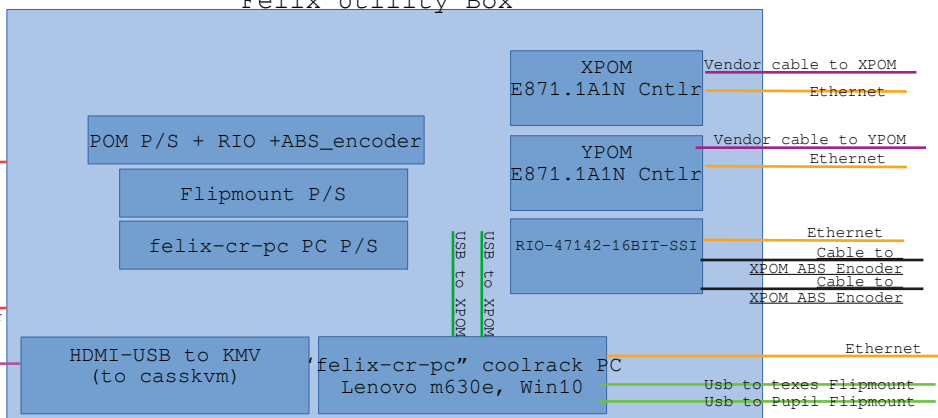
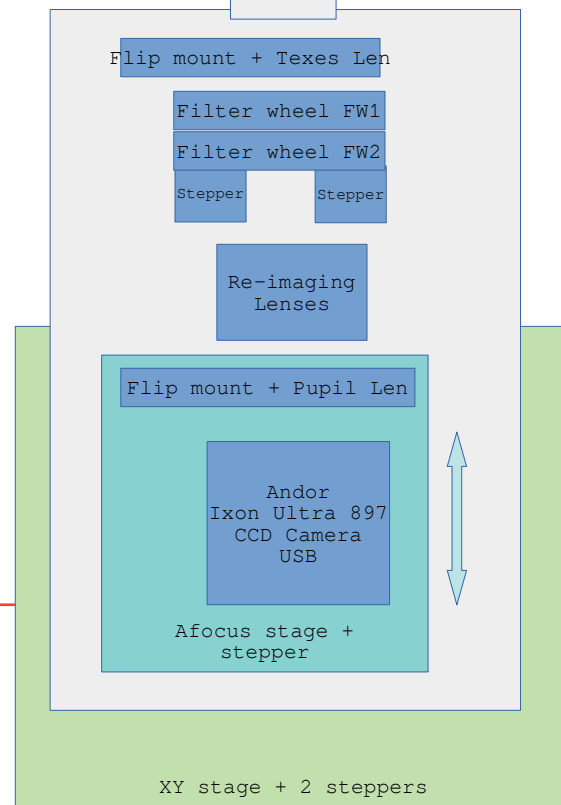
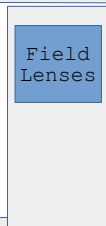
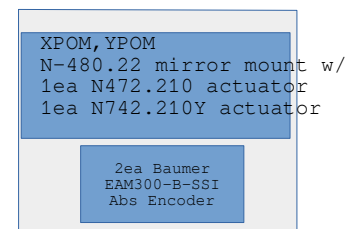
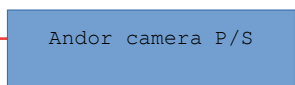
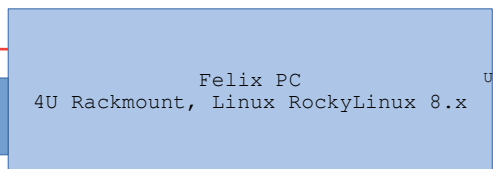
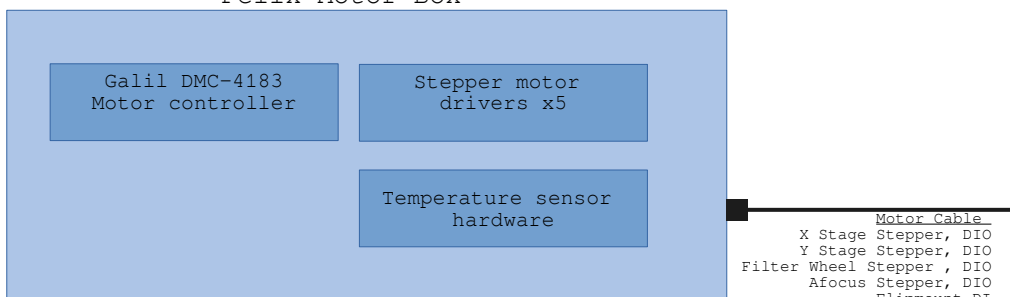


