Notes on MOSAIX ship flux system install.

Below is the instrument wiring diagram :

7500DS   Metek 3D   RM Young 2D

interface

power   ethernet

GPS ant.

combined   combined

RS-422   RS-485

+24 C   +24 C

network switch   smart flux   N-Port 5150A-T   N-Port 5150A-T

+24 C   +24 C   +24 C   +24 C

+24 C

EddyFlux Enclosure - mounted to railing below tower

Metek 3D

7500DS via TCP client mode?

RM Young

network switch   N-port 5450   Wind Display   RS-485   RS-232   RS-422

DAS

+24 C   +24 C   +24 C

Lab Van
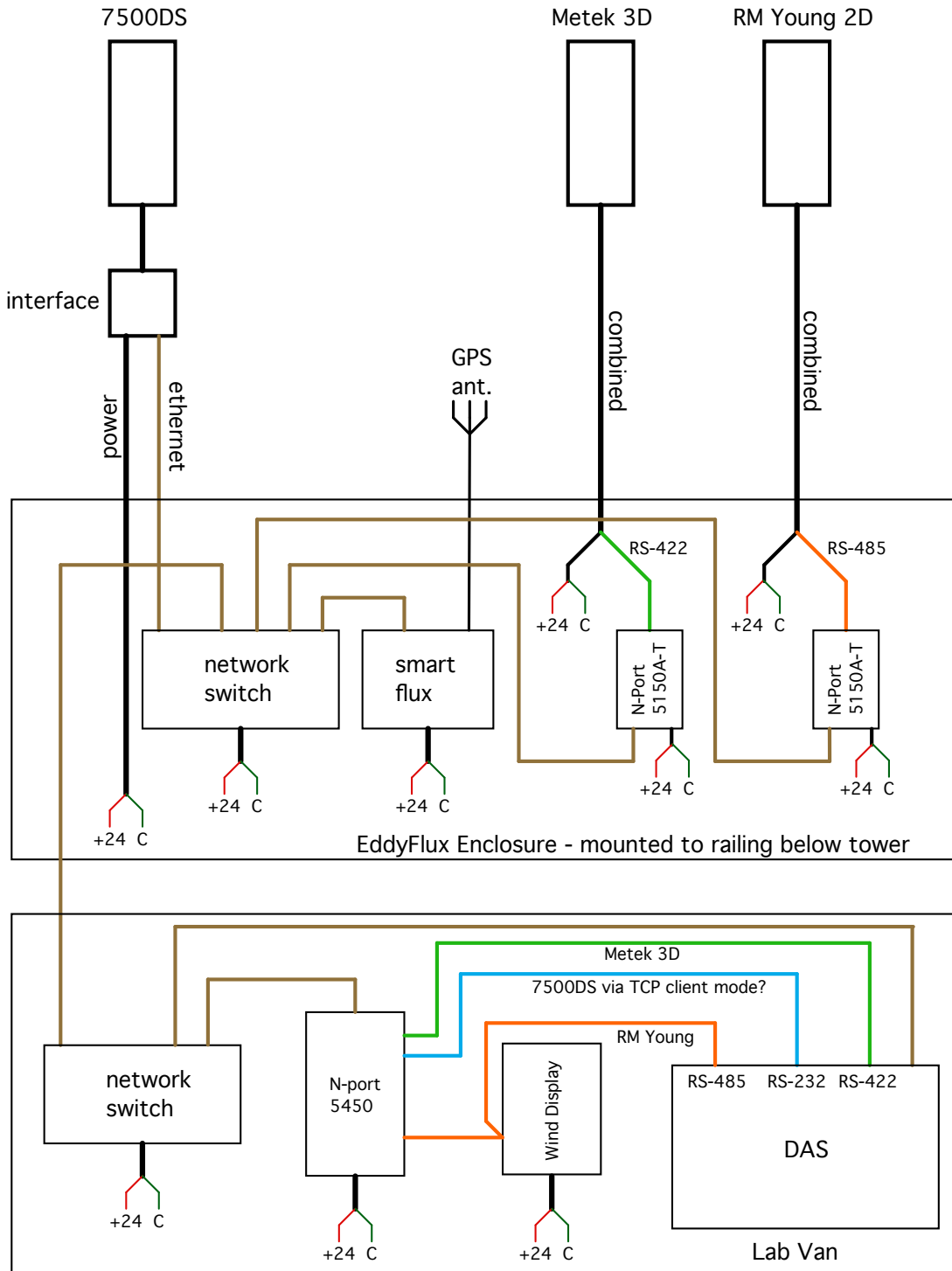
1. **LICOR 7500DS**

The Licor 7500 DS is pretty self-explanatory. Connect the sensor head to the interface box, then the power line and ethernet cable to the SmartFLux box inside the EddyFlux enclosure. Refer to manual if any doubts

2. **RM Young 2D (model 86004)**
    2.1. **Anemometer to EddyFlux Enclosure**

The RM Young anemometer is currently configured to be run in RS-485 full-duplex so that we can take control of the unit remotely. On the sensor side, it should be wired as in Fig A4 of the anemometer manual with a little correction on the jumpers (Z/Y/Tx/RX should be used instead of Z/Y/A/).

