

The best just got better

A+T's new processor offers a wealth of new user-programmable features

A+T Instruments specialise in very well-designed and engineered displays and processors for superyachts and race boats coupled with 24/7 telephone and email support. The current installed base includes over 500 of the largest and fastest boats on the planet. This is growing faster now with the introduction of the A+T 500 series wind sensors and parts for existing legacy anemometers.

However much the system design anticipates user requirements, new sensors, new applications and new display functions are always needed by demanding and forward-thinking clients. A+T's new ATPX instrument processors now provide additional user-configurable features including Modbus connectivity, a user-programmable layer of functionality and internal logging.

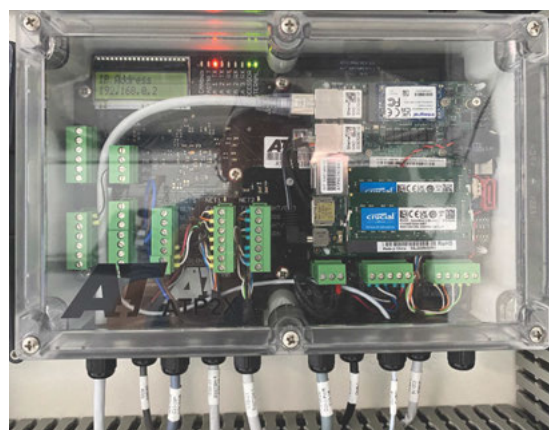
The heart of the system is the proven and powerful ATP processor with its wide range of interfacing and multi-language connectivity (Ethernet, Fastnet and CANbus/N2K compatible) allowing for connection to a wide range of sensors, displays and plotters. It is equipped with a significantly more powerful processor (Quad-core 2.0 GHz with 1TB of solid-state memory). It also provides three independent Ethernet ports so that one can be used for the public network and web server, one for the instrument network connecting displays and sensors plus a dedicated port for PLC connection.

The added layer of user-programmable capability provides for the generation and manipulation

of new data items to output to displays and race software such as Expedition. This new data can also be written back into the calculation software and used there. An application for a canting keel boat would be to build a bespoke leeway model taking inputs of keel cant, daggerboard, heel, speed, wind angle and rudder and then putting this back into the wind calculations.

This is done using a well-known and well-documented open-source program, Node-RED, which, like the rest of the A+T instrument system, is webserver based. It features drag-and-drop modules including functions such as scaling and damping. The in-built module library is being added to continually. Users can add their own mathematics to these. This layer also has access to the ATP input/output interfaces and custom serial data can be user constructed to add communication to bespoke systems. An example would be to interrogate an RS485 load-cell amplifier network and name, map and scale the individual loads.

In the ATPX the third independent Ethernet port is provided for interface to PLC systems over TCP/IP using Modbus, the de facto PLC data interchange standard. The dedicated port is to give PLC security by ensuring no connection to general network traffic on the yacht. Any data fields can be read from the PLC so typically loads, displacements and engine parameters and sent to displays and external software. This data can also be manipulated in the Node-RED layer if needed. Conversely, all sailing data



Top: custom variable creation, calculation and output for display using Node-RED layer. Above: ATP2X powering a full Ethernet networked system driving 19 displays with full PLC integration on a canting keel race yacht

can be read directly by the PLC as is often needed for sail control or alarm and monitoring systems.

Fast logging is available directly on board the ATPX. The specification for this is currently being worked up with a number of top race navigators and data analysis specialists. Key considerations are compatibility with analysis software such as KND and flexibility of logging rates. Variables including all raw (before calibration) data can be logged at up to 100Hz to allow for peak values. Even logging say 50 variables at 100Hz, the ATPX has sufficient solid-state memory for over a year's continuous logging. Feedback on logging requirements is welcome from Seahorse readers.

A number of ATPX systems have been supplied recently for a range of applications including a superyacht for advanced data logging, a canting keel race yacht and a rotating wingsail project for commercial shipping. www.aandtstruments.com