HWP Control Box (MK, 07/31/07)

The Players

EDAS: Blue and silver device with four modules: power supply, main computer, serial output, analog output

Indexer: Black box with green marking for wire inputs, Panther brand

PM4: Small black box with digital display on front. Back has two rows of green outlets for connectors

Hwp encoder: big black thing protruding off of hwp, in box 3

Hwp motor: Blue cylindrical motor, also in box 3

Data Acq system: We'll be using two BNC plugs near the top of the rack

Heaters: Two sets of resistors, run by power supplies, mounted on hwp plate in box 3

Paddle: Direct serial communications with indexer

Connections

EDAS

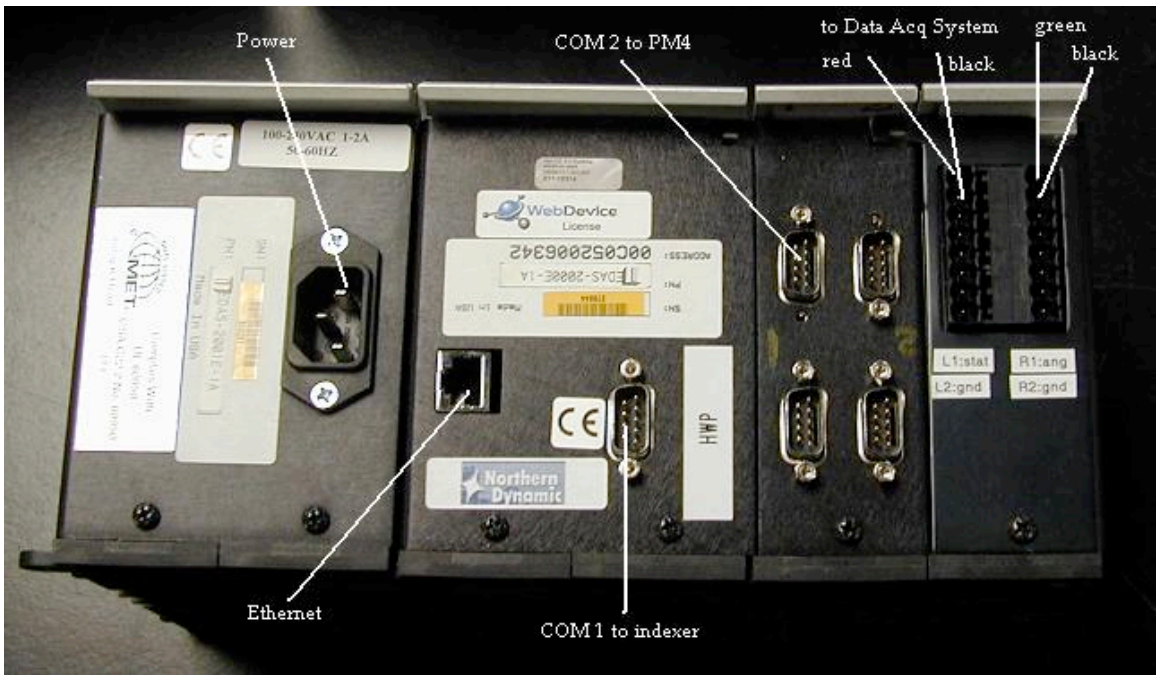
Serial: note that, in addition to the four serial ports on the serial module, there is one port on the main computer module. This port is called PORT 1. PORT 2 is in the upper left hand corner on the serial module.

PORT 1: to indexer serial port (regular serial cable)
PORT 2: to PM4 (serial cable with green plug on opposite end)

Analog: Outputs and grounds are right next to each other. OUT 0 is in the upper left hand corner; its ground is directly below. OUT 1 is in the upper right hand corner, again with its ground right below.

