ATP1 Installation Notes (preliminary)

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1. Introduction

The ATP1 processor covered in this manual is the core product from A+T and is aimed at racing boats, superyachts and large cruising and classic yachts.

1.1.   Multi-Fuel connectivity
As many initial users of the ATP are yachts which have an installed base of B&G Fastnet displays, sensors and wiring, the ATP1 supports these with no change. The ATP1 therefore has three core databus connections:-

1.1.1. Ethernet network carrying the ATP databus protocol (ATPDB)
This a stand alone network which uses its own IP addressing and protocols. It can also carry power to peripheral devices (but it is not industry standard POE). It links A+T sensors and displays.

1.1.2. A second general purpose Ethernet network connection
This is a normal network connection intended to sit on the yacht's main network and used to access the ATP webserver. If then connected to a wireless network then any connected computer or tablet can access the ATP webserver.

1.1.3. Fastnet
This supports existing B&G displays, sensors and wiring including A+T displays connected to Fastnet.

A typical installation example schematic is shown below.
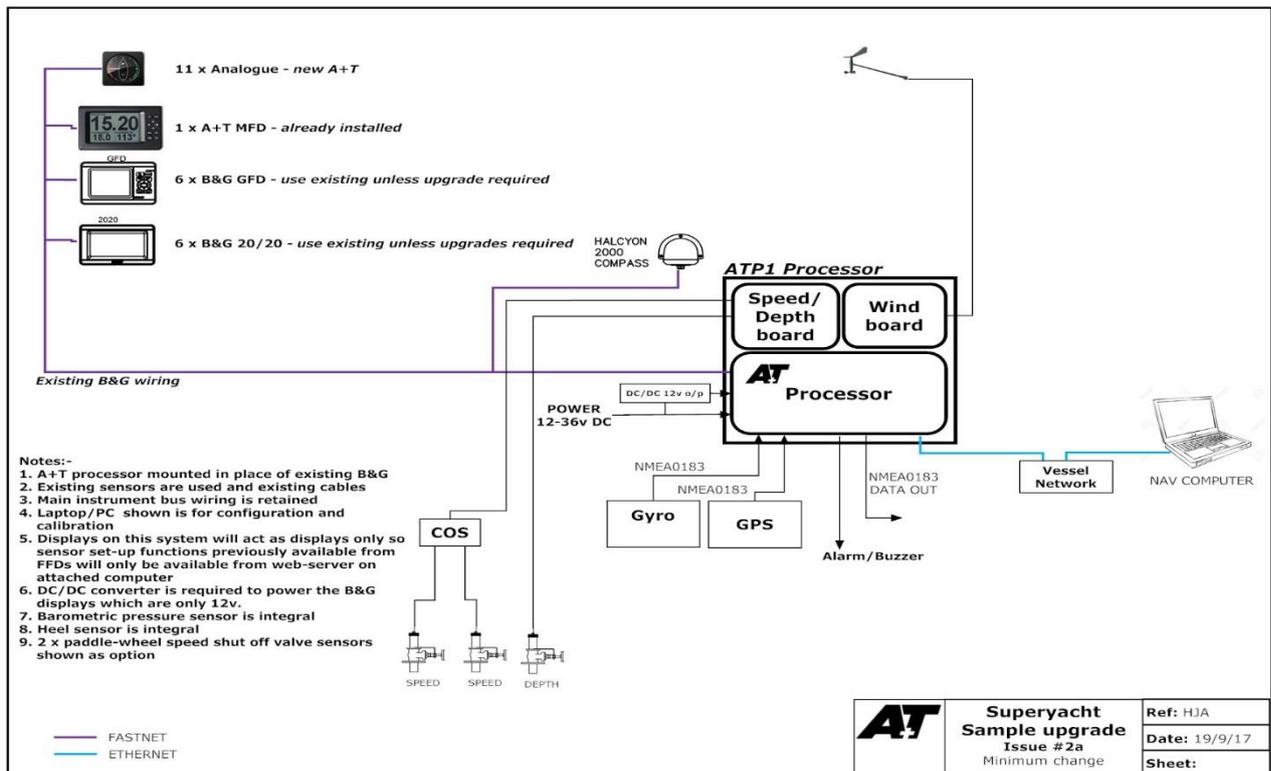
1.2.   Webserver

Central to the setting up and diagnostics of the ATP is the built-in webserver. This can be accessed from a suitably connected PC, MAC or tablet. All likely installations of the ATP will have a dedicated computer and this is the prime tool for setting up and calibrating the system.