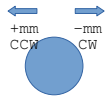
### Felix Utility Box



### Felix Motor Box



# Felix POM and ABS Encoders Details



Rotation as viewed as pictured

N-480.220C0 = mirror mount with actuators  
 1ea N-472.210 is x\_pom  
 1ea N-472.210Y is y\_pom  
  
 1 rotation = 0.5 mm  
 Provides up to 13mm of travel.  
  
 Oct2024 SN installed:  
 PI-120056991 is x\_pom  
 PI-120053263 is y\_pom



E-873UHV3 adapter cables, 3m, 2 each



Piezo-Mike P/S

Ethernet

USB

USB

Ethernet

Felix-cr-pc  
 Felix coolracks PC  
 Lenovo M630e  
 Part #10YM0094US  
 Win10Pro  
 Vnc: felix-cr-pc:16000

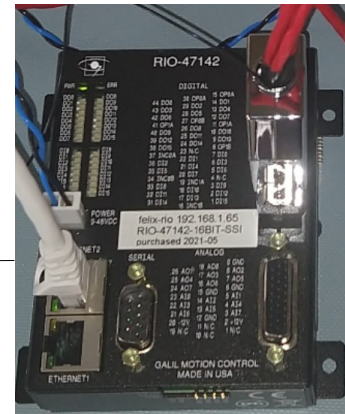


Piezo-Mike P/S

Absolute encoder for the each POM axis is  
 Provide by Baumer EAM300-B absolute Encoder:  
  
 Part # EAM300-BF6.5B4B.14120.A  
 (SSI binary, 14bit ST,12bit MT)  
 1 turn is 16384 counts. Up to 4092 turns.  
  
 Encoder is read by an Galil RIO w/SSI inputs.  
 Part # RIO-47142-16BIT-SSI



AC Power notes:  
 POM hardware to RPC ??  
 Felix-cr-PC to RPC ??



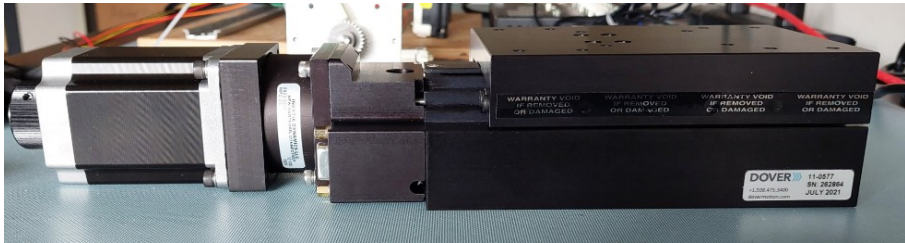
Ethernet

Additional setup note here: <https://irtfweb.ifa.hawaii.edu/~felix/irtf/about/pom/>

# Felix AFocus Details

- steps & -encoder cnts  
 CW moves <-  
 Reverse Limit

+ steps & +encoder cnts  
 CCW moves ->  
 Forward Limit



Units:  
 Stage travel is ~4 inches or ~100,000 um  
 1 shaft Rev is 2000 um

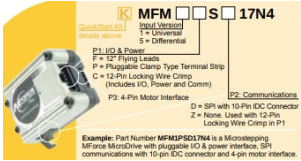
Encoders counts in um, 2000um per revolution  
 Range is 0 to 102,916 um (measured limit to limit)