OUT 0: Red wire of red/black twisted wires. (BNC goes to Data Acq, hwp status)
GRD 0: Black wire of red/black twisted wires. (BNC goes to Data Acq, hwp status)

OUT 1: Green wire of green/black twisted wires. (BNC goes to Data Acq, angle flag)
GRD 1: Black wire of green/black twisted wires. (BNC goes to Data Acq, angle flag)



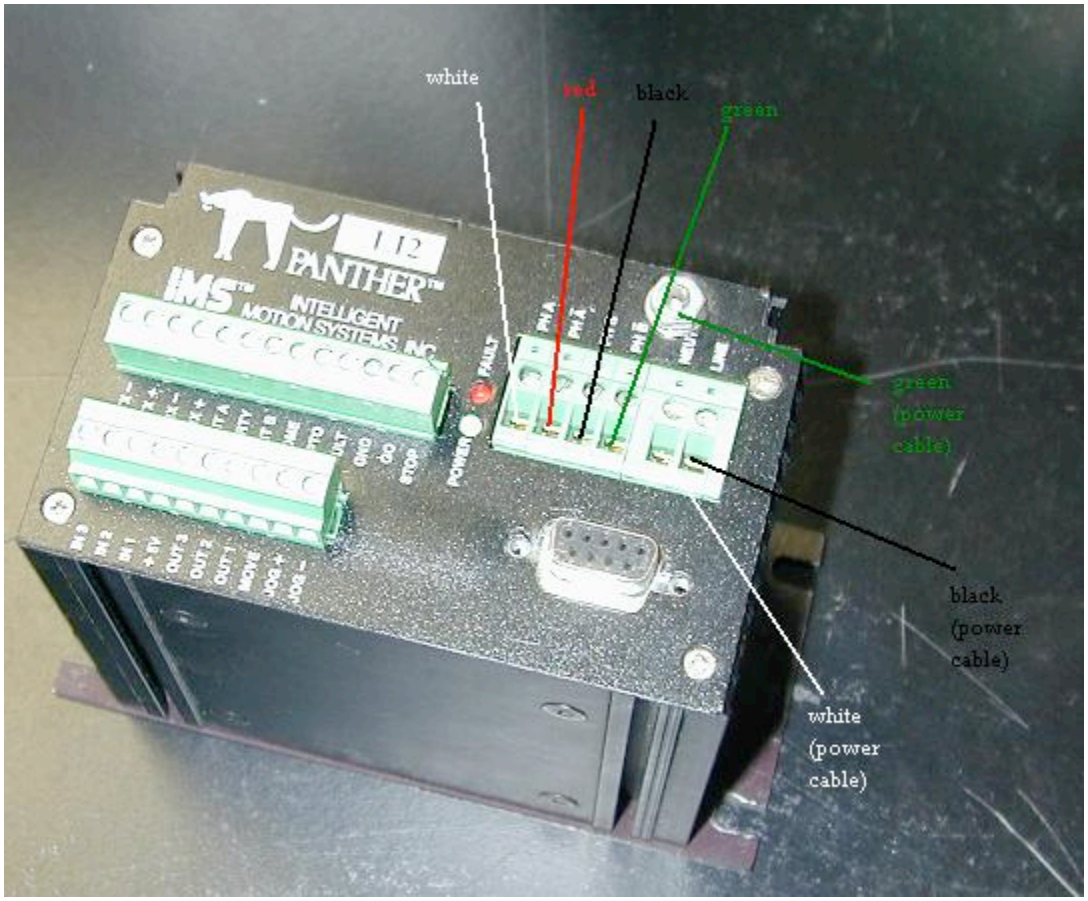
Indexer

Power—Neutral: white wire of power cable
Line: Black wire of power cable
Ground (wire stub with nut): green wire of power cable
Motor—A: white wire (to motor cable)
Abar: red wire (to motor cable)
B: black wire (to motor cable)
Bbar: green wire (to motor cable)

Note: Motor cable connects to 8-prong female military connector, which goes to another motor cable with red crimped end—more later)

Serial: Cable to EDAS (PORT 1)*or* plug in paddle

Note: When plugging in paddle, first reboot with paddle connected. Will need to reboot indexer AND EDAS when you plug in EDAS again.