Calibration and other system controls from displays is restricted to a few key functions (covered in sections 19 & 20).

As well as the ease of use, room for explanation and 'HELP' files, the other advantage of the webserver is that the user can see much of the calculation going on in the ATP processor so is provided with considerable diagnostic information.

1.3.   Expedition performance and navigation software

Once configured from the Webserver, the ATP is intended to work as a stand-alone system with no connection to either a computer or internet. Concentration has been given to producing very fast and reliable calculation and output of highest quality core data required to sail the yacht.

Higher level functions such as start-line, laylines, optimal routing, sail selection, weather are not included and are left to be provided by dedicated software solutions such as Expedition and displayed using external channels with no practical limit. The ATP has been developed for use specifically with Expedition both to provide these functions and to provide for editing and uploading of performance information. Other software packages may be closely interfaced over time.

The ATP does provide target performance information, even when not connected to a computer, but does not provide for its editing or updating which is done in Expedition.

The ATP does not provide data logging. This is left again to Expedition or a connected computer application. A higher specification processor due for launch in 2018 will include very extensive and high data-rate logging capability.

1.4.   This manual

The manual largely provides the background and explanation of how the ATP works. Detailed 'how to' is not provided as this is generally intuitive from the webserver. Updates are continually produced reflecting feedback and system development. Please visit www.AandTinstruments.com/downloads for the latest version of the manual and the ATP software.

2. Webserver & network connection

2.1.   Getting started
The webserver can be accessed on the ATP1 with no connections other than power and an Ethernet cable.

2.1.1. Connect power (10-36Vdc) to the unit
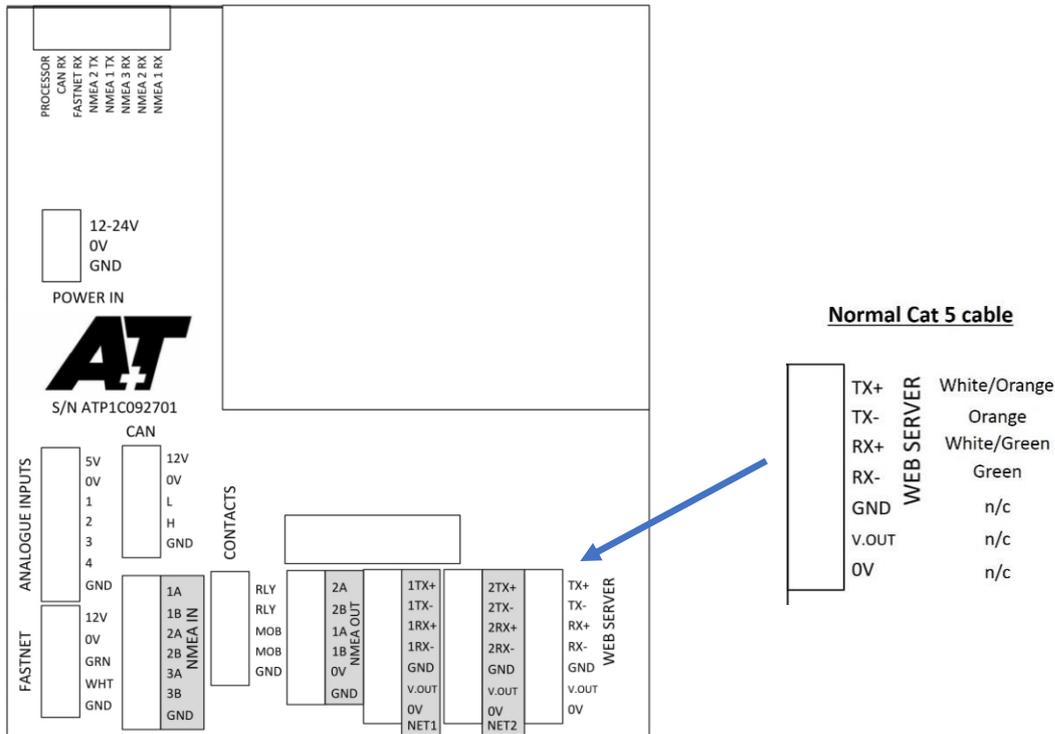
2.1.2. Connect a computer to the ATP Ethernet port either
2.1.2.1.   Directly (on older computers or if difficulty then a cross-over cable or switch should be used)
2.1.2.2.   Or by connecting the ATP onto an existing network with a DHCP server. If this is required then ensure that the Ethernet is connected both to the ATP and to the DHCP server before powering up the ATP.

