





















P1– Shopping & Machining List

<i>Item ID</i>	<i>Source</i>	<i>Accessibility</i>	<i>Name/Description (Material for self-made)</i>	<i>Link</i>	<i>Image</i>	<i>Quantity</i>
General tools						
<i>a.</i>	<i>Thorlabs</i>	<i>purchase</i>	<i>Spanner wrench 1</i>	<i>SPW30</i>		<i>1</i>
<i>b.</i>	<i>Thorlabs</i>	<i>purchase</i>	<i>Fiber stripping tool</i>	<i>FTS4</i>		<i>1</i>
<i>c.</i>	<i>Thorlabs</i>	<i>purchase</i>	<i>Fiber cleaver</i>	<i>XL411</i>		<i>1</i>
<i>d.</i>	<i>Thorlabs</i>	<i>purchase</i>	<i>Spanner wrench 2</i>	<i>SPW602</i>		<i>1</i>
<i>e.</i>	<i>Thorlabs</i>	<i>purchase</i>	<i>UV Curing LED system</i>	<i>CD20K2</i>		<i>1</i>
<i>f.</i>	<i>Thorlabs</i>	<i>purchase</i>	<i>Handheld laser source (635nm)</i> <i>Single mode patch cable</i>	<i>HLS635</i> <i>PI-630Y-FC-2</i>		<i>1</i> <i>1</i>
<i>g.</i>	<i>Thorlabs</i>	<i>purchase</i>	<i>Power and energy meter</i> <i>Photodiode power sensor</i>	<i>PM100D</i> <i>SI21C</i>		<i>1</i> <i>1</i>

h.	Thorlabs	purchase	Green LED (530nm)	M530F2		1
			T-Cube LED Driver	LEDD1B		1
			Power supply	KPS201		1
i.	Thorlabs	purchase	NIR detector card	VRC4		1
j.	Thorlabs	purchase	Lens cleaning tissues	MC-5		1
k.	RS	purchase	Foam cotton bud & swabs	Swabs		1
l.	Thorlabs	purchase	Optical adhesive	NOA61		1
m.	Thorlabs	purchase	Splice protector sleeve	SPS60		1-2
n.	Thorlabs	purchase	Distortion grid with 50um grid spacing	R1L3S3P		1
			Fluorescent marker	-		1
o.	Winjee	purchase	Silicone rubber back glue	704		1
p.	3M	purchase	Epoxy (black)	DP420		1
	Loctite		Super glue	415		1





q.	Ahlsell	purchase	Heat gun	link		1
r.	APE	purchase	Pulsed Check autocorrelator	APE-NX		1
s.	Thorlabs	purchase	Base to fixate Pulse Check on Optical Breadboard	MB2025/M		1
t.	Fabory	purchase	M2x5H Philips 7985225	M2screws		>10
u.	TRfastenings	purchase	M3x3mm Pan Head Pozidriv Machine Screw DIN7985	M3x3		>3
v.	Thorlabs	purchase	M4 capscrews kit	HW-KIT1/M		1
w.	Elfa Distrelec	purchase	Air duster Green PRF	PRF 4-44		1
x.	Surface Solutions	purchase	Black rubber spray	SS black		1
y.	Elfa Distrelec	purchase	Tweezers Carbon Fibre Forceps	301-51-451 11270-20		1 1
Core optics module						
Mechanical components						
1	Thorlabs	purchase	Nexus breadboard	B3045L		1











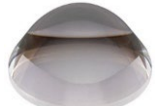
2	Thorlabs	purchase	Sorbothane feet	AV6/M		1
3	Thorlabs	purchase	Fiber adapter plate	SMISMA		1
4	Thorlabs	purchase	Adjustable mirror mount	POLARIS-K05S2		2
5	Thorlabs	purchase	Rotation mount & M3 screw	MRM05/M		1
6	Thorlabs	purchase	M6 cap screws kit	HW-KIT2/M		>20
7	Wolida	purchase	Heat shrinkage tubings Wolida Ø0.6/0.4mm 2:1 ratio 2.5mm Distrelec 3mm	Tube1 Tube2 Tube3		3
8	Thorlabs	purchase	3-axis Microblock stage	MBT616D/M		1
9	Thorlabs	Purchase	XYZ Translation stage & right-angle bracket	MT3A/M AB90E/M		1
10	Thorlabs	Purchase	Compatible flexure stage mount	HCS020		1
11	Thorlabs	Purchase	Fiber clamp holds fiber Bare fiber adapter & Flat base to glue into (e.g.)	HFF001 SI40-BFA XT95P3		1 3 1