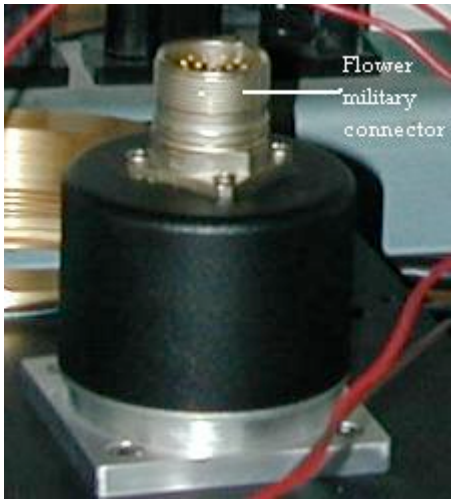
PM4

pins ABC (screws down): serial connector to EDAS (PORT 2)
pins 123 (screws up): power cable to outlet
pins 7-12 (screws up): connector to encoder

Note: MAKE SURE SERIAL CONNECTOR IS **ABOVE** POWER CABLE! SERIOUS DAMAGE CAN RESULT IF THE CONNECTIONS ARE WRONG!!!

Encoder

"Flower" military connector: to PM4 power supply (green end cable, 123)
Banana plugs: to power supplies (+10V)

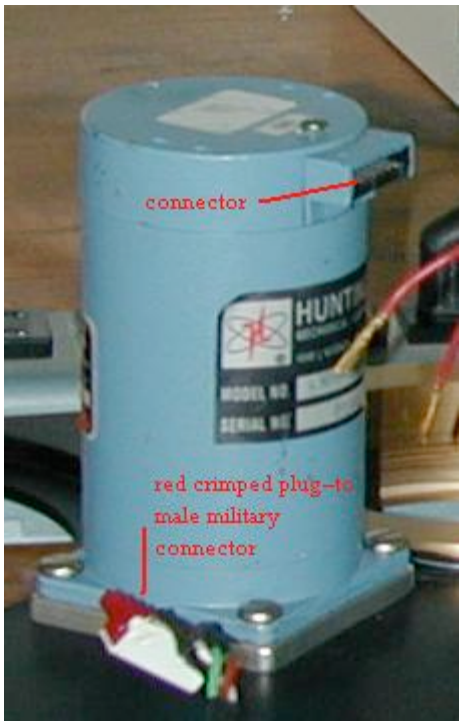


Heaters

BNC: find extra long BNC cables, hook up to large power supplies. Set power to 22V.

Motor

Rectangular socket: red crimped cable (blank on connector matches with ‘missing wire’ on motor)



Paddle Commands

After plugging in paddle and turning on indexer power, paddle should beep.

Then type: <space>, <return>

you should see a prompt

To check parameters, type: X <return>

Parameters SHOULD be:
Y = 0 8
E = 50
K = 10/10
H = VR
NA=
I = 100 (3200/32)
V = 150 (4800/32)(R1 = 0)

If not, you can change parameters by typing:

letter <space> *value* <return>

For example, to change the current to 50, you would type:

I <space> 50 <return>

To move the hwp, type:

+/-*# of steps* <return>

+ denotes CW, - denotes CCW
100 steps → ~90 degrees

HWP Control Box

Notes

- The fuse on the back is cheap and not in good shape. If the fuse is not screwed in CW, there is no connection. Right now, the fuse is taped in place to prevent loss of connection. We need to fix for the next run (easy; all connections plug-in).
- The green/white wire that leads to the indexer (Ph Bbar) does not seem to stay in. Try to make a connection; it may be possible that the indexer needs to be switched out.
- The encoder plug connects to the box's interior wires via a military connector. It is possible that the connector will fall out during shipping. Please check, and plug back in if necessary.
- My handwriting is atrocious. If you have the time, make the box look more professional—add labels.
- The red 'ON' indicator light is also cheap and from Radio Shack. The bulb/resister may pull out…if so, just pop back in; there are two tabs that you have to align to get it to go in, then rotate the red light case slightly. It should stay in place.

Hwp Control Box

Box front

Box back

Cable/Box Pinouts

	Encoder Cable/Plug			
Cable Wire	Plug Wire	Pin	Encoder End	Box
grey	black	A	14 (data)	PM4, 12
pink	green	H	17 (data_bar)	PM4, 11
yellow	yellow	D	9 (clock_bar)	PM4, 9
purple	blue	E	8 (clock)	PM4, 8
green/white	white	J	10 (0V)	Power Supply, neutral
green/brown	brown	L	7 (Up)	Power Supply, line

		Hwp Motor		
Cable Wire	Plug Wire	Pin	Motor End	Box
white	purple/white	A	white	A
red	blue/white	B	red	Abar
black	orange/white	C	black	B
green	green/white	D	blue	Bbar