2.2.   IP addressing
When shipped the ATP has fixed IP address 192.168.1.219

On power up, the ATP waits for 5 seconds to see if it is being given an IP address by a DHCP server on the connected network (if there is one). If no DHCP address is received then the IP address reverts to its fixed IP address. This may be changed once initial access to the webserver is achieved.

To determine the IP address that the ATP has adopted check the small LCD display in top left corner of ATP cabinet. It can also be shown on any connected display on the Fastnet bus under MENU/ATP1/IP ADDR or Channel 254.

2.3.   Linking to Webserver

Enter IP Address as above into any browser on PC, Mac or Tablet and page as shown below should appear.

2.4.   General principles

2.4.1. Note that no changes entered on any page are implemented until either OK or APPLY is clicked

2.4.2. On all pages with real-time updating fields there is a HOLD button in the top right corner which holds a synchronised snapshot of any dynamic data. It can be released by clicking the button again or by changing the page displayed. Holding the webserver pages in this way has no effect on calculations or on displays on the system.

APPENDIX C Hardware Installation

C1 Motherboard

The processor motherboard connections are shown below
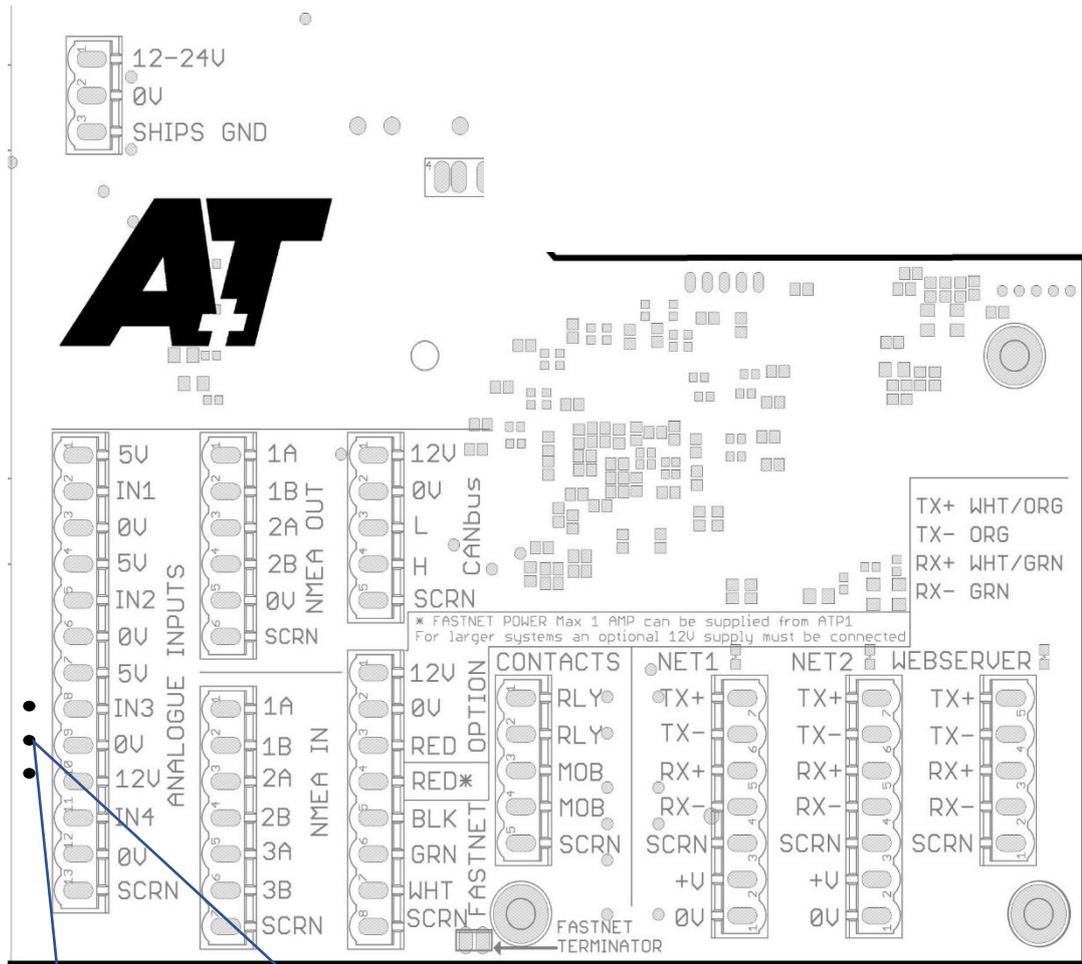
Header to select 12V regulated or 12/24v power input for analogue reference