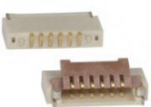


12	Thorlabs	purchase	Fixed mounting bracket	AM4007/M		1
13	Thorlabs	purchase	SM05 Threaded adapter to red laser source FC/PC Fiber Collimation (linked to items f)	AD1109F F230FC-B		1 1
14	Thorlabs	purchase	Kinematic cage cube	DFMIT3		1
15	Thorlabs	purchase	Kinematic cage cube base	DFM1B		1
16	Thorlabs	purchase	Lens tubes	SM1L05		4
17	Thorlabs	purchase	End cap for machining	SM1CP2M		1
18	Thorlabs	purchase	Coupler	SM1T2		3
19	Thorlabs	purchase	Optical beam shutter with controller for PMT	SHB1		1
20	Thorlabs	purchase	Post mounting adapter	SHM1/M		1
21	Kavli NTNU	self-made	Coupling box (Al7075 with sand spray)	Github(1)		1
22	Kavli NTNU	self-made	Coupling box cap (Al7075 with sand spray)	Github(1)		1



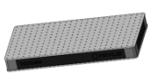








23	Kavli NTNU	self-made	Coupling holder (Stainless steel)	Github(1)		1
24	Kavli NTNU	self-made	Coupling protector (Al anodized)	Github(1)		1
25	Kavli NTNU	self-made	Collimator assemble tool (Al6061)	Github(1)		1
26	Kavli NTNU	self-made	Collimator holder (Al6061 black anodized)	Github(1)		1
27	Kavli NTNU	self-made	Control box shell (Al6061 black anodized)	Github(1)		1
28	Kavli NTNU	self-made	Control box cap (Al6061 black anodized)	Github(1)		1

Optical components

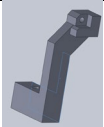
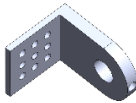
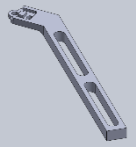









29	<p>Femtosecond laser with center wavelength at 920nm, 80MHz, pulse width 100-130fs, and average power >1W</p> <p>Example suppliers: TOPTICA, SPARKLASER, COHERENT</p>	purchase	<p>Laser source</p> <p>Spark Laser offers higher positive GDD (up to 120 000 fs²)</p>	<p>Example types:</p> <p>FemtoFiber ultra 920</p> <p>ALCOR 920 X-Sight</p>	 	<p>1</p> <p>OR</p> <p>1</p>
30	LabMaker	modify	<p>Tapered fiber bundle (TFB) XMLG, Ø.027"x98.4"[2.5 m] Drawing C54706.04</p> <p>PRODUCTION DISCONTINUED!</p> <p>Grin Fiber Bundle (GFB) New solution! with items: 30.1 Fiber Bundle by SCHOTT Part Number 1840314 Drawing C54706.1X</p>	<p>1838003</p> <p>1840314</p>	 	1

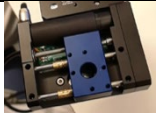



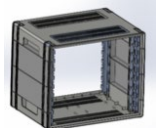
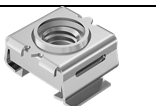