Here is the modified manual figure :
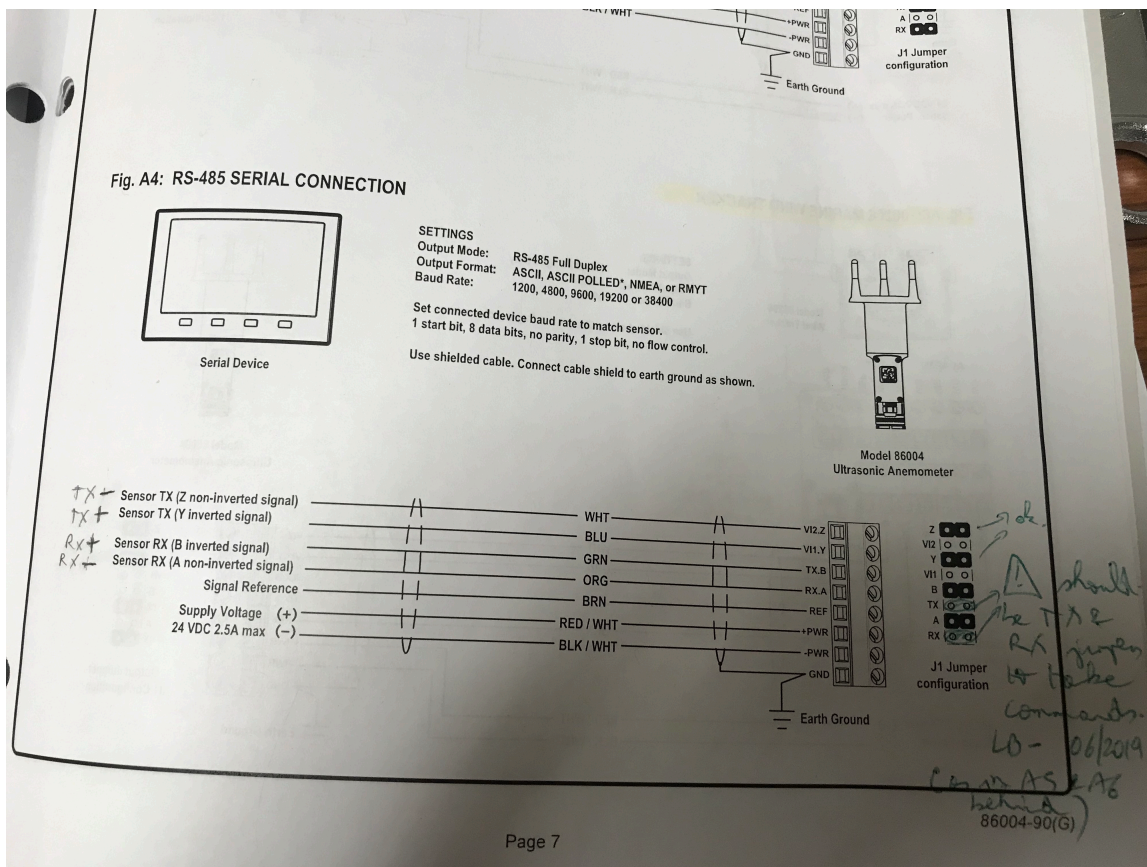
Using the cable from the manufacturer , the connection should look like this on the anemometer side :

Then simply connect the other end of the cable (RS232 DB9 pin with power connector) inside the EddyFlux enclosure to the corresponding N-port module as the picure below. The other part of the cable is for DCpower and should be wired accordingly.

2.2. From N-port 5450 to DAS and wind display

From the 4 port-MOXA box, we split the signal so that one part goes to the DAS and the other to the YOUNG wind display. A special connector was made for this as illustrated here :