Notes:-

Power
Connect either 24v or 12v power through a 5A fuse or circuit breaker to the ATP power terminals.

Screen Connections
Connections for screen are provided on each connector. All screen connections are joined inside the unit and connected to the Ship's Ground terminal on the power connector.

The ATP Ship's Ground terminal should either be left disconnected or connected to Ship's Ground. It **should not be connected** to the power 0V.

Screen connections should not be connected on NMEA0183 inputs. They should be connected on NMEA0183 outputs only.

Fastnet Connection
Connect the white, green, black and screen of the Fastnet network cable as marked

An in-built 100 Ohm resistor is mounted at the bottom of the Fastnet connector which is active when the header is in place. This should be used when the processor is at one end of the Fastnet Network. Total terminator resistance on the Fastnet Network should be close (+/- 10%) to 50 Ohm.
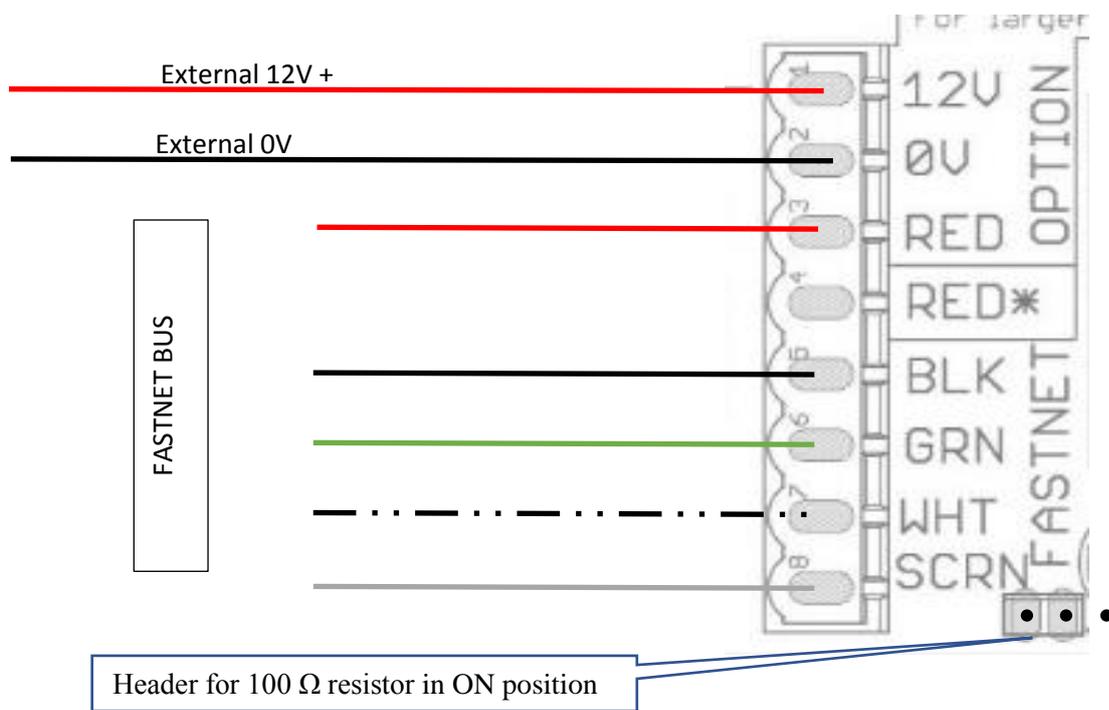
For the red connection then see notes below:-

When any B&G displays, sensors, interfaces or other 12V only units are to be connected to the Fastnet network then this must be supplied with 12V. If only A+T displays and interfaces are used then 24V may be used.