Steps (400 step/rev \* 5 microsteps) = 2000 step/rev  
 1 encoder cnt = 1 microsteps.  
 Range is 0 to 101600 steps (about 51.5 rotation)

Motion Industries/Dover Motion  
 Linear Motion Ball-screw actuator (Linear Stage)  
 Part#: LME-AD-400-CP7-MB4-E04-L01  
 AB = Aluminum Black Anodized.  
 400 = 4" (100mm) of travel  
 CP7 = Ball screw 2mm  
 MB4 - Step 118 oz-in; 400 step/rev w/ brake  
 E04 - Linear Encoder 1um resolution  
 L01 - NPN, N.O. Limit switch

Motor: PK268ME2.0BC5  
 Brake: [www.idicb.com](http://www.idicb.com) MPC-23 8923-3331  
 Encoder is: RENISHAW RGH22X30D00A

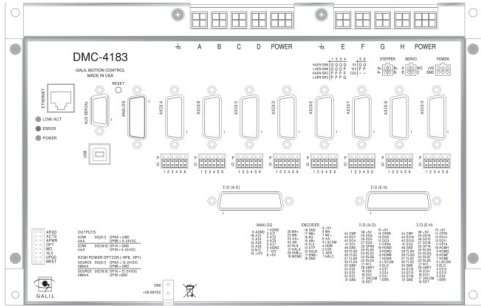
Schnider/IMS  
 MForce MicroDrive  
 MFM1CS217N4  
 x5 microsteps



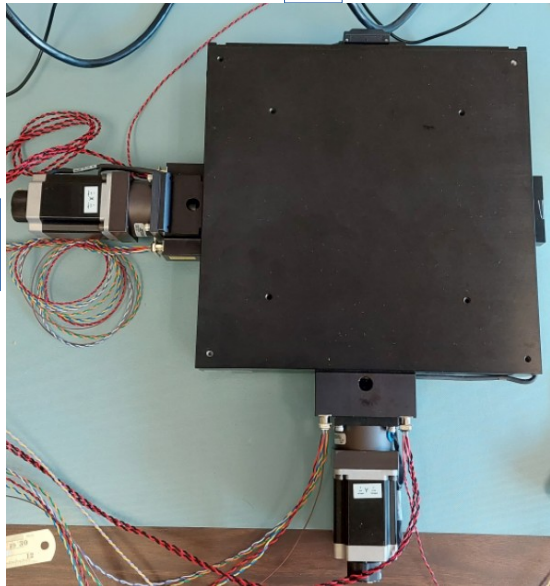
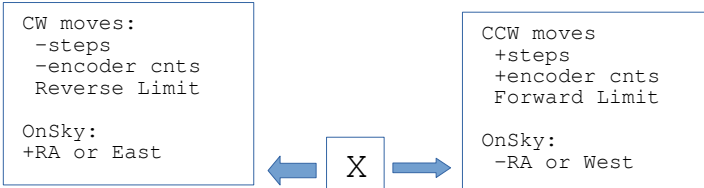
Galil DMC-4183

Axis C

D03 (control brake)

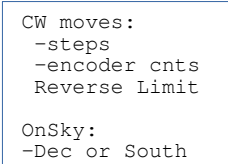


# Felix XY Stage Details



X Motor w/ Brake

Y Motor w/ brake



Units:  
 Stage travel is ~10 inches or ~254,000 um  
 Encoder count in um, 2540 um per revolution (stage has a 0.1 inch lead screw)  
 Steps (400 step/rev \* 5 microsteps) = 2000 step/rev  
 1 encoder cnt = 0.787 microsteps.  
 Range is 0 to 200,000 steps (about 100 rotation)