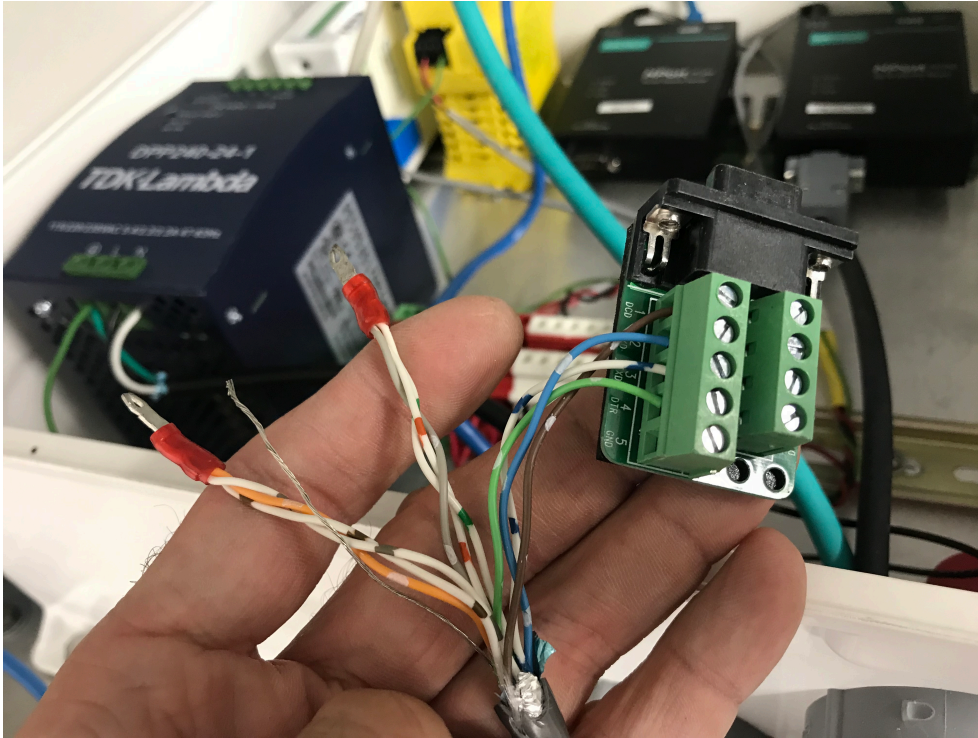The black cable goes to the DAS while the grey one goes to the wind display.

The back of the wind diplay is then wired easily following the labeling as pictured below :
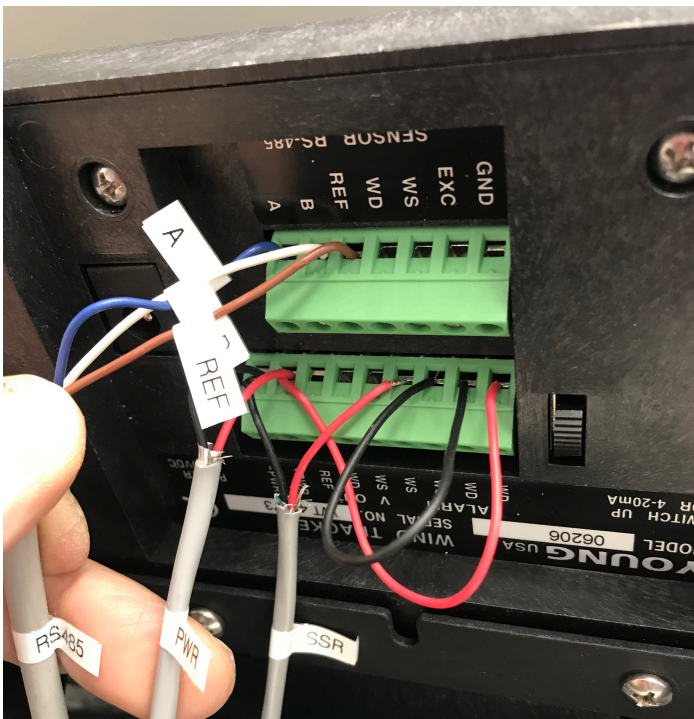
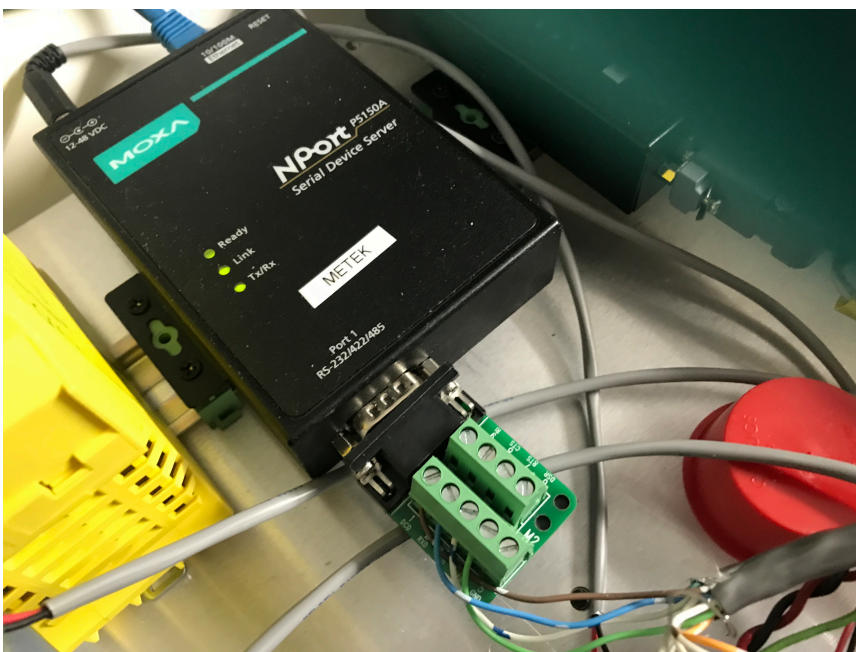
The other cables are power and signal to the DC SSR box.

