	
Compatibility	B&G Fastnet, CANbus (N2k compatible), A+T Ethernet, Custom	

Warranty:
The A+T Analogue 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 except by A+T.   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

CE

Analogue functionality

The standard analogue range includes:
- AWA
- Magnified AWA
- AWS
- TWA
- TWS
- TWD
- Rudder angle
- Boatspeed (kt)
- Depth (m)
- Tachometer and other custom data (contact A+T)

Interfacing options
- B&G Fastnet Bus
- CANbus (N2k compatible)
- Ethernet for A+T systems
- Custom (contact A+T)

NOTE: CANbus displays are supplied with the N2k source set to ALL. If more than one source is available you may observe erratic behaviour. A CANbus display must be configured to a single data source. This may be done via Bluetooth.

Bluetooth Control
See Appendix B for details on connecting a Windows PC to the Analogue display over Bluetooth. Once connected, a number of functions are available:
- Update the displays firmware
- View display diagnostics, logs, statistics, and perform system tests
- Manage lighting, including fine tuning lighting to match other displays
- Set the CANbus data source
- Factory reset the display

Appendices:-
A. Display wiring and maintenance
B. Firmware update and Bluetooth connection
C. Mounting instructions and cut-out template

APPENDIX A

The Analogue display is supplied with a 0.3 metre pigtail with a waterproof connector to a 3 metre bare ended cable. Cables may be shortened without affecting the unit or warranty. Custom cable lengths are available, as are IP68 rated in-line connectors. Contact A+T to discuss your requirements.

CANbus (N2k compatible) displays are supplied with a 0.3m drop cable with a microC connector.

The colour codes in the cable are:-

A+T Colour	Fastnet	Ethernet	CANbus (N2k compatible)		
Black	0 Vdc *	0 Vdc	**Pin**		
Red	+ve Power (10-40 VDC)		1	Shield	Brown
White	Fastnet A** (White)	Rx+	2	NET S/+ve	White
Green	Fastnet B** (Green)	Rx-	3	NET C/-ve	Blue
Brown		Tx+	4	CAN+/NET H	Black
Blue		Tx-	5	CAN-/NET L	Grey
Violet					
Yellow					
Bare	Screen				

*If the unit is powered from a supply other than the Fastnet power, then the 0v of this 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 Ω, at either end of the network. The resistance measured across green and white with no power should be close to 50 Ω.

Trim all unused wires and isolate.

Maintenance

The Analogue displays are hermetically sealed and have been subject to an immersion test before shipping. However, due to the materials used and internal volume, some humidity may develop within the units over some years.

A field serviceable desiccator is installed in the rear of the display to extract any moisture that becomes present, however some misting may become evident on the inside of the glass over a the course of a few years.

Should this occur, you may remove the desiccator and reactivate it to return the display to normal service.

Instructions
1. In a clean, dry environment, unscrew the desiccator from the rear of the display and carefully store the display to prevent ingress of any foreign materials such as dust.
2. Place the desiccator in an **electric oven** at 105 to 120 deg C for 1 to 2 hours to dry out
3. Once dried out, allow the desiccator to cool completely and replace into the rear of the display, taking care to not excessively tighten. Over tightening may strip the threads and void the warranty on your unit.

APPENDIX B

Firmware updates

Ethernet based Analogues can be updated from the ATP Webserver. See the ATP Manual for instructions.

All other Analogues can be set up and updated via Bluetooth.

Preparation

1. A terminal emulator program such as TeraTerm or HyperTerminal is required. TeraTerm is recommended and is available at https://osdn.net/projects/ttssh2/releases/.

2. Download the Bluetooth Uploader files and the latest version of Analogue firmware from https://www.aandtinstruments.com/support/downloads/

3. The Bluetooth Uploader VX.XX.zip file contains two files which must be extracted to the same Folder:
   - A+T Uploader VX_XX.exe
   - InTheHand.Net.Personal.dll

4. Analogue displays are shipped with Bluetooth enabled. If this has been manually turned off, then it can be re-enabled by setting the rotary switch on the inside of the unit to '0'.
   - The rotary switch is located inside the display and can be located by unscrewing the desiccant in the rear of the display. See **APPENDIX A - Maintenance**

## To pair with your Windows 7, 8 or 10 PC:

1. In Windows, select Settings > Devices > Bluetooth & other devices, then select "Add Bluetooth or other device"
2. Select the Analogue display identified by the serial number
3. When requested, enter the PIN: 1234
4. The PC will then connect to the display
5. Navigate to Windows Control Panel > Devices and Printers. Right click on the paired device, click on Properties and note the COM port number in the Hardware tab.
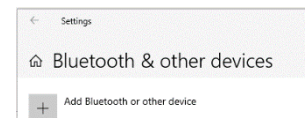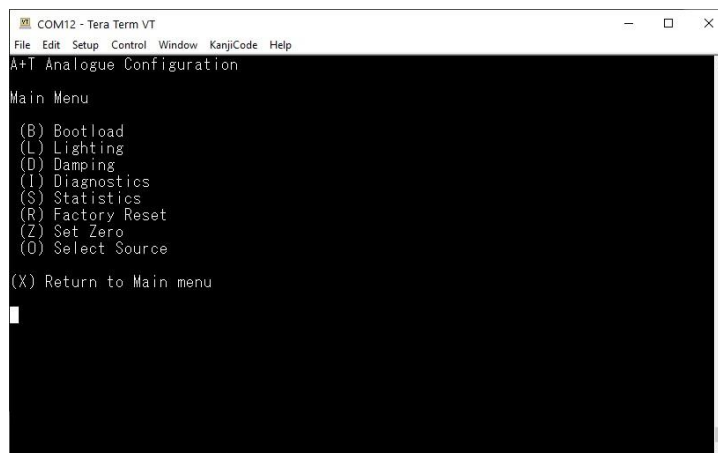
Connect to the Analogue system menu

Open your terminal emulator. The instructions below are for TeraTerm.