			30.2 AR windows by Sunlight (dia 1.8x0.2mm, S1:HT $T > 99\%$ @ 450-700nm, $AOI = 0^\circ$)	WIN1.8x0.2- SIAR450-700	  	
			30.3 GRIN lens #64-520 Or #64-526 (1.8mm Dia, 670nm DWL, 0.23mm WD)	#64-520 Or #64-526		
			30.4 GFB holder Note: GFB is compatible with version2 of Scopebody P3 (see item #104_2023)	GitHub		
31	NKT Photonics	purchase	Hollow-core PCF, HC-920 * (~2.2-2.4m)	K60-060-PM *		1
32	Fuzhou Sunlight Technology	purchase	Glass rods (ZF62)	GLA-10x150-AR800-1100		3
33	Fuzhou Sunlight Technology	purchase	Glass flange ** (6.5mm length Inside \varnothing 0.126-0.128mm)	TUB-1.8x6.5-0.127 **		2
34	Thorlabs	purchase	Prisms *** direct light from the seed laser up to the HC-920 fiber	MRA12-E03 ***		8
35	Thorlabs	purchase	Emission filter 525 nm green channel	MF525-39		1
36	Thorlabs	purchase	Emission filter 630 nm red channel	MF630-69		1
37	Thorlabs	purchase	Shortpass filter	FESH0750		2
38	Thorlabs	purchase	Dichroic mirror	DMLP567R		1
39	Thorlabs	purchase	Aspheric condenser lens	ACL25416U-A		3

40	Thorlabs	purchase	Coupling lens	C230TMD-B		1
41	Thorlabs	purchase	Half-Wave plate	WPHSM05-915		1
42	Thorlabs	purchase	Protected silver mirrors	PF05-03-P01		2
43	Edmund Optics	purchase	Collimating lens	#84-128		1
Electrical components						
44	Mirrorcle Technologies	purchase	MEMS driver (controller) BDQ PicoAmp 5.4 T180	DR-11-055-00		1
45	Digikey	purchase	BNC to SMA cables	CCBNS-MM-RG174-36		1
46	RS	purchase	DSUB15 connector plug (male)	472-859		2
47	RS	purchase	Backshell	765-9448		2
48	RS	purchase	DSUB15 Connector Socket (female)	472-865		2
49	Digikey	purchase	6-pin connector for MEMS	FH19C-6S-0.5SH(10)		1
50	Industrifil	purchase	Single wire cables (6 colours of $\approx 2.5\text{m}$)	UAA-3607		6
51	Thorlabs	purchase	μ TLens Driver	KPZ101		1

52	Thorlabs	purchase	PMT	PMT2101/M		2
53	Thorlabs	purchase	Controller for shutter	SHB1		1
Scope mounting module						
Mechanical components						
54	Thorlabs	purchase	Aluminum optical breadboard	B3060A		1
55	Thorlabs	purchase	Sorbothane feet	AV6/M		1
56	Thorlabs	purchase	One-sided construction rail Black Anodized (95x500 mm)	XT95SD-500		2
57	Thorlabs	purchase	Rail carriage suitable for sliding onto item 58	XT95RC4/M		2
58	Thorlabs	purchase	Precision construction rail L=400mm	XT95B-400		1
59	Thorlabs	purchase	Post Mounting Clamp	CI545/M		1
60	Thorlabs	purchase	Manual Rotation Stage	RP03/M		1
61	Thorlabs	purchase	Base for item 58	XT95P3		1
62	Thorlabs	purchase	Optical post	TR75/M		2



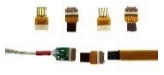


63	Thorlabs	modify	Running wheel hardboard	Github, TB4		1/4
64	Thorlabs	purchase	M6 spacers & washers	W25S050		>4
65	Thorlabs	purchase	Spacer on both sides of wheel	PS1M		2
66	SKF	purchase	Bearing OD 19mm ID 6mm	626-2Z		1
67	Thorlabs	purchase	Right-angle clamp	RSA90/M		1
68	Thorlabs	purchase	Pillar posts	RS50/M		2
69	Thorlabs	purchase	Universal post holder	UPH100/M		3
70	Thorlabs	purchase	Locking Ball and Socket Mount; to support LEDs near Tracking Camera	TRB1/M		8
71	Thorlabs	purchase	Adapter camera-lens	SM1A10Z		2
72	Kavli NTNU	self-made	MINI2P Holder P1 (Al6061)	Github(1)		1
73	Kavli NTNU	self-made	MINI2P Holder P2 (Al6061)	Github(1)		1
74	Kavli NTNU	self-made	MINI2P Holder P3 (Stainless steel)	Github(1)		1
75	Kavli NTNU TRfastenings	self-made	MINI2P Holder P4 & screw (Stainless steel) M2.5x5 cap head hexagon socket drive screw, DIN912	Github(1) M2.5cap		1 1