3. **METEK**

The Metek uses RS-422 connection. Connect cable to the anemometer, and the other end to one of the DB-9 adaptor as follow :

The connect this to METEK labeled MOXA box.

Note the pictures above show the homemade 10-wire cable. If using the manufacturer cable, the color coding is different. Refer to the table of cable pinning for a 10-wire cable without analog output channels. (p12 of the manual).

Pin	Color	Function	Pin	Color	Function
1			9	green	TxD-, Z (RS422) Bus-, Z (RS485)
2			10	yellow	TxD+, Y (RS422) Bus+, Y (RS485)
3			11	grey	+ 9...36 V DC, power supply for electronic
4			12	pink	GND, power supply for electronic
5			13	blue	+24 V DC, power supply for heater
6	white	RxD+, A (RS422) Bus+, Y (RS485)	14	red	+24 V DC, power supply for heater
7	brown	RxD-, B (RS422) Bus-, Z (RS485)	15	black	GND, power supply for heater
8			16	purple	GND, power supply for heater
			17	NC	

The homemade cable the color/pin assignment is as follow :

6	blue	RxD+
7	brown	RxD-
9	green	TxD-
10	White-blue	TxD+
11	grey	V+ electronics
12	orange	GND electronics
13	White-red	+24V heater
14	White-green	+24V heater
15	White-brown	GND heater
16	White-grey	GND heater

The importang thing to note here is that the DB9 adaptor connecting to **the MOXA box inside the EddyFlux enclosure should be wired as follow for RS422/485 :**

Pin 1 = RxD- of sensor

Pin 2 = RxD+ of sensor

Pin 3 = TxD+ of sensor

Pin 4 = TxD – of sensor

Pin 5 = GND

Note that is also how the RMYoung is wired as things have to be « crossed-over » with the MOXAs as per the port pinouts for RS422/485. In a nutshell the connections from the sensors to the sealevel octopus connection looks like so :

Metek or RMYoung	Moxa RS422/485 pinout	SeaLevel RS422/485 pinout
TxD+	Pin 3 = RxD+	Pin 4 = TX+
RxD+	Pin 2 = TxD+	Pin 1 = RX+
TxD-	Pin 4 = RxD-	Pin 3 = TX-
RxD-	Pin 1 = TxD-	Pin 2 = RX-

Pin 5 is GND.

4. **Finally connect all other power and ethernet cables between respective MOXAs, braiboxes and power sources.**

5. **Other important notes**
   - Use the YOUNG 86SETUP program for checking and configuring the anemometer.
   - Similarly use the METEK software to configure the METEK sonic as need be. Refer to manual on DAS for parameters and commands
   - Use the SeaLevel software to change the DB9 cable on the octopus to RS-232/422/485. Also in the event of a reset, be sure that in the SeaLevel port manager the FIFO trigger RX is 1 instead of the default 192. 192 could otherwise lead to time lags in DAS acquisition.

6. Current MOXA configuration and IP addresses

In Lab Van						
unit	mode	network IP config	IP of remote host	port	serial config	ID
5450 4-port		192.168.127.2, static, public, 255.255.255.0				
port 1	Pair Connect Master		192.168.127.10	4010	4800,N,8,1	RMYoung 2D
port 2	Pair Connect Master		192.168.127.11	4011	9600,N,8,1	METEK
port 3	Pair Connect Master					Not used
port 4	Pair Connect Master					Not used
On tower						
5150A single channel	Pair Connect Slave	192.168.127.10, static, public, 255.255.255.0		4010	4800,N,8,1	RMYoung 2D
5150A single channel	Pair Connect Slave	192.168.127.11, static, public, 255.255.255.0		4011	9600,N,8,1	METEK

- LICOR7500 IP address = 192.168.127.12
- PICARRO IP address = 192.168.127.13 . The PICARRO ship uses a MOXA NPort-5110 to convert RS-232 to TCP/IP. MOXA configured as TCP Server mode with FIFO disabled in serial setup or it won't work properly.