1. Select Serial and the correct Analogue COM port.
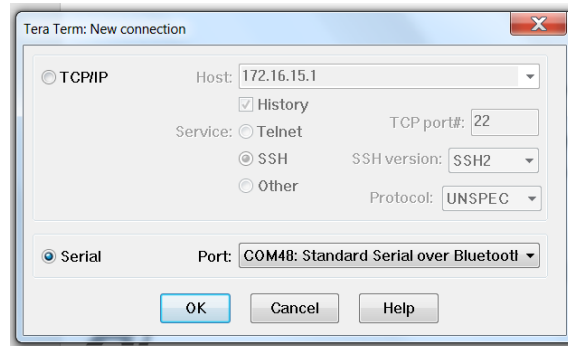
2. Click OK and a blank terminal screen will open.
3. Press [Enter] to bring up the system menu.

The system menu is operated by keyboard keys. For example to adjust the lighting levels press L to enter the lighting menu, or to set the CANbus (N2k) data source, press O.

Upload new firmware

1. Type B to enter the Bootload menu and when prompted press Y to confirm setting the unit to Bootload to receive update files
2. Quit/Exit TeraTerm
3. Run the A+T Bluetooth Uploader program and click on 'Find unit'. The target Analogue will appear in the list of available displays.
4. Select the target Analogue and click 'Connect', then follow the instructions in the Uploader for opening the update file and Uploading.
5. Once uploading starts the needle pointer will move around the dial.
6. Once the Uploader shows 100% the Analogue will reset and then continue normal operation.

APPENDIX C

Mounting the Analogue display

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

Recommendations:

a) A 1mm clearance between the Analogue and the bulkhead cutout
b) Use the supplied gasket to mount on a clean, flat surface.
c) Should you require additional waterproofing, or are mounting on a curved surface, use a bead of proprietry **NON-ADHESIVE** sealant instead of the supplied gasket and fasten using small spacers to achieve an even gasket without squeezing all the sealant out of the gap.
   a. Once the sealant has cured, remove spacers and gently tighten the fastenings to take up on the now formed gasket.
   b. Clean away any surplus sealant.
d) **DO NOT OVERTIGHTEN THE FASTENINGS**. Ovetightening 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 ocurrences are covered by warranty.
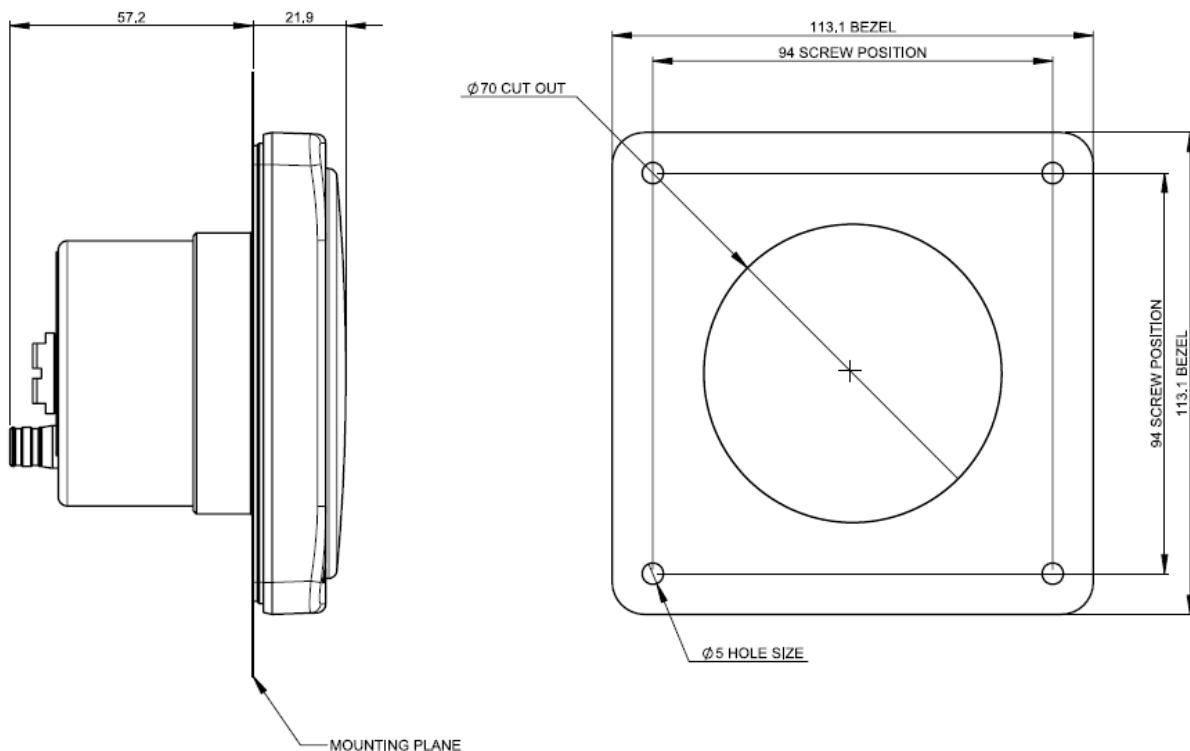
NOTE: The fastening hole locations of a B&G H2000 Analogue display vary and may not exactly match the A+T Analogue display. They may require re-drilling to fit.