Two options for providing 12V power to Fastnet are available:-

For a small system not drawing too much power (up to 1 amp, typically less than 6 displays) then power may be taken from the Processor Fastnet connector marked RED*.

Fastnet Connection

Small systems (<1A)

Header for 100 Ω resistor
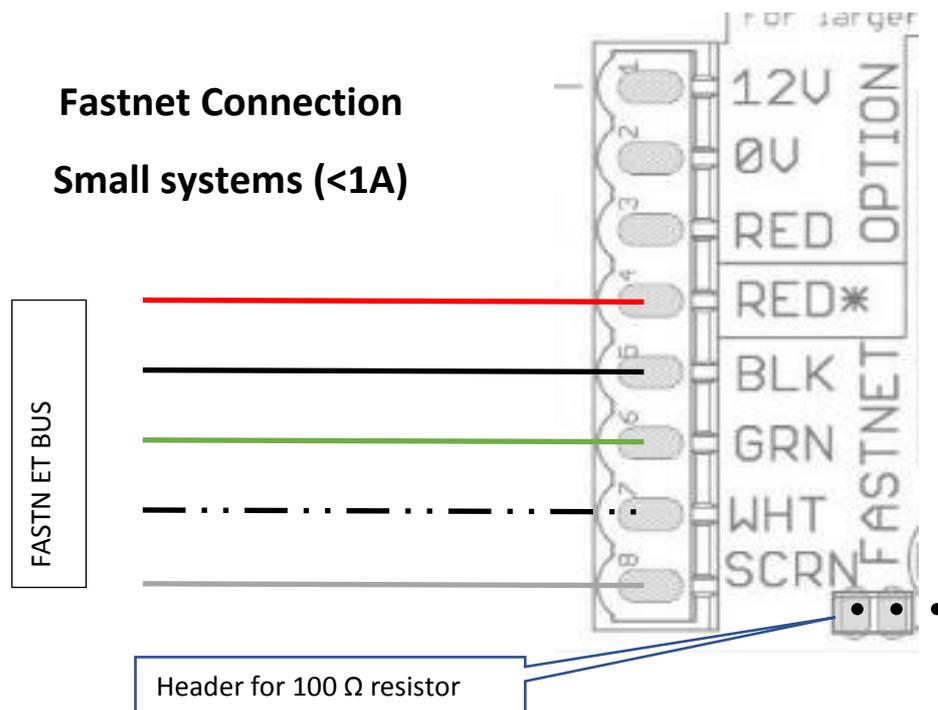
For a larger systems then the Fastnet red should be connected to the RED terminal immediately above this marked 12V OPTION and a 12V external power source with a 5A fuse or circuit breaker should be connected to the connecters marked 12V and 0V OPTION.

External 12V +

External 0V

FASTNET BUS

12V	
0V	OPTION
RED	
RED*	
BLK	
GRN	FASTNET
WHT	
SCRN	

Header for 100 Ω resistor in ON position

Fastnet Connection Large system (>1A)

C2 Wind Board
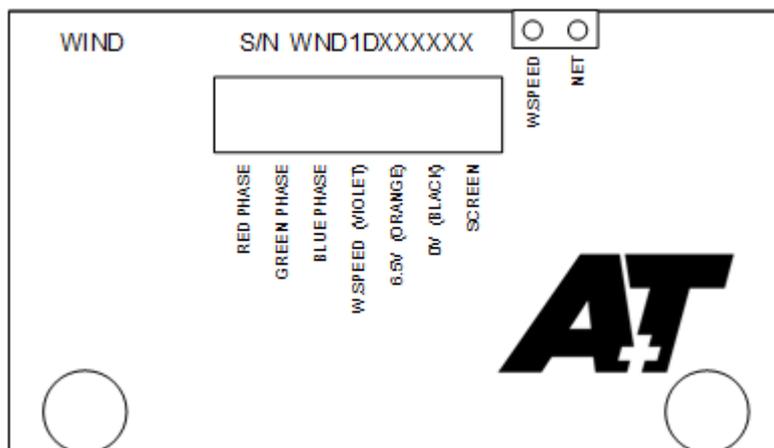
C3 Speed/Depth/Water Temperature Board

