Metek 3D sonic anemometer

System description

The 3D anemometer is mounted at the top of the bow mast. Its primary purpose is fast wind speed measurements for turbulence and flux.

The 3D sonic system and processing electronics are completely contained in the anemometer head. The 24 volt DC power supply in the flux box below the tower provides all power for heat and electronics. Communication is via RS 422 serial, and the serial feed is converted to TCP/IP at the flux box and then back to RS 422 in the lab van using MOXA serial device servers. The data rate is 10 Hz.

This system worked well during leg 1. The anemometer head is heated and did not have problems with icing, even in freezing fog conditions. The head is relatively easy to remove from the mount on the tower with an Allen wrench. Loosen the set screw and pull out the anemometer head to disconnect the cable connector.

We have a spare Meter anemometer head in a cardboard box on the shelves in the device room. This was checked in Boulder before shipping and should be ready to install and use if necessary.

System cabling

The anemometer head is connected to the flux box with a single cable for power and serial communications. See Ludo's write-up for a description of the wiring details.

The flux box 5150A MOXA for the Metek is configured as shown on the following screen shots. For the 4-port MOXA in the lab van, the serial tab will be the same as below (9600,8,N,1) and the operating mode panel will be set to Pair Connect Master mode with port 4011. Remember to check the Modify box if you want to actually change any of the settings.

The DAS100 serial port (COM12) is set to RS-422 mode using the Port Manager app.

uSonicConfig setup utility

The uSonicConfig app on is used for remote connection to test and configure the anemometer. See the Metek manual for details. Shut down NOAA Data Acquisition logging for the Metek before using the uSonicConfig app.

Data files and submission to MCS archive

All 10 Hz data is saved on DAS100 by the NOAA Data Acquisition service. See data archiving instructions for details.
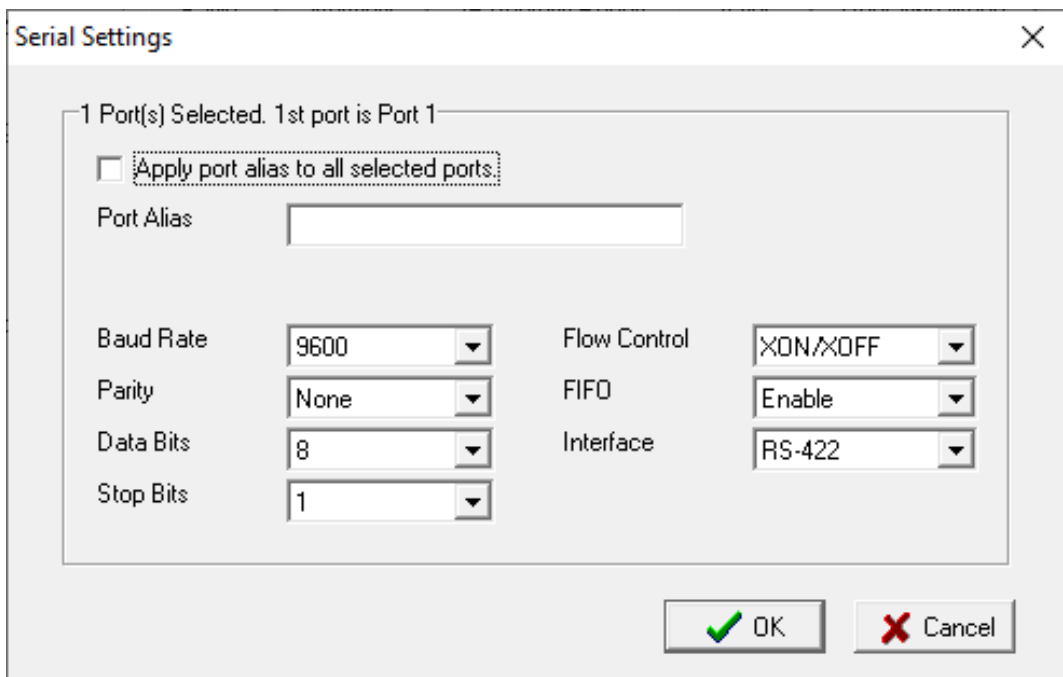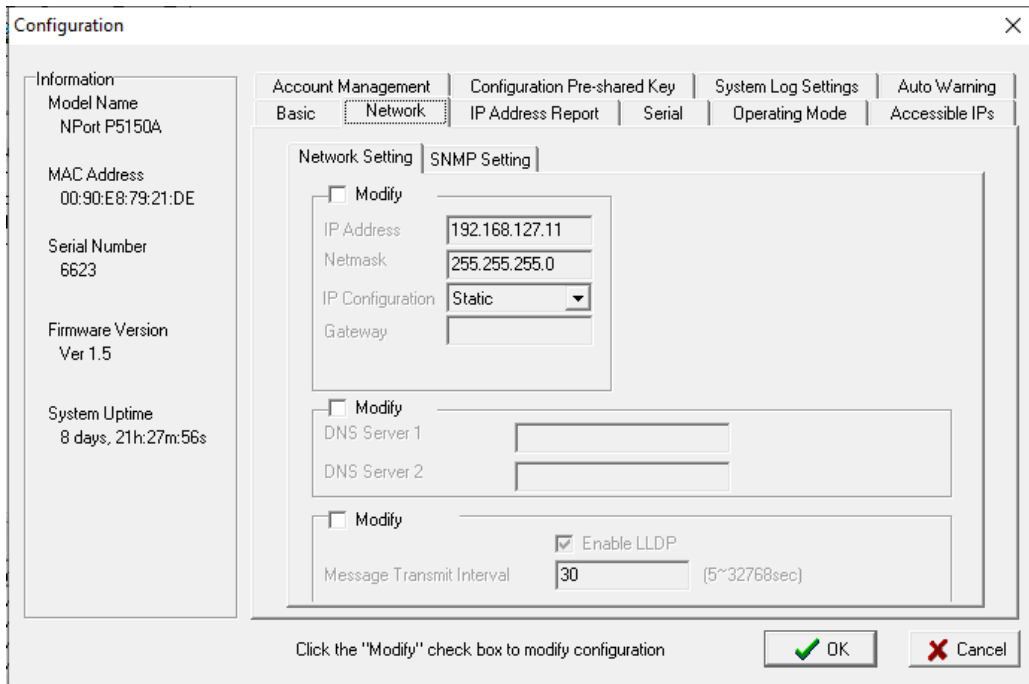
Operating Mode ✕

┌─ 1 Port(s) Selected. 1st port is Port 1 ─────────────────────────┐

Operating Mode   `Pair Conn. Slave Mode` ▼

└──┘

┌─ Pair Conn. Slave ─┐

┌─ Misc (Optional) ──────────────────────────────────┐

TCP Alive Check Timeout

`7`   (0-99 min)

└──┘

┌─ Pair Connection Slave Mode Settings ──────────────┐

Local TCP Port   `4011`

└──┘

✔ OK   ✗ Cancel