			MINI2P holder P4 version 2 (NEW!) Holder for scope assembly	Github		1
76	Kavli NTNU	self-made	Wheel Holder (Stainless steel)	Github		1
77	Kavli NTNU TRfastenings	self-made	Headbar holder & screw (Titanium alloy) M3x3mm Pan Head PoziDriv Machine Screw, zinc & clear, DIN7985	Github M3x3		1 2
Optical and electrical components						
78	Thorlabs RS	purchase	LED & Accessories 850nm IR LED Array Light Source LED 5m cable Adapter Supply Power for LED	LIU850A 780-0087 301-29-731 136-1345	   	1 1 1 1
79	Thorlabs	purchase	Zelux 1.6 MP Monochrome CMOS Camera & adapter SMI to C-Mount	CS165MU/M SM1A10Z	 	1 1
80	Edmund Optics	purchase	Lens focal length 4.5mm Or 8.5mm for lateral and frontal camera to control head fixation	4.5mm 8.5mm		1
81	Edmund Optics	purchase	Basler camera for Animal Tracking 16mm EFL Camera Lens Shortpass Filter 875nm	acA2040-90um MVL16M23 #86-106	 	1 1 1

82	Physik Instrumente (PI)	<i>purchase</i>	DC Motors	M-112.2DG		3
<i>Mobile cart and controlling system</i>						
<i>Mechanical and electrical components</i>						
83	Thorlabs	<i>purchase</i>	Mobile cart	POC001		1
84	Thorlabs	<i>purchase</i>	Optical breadboard 600x900x55mm	PBG52506		1
85	Thorlabs	<i>purchase</i>	Optional drawer	POD001		1
86	Schroff	<i>purchase</i>	19-inch rack	Ref 721-2708		1
87	McMASTER-CARR	<i>purchase</i>	Span-in nuts	90680A729		10
88	Dell	<i>purchase</i>	Workstation is an Intel core i9 with operating windows 10 Pro	7080		1
89	Dell	<i>purchase</i>	(32"to 49") curved LED-backlit LCD5K2K monitor	Monitor		1
90	Vidrio Technologies LLC	<i>purchase</i>	vDAQ card provides data acquisition and control of Laser, μ TLens, shutter, among others	V-vDAQ.R1		1
91	Vidrio Technologies LLC	<i>purchase</i>	vDAQ breadboard	V-vDAQ.R1		1
92	Physik Instrumente (PI)	<i>purchase</i>	Motion controller for PI motors	C-884.4DC		1
93	Femtosecond laser with center wavelength at 920nm, 80MHz, pulse width 100-	<i>purchase</i>	Controller for 920nm laser	Example types: FFUltra920 OR		1

102	Kavli NTNU	self-made	#A102_2023 Scope Body P1 (PEEK CF30 black)	GitHub		1
103	Kavli NTNU	self-made	Scope Body P2 (PEEK CF30 black) MINI2P 2022	GitHub		1
104	Kavli NTNU	self-made	#B104_2023 Scopebody P3 V2 (PEEK CF30 black)	GitHub		1
105	Kavli NTNU	self-made	Stitching Adapters (PEEK CF30 black)	GitHub		25
106	Kavli NTNU	self-made	Baseplate (Al6061 black anodized)	GitHub		10
107	Kavli NTNU	self-made	#D107_2023 TLens testing holder (Al6061 black anodized)	GitHub		1
108	FandWay TRfastenings	purchase	Screws for MINI2P: M1.2 x 3.0/4.0 pan head M1.6x 2.5 DIN916 – 45H (black)	M1.2cap M1.6set	NA	2 >10
Optical components						
109	Domilight	purchase	Scan Lens	D0166		1
110	Fuzhou Sunlight Technology	purchase	Dichroic Mirror	DMSP0405		1
111	Domilight	purchase	Objective1 Water+glass	D0213-3X		1
112	Domilight	purchase	Objective2 Air	D0254-3X		1
113	Domilight	purchase	Objective3**** Air+glass	D0309-3X ****		1