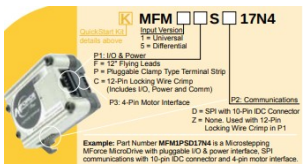
Motion Industries/Dover Motion  
 XYRB Precision XY Table  
 Part#: XYR-AB-1212-CP1-M04-E04-L01  
 AB = Aluminum Black Anodized.  
 1212 - 12" x 12" base with 10" Travel  
 CP1 - 10 TPI (0.1 inch) Precision \*  
 M04 - Step 118 oz-in; 400 step/rev  
 E04 - Linear Encoder 1um resolution RGH22  
 L01 - NPN, N.O. Limit switch

\* A CP3 (0.02 inch) model was ordered, but we received a CP1 (0.1 inch model. Model. Felix will use the CP1 model.  
 \*After purchase, IRTF contracted vendor and replaced Motor with motor/brakes assembly.

Motor: PK268ME2.0BC5  
 Encoder is: RENISHAW RGH22X30D00A

Schnider/IMS  
 MForce MicroDrive  
 MFM1CSZ17N4  
 x5 microsteps

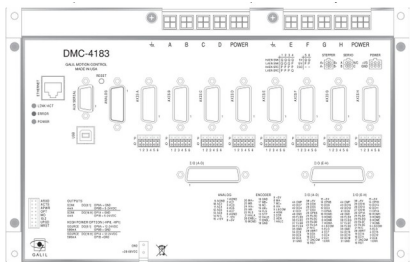
Schnider/IMS  
 MForce MicroDrive  
 MFM1CSZ17N4  
 x5 microsteps



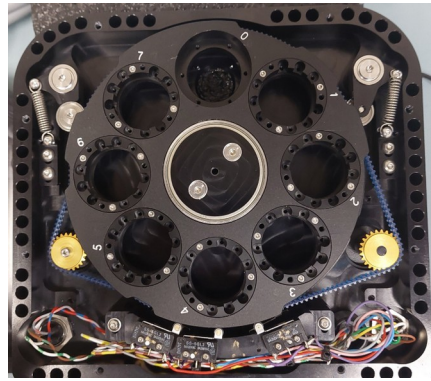
Galil DMC-4183

Axis A (xstage)  
 DO1 - brake\_release XStage

Axis B (ystage)  
 DO2 - brake\_release YStage



# Felix Dual Filter Wheel Details



### Filter Wheel 1 Details

Detent	Step	Filter_Name	Description
0	0	SDSS_g	0.48 μm
1	960	SDSS_r	0.62 μm
2	1920	SDSS_i	0.76 μm
3	2880	SDSS_z	0.86 μm
4	3841	uncoated	0.70 μm
5	4801	Cyl_Len	0.70 μm
6	5761	open7	0.70 μm
7	6721	open8	0.70 μm



Motor Shaft:  
 200 step/rev motor \*  
 x5 microstep  
 = 1000 step/rev

Size of wheel is  
 7628 steps/rev

Steps between detents  
 are 7628/8 = 960.25

Detents are about 150 steps.

### Filter Wheel 2 Details

Detent	Step	Filter_Name	Description
0	0	ND1	
1	960	ND2	
2	1920	ND3	
3	2880	ND4	
4	3841	uncoated	
5	4801	open6	
6	5761	open7	
7	6721	open8	

Galil DMC-4183

Axis D (Filter1)  
 DI1 to DI3 - detent position of filter1.  
 ~(D8-D1) & 0x03 = detent position of filter1.

Axis E (Filter2)  
 DI5 - DI8 - detent position of filter2.  
 (~(D8-D1)) >> 4) & 0x03 = detent position of filter2.

Schnider/IMS  
 MForce MicroDrive  
 MFM1CSZ17N4  
 x5 microsteps

Schnider/IMS  
 MForce MicroDrive  
 MFM1CSZ17N4  
 x5 microsteps