APPENDIX D Commissioning Checklist/Short Guide

Start up

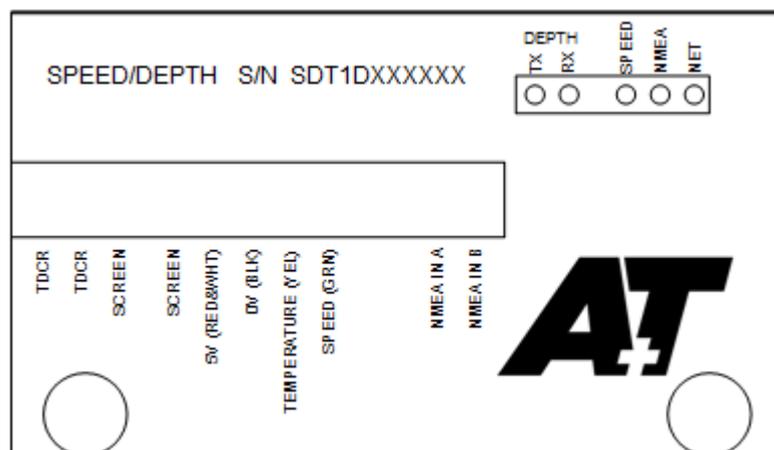| Item	Activity	Notes
Power up	Check processor, motherboard LEDs come on and small LCD display working	Boot time should not be more than 22 sec
Connect computer with Ethernet cable	Get webserver working	Set IP address and mode
Connect Fastnet	Check displays showing time or barometric pressure (always output)	Check how Fastnet is powered (12v). Check network resistance. Is APT1 100 Ohm resistor fitted/needed

Boat & Wind Speed, Heel, Leeway

Item	Activity	Notes
Connect paddle wheel	Spin & check pulses on speed page.	Set Hz calibration to previous value if known
Connect wind sensor	Check mast volts up and down on Wind Measurement page Check pulses coming from speed senor	
Calibrate Wind	Set up MHU offset and wind correction table as normal.	Check Leeway and heel set up first
Heel	Set up mounting orientation	
	Check output sensible	
Leeway	Set best known number	If sailing vessel, else 0

NMEA 0183 inputs, GPS, depth, gyro etc

Item	Activity	Notes
Connect input	Verify expected data on NMEA 0183 Diagnostics page	
Set filter	Webserver/Other Data/NMEA0183/Filter	Set to take in required information
GPS	Webserver/Position. Select correct input port and verify data received	
Gyro/compass	Webserver/Heading. Select correct input port and type of input data True/Mag	Verify data received and set any offset
Depth	Webserver/Depth. Select input port and name it if required	Set datum offset
Outputs	Set baud rates	
	Select data to be sent on Filters page	

Analogue inputs

Item	Activity	Notes
Reference Voltage	Select header for regulated 12V or input power voltage on 12V reference	
For each input	Select pre-defined or user	Check & calibrate
MOB	Note must switch 12v reference to input channel for correct operation	

Fastnet settings

Item	Activity	Notes
Inputs	Set up nodes and channels and enable inputs	Typically heading, rudder, GPS, loadcells
Outputs	Enable and name output channels	e.g aft depth
Fast heading	Select if required	Typically for autopilot
True/Mag	Set default for bearing/heading mode output	Has no effect on calculations

Alarms/MOB, set from Home page

Item	Activity	Notes
Alarms	Select levels, mode and enable as required	Can close relay for connection to plc or sounder/light
MOB	Set up as required	Can close separate relay for connection to plc or sounder/light
A+T MFDs	Set to show MOB as required	TEST MOB SYSTEM