114	Polight	<i>purchase</i>	μ TLENS & accessories 4 Stacked μ TLENS Male-pin	<u>μTLENS-NIR-D-45</u> <u>Mill-max1</u>	 	1 1
Electrical components						
115	Mirrorcle	<i>purchase</i>	FAST MEMS (MEMS-F)	<u>A7M10.2-1000AL</u>		1
116	Mirrorcle	<i>purchase</i>	Large-angle MEMS (MEMS-L)	<u>A3I12.2-1200AL</u>		1
117	Kavli NTNU Digi-key	<i>purchase</i>	MEMS PCB & others Female-pin	<u>LABmaker</u> <u>Mill-max2</u>		1 1
Others/ New components 2023						
118	Kavli NTNU	<i>Self-made</i>	#C118 (new!) MEMs locker (PEEK-CF30 black anodized)	<u>GitHub</u>		1
119	Kavli NTNU	<i>Self-made</i>	Dummy scope	<u>GitHub</u>		5-10
120	Kavli NTNU	<i>Self-made</i>	Headbars for (3 types) CA1 V1 MEC + 5mm cannular See prism assemble	<u>GitHub</u> <u>GitHub</u> <u>Prism assemble</u>		>10
121	Sunlight	<i>purchase</i>	Glass plugs 4.6x1.5mm	<u>Sunlight</u>		>2
122	Sunlight	<i>purchase</i>	Cover slips Dia5x0.15mm	<u>Sunlight</u>		1
123	ThermoFisher	<i>purchase</i>	Beads FluoSpheres Carboxylate yellow/green (505-515) (dissolve with ethanol/distilled water)	<u>F8823</u>		1

124	Thorlabs	<i>purchase</i>	Kinematic rotation mount (for distortion grid setup)	KSIRS		1
125	Thorlabs	<i>purchase</i>	Quick-connect goniometers	XRNG2/M		2
126	LabMaker	<i>purchase</i>	Sacrificial connector v1 6-position connector with flex PCB	LabMaker		1
127	LabMaker	<i>purchase</i>	Scope cable harness v1 (assembled, replacing items 47-50)	LabMaker		1
128	LabMaker	<i>purchase</i>	Coupling box v1 (Mounted with all optical components)	LabMaker		1
129	Spark Laser	<i>purchase</i>	NEW! ALCOR 920-MINI2P laser «Plug and Play» with coupled fiber	ALCOR 920-Mini2P		

* NKT updated this product to K50-060-70 since 2021. The outer diameter of the old product (K50-060-00) and the new one (K50-060-70) is different!

NKT has a new fiber available since 2023: K60-060-PM (in protocols referred as HC-920-PM).

** TUB-1.8x7-0.155 fits HC-920: K50-060-00. If your HC-920 is K50-060-70, the order name of this component should be TUB-1.8x6.5-0.127. The 3D models for both components are on GitHub now. “33-GlassFlange” is TUB-1.8x7-0.155, “33-GlassFlange-for new HC-920” is for TUB-1.8x6.5-0.127.

*** MRA12-P01 for the new K50-060-PM was replaced by [MRA12-E03](#)

**** A lighter version (less 125mg) of this objective is available with ordering name: D0309.

Note on the 3D Model & 2D Drawings connected to the Machining & Price List above:

In the attached files are the 3D drawings in STEP format that can be opened in multiple programs where three-dimensional data is represented. These 3D models are available for all the components of the MINI2P platform (both in-house and items bought). However, the 2D drawings given in DWG format are only for home-made components, whereas a link is provided to the 2D drawings of all the other bought components, which are accessible on the supplier's website.