

**PONDICHERRY UNIVERSITY, PUDUCHERRY – 605 014**

*(a central University)*

**DEPARTMENT OF PHYSICS**

Sealed quotations are invited for purchase of the following items. The quotations duly signed and sealed should be submitted to the address below. The quotation should be sent by Post (Normal / Speed / Registered / Courier) only. The price quoted should include all the costs such as delivery, installation, testing etc., and also inclusive of all taxes. Warranty terms should be explicitly specified in your quotation. The technical specifications are given below. **Last date for receiving quotations is June 28, 2012**

Dr. Alok Sharan

Assistant Professor

Department of Physics

Pondicherry University

Puducherry – 605 014

## TERMS AND CONDITIONS

### I. General Information:

- a) Last date and time of receipt of the Quotations: June 28, 5.30 PM
- b) Quotation / Tender Document fee Rs. 100/-
- c) EMD rates: 2.5% of the quoted price.
- d) Quoting merely the lowest price does not confer any right to any bidder for award of supply order. The University's Purchase Committee, reserves the right to select the equipment any bid under the grounds of specification compliance, technologically advanced quality, proven performance track record, brand reputation, service backup support & training, offer of additional / special features, Compatibility with the existing System, etc.
- e) The Quotation / Tender Document Fee and EMD should be submitted along with your quotations.
- f) The quotation must be submitted along with the stipulated quotation document fee and EMD in the sealed cover, super-scribing
  - 1) Quotation for Optical Components”
  - 2) Quotation for Opto-mechanics”
  - 3) Quotations for Nano-Positioners”
  - 4) Quotations for Photodiodes and Peizo Systems
  - 5) Quotations for CCD Camera” – Department of Physics”. The name and address of the bidder should also be mentioned at the “From address” space. Each of the above quote should be in different sealed envelope.
- g) The quotations should be addressed and posted to the following address by speed, registered post or by courier.

Dr Alok Sharan, Assistant Professor Department of Physics Pondicherry University  
PUDUCHERRY – 605 014
- h) Quotations will not be accepted through fax / e-mail.

### II. Common Conditions (Import or Indigenous)

#### ***1. Purchase of Quotation Document:***

The Quotation / Tender document can be downloaded from the University website [www.pondiuni.edu.in](http://www.pondiuni.edu.in) or procured from the Pondicherry University on payment of fee as specified above, by means of a D.D, drawn in favor of **the Finance Officer, Pondicherry University, payable at Puducherry**. The downloaded application should be accompanied with the quotation document fee, in the form of a Demand Draft.

## ***2. Price Schedule***

The rates should be quoted for a single unit and also for the total quantity required by the University. The price should include the Delivery, installation, training charges, etc. at the respective Department, Pondicherry University. The prices quoted shall remain firm until the furnace is supplied to the respective Department, Pondicherry University.

## ***3. Quoting the Core price & Tax, Duties, Discount etc.***

The taxes / duties / discounts, if applicable, are to be explicitly and separately shown in the bid.

## ***4. Eligibility:***

The firm must have the requisite domain expertise with regard to supply, installation and post-sale service of the items they are quoting. The firm should have been in existence for at least six years as on the date of this quotation and must have executed at least three orders for this kind of hardware (furnace) during the last three years.

## ***5. Duty Exemption***

The University has been granted the benefit of exemption from the payment of the Central Excise Duty and Customs Duty by the Department of Scientific and Industrial Research (DSIR), India, vide their Notification No.10/97 dt. 01-03-1997 and 51/96 dated 23.07.96 respectively, in respect of

- a) Scientific and technical instruments, apparatus, equipment, Software including computers.
- b) Accessories and spare parts of goods specified in (a) above and consumables.
- c) Computer software, compact disks, CD ROM, Recording magnetic tapes, microfilms, microchips etc.
- d) Prototypes.

Customs duties at Indian port, if any, will be to the account of the University.

## ***6. Technical Specifications: (See Separate Sheet for the following)***

- 1) *Technical Specifications* for Optical Components”
- 2) *Technical Specifications* for Opto-mechanics”
- 3) *Technical Specifications* for Nano-Positioners”
- 4) *Technical Specifications* for Photodiodes and Piezo Systems
- 5) *Technical Specifications* for CCD Camera”

- i. **WARRANTY:** All the items covered under the purchase order, when installed, shall be warranted for the quality, workmanship, trouble free operation and performance for a period of at least 13 months from the date of putting the system into operation at the Department of Physics, Pondicherry University, or at least 12 months from the date of receipt of the last lot of the consignment in India.
- ii. If any item covered under warranty fails, the same shall be replaced free of cost including all the applicable charges including shipping cost both ways.
- iii. Complete technical specifications/relevant data sheet /calibration sheet of the components must be included along-with the quotations..
- iv. The necessary service support should be provided by Bidder during the agreement period.
- v. The training should be provided by the supplying companies for a minimum period of four days from the date of installation with an expert team. Alternate years training should be provided during the license period.
- vi. Technical post sale support by email and telephone will be provided during the period.
- vii. Operating Manual should be provided in English.
- viii. A clear statement regarding availability of after-sales service and availability of spare-parts for next 3 to 6 years should be included.
- ix. A recent customer list (within last five years) with contact details including email ad-dress is to be submitted with technical bids / bids as the case may be.
- x. If any of the items are proprietary product, a proprietary product certificate should be enclosed.
- xi. The information pertaining to infrastructural, power and any other requirement for satisfactory installation and commissioning of the whole system must be provided by the bidder, at least 120 days in advance of the installation to be commenced if purchase order is issued.

xii. All electronics /electrical components must be able to be operated on 230V / 50 Hz single phase and / or equivalent three phase electrical power.

xiii. If the bidder is an authorized representative in India, they are requested to inform their technical ability to take care of the problems in the system, if developed later within the warranty and outside the warranty period. The responsibility of the Indian agent must be clearly specified.

xiv. The bidder from abroad shall obtain, if required, export permission from the appropriate authorities in his country or the country of origin for items to be shipped to India in case of items to be imported. The University shall provide necessary information if required for this purpose.

**xv. The validity of the each quotation should be at least for THREE MONTHS from closing date.**

xvi. The offers will not be considered if received after the bid closing date and time.

xvii. The offers received through telex / telefax / e-mail will not be accepted by the University under any circumstances.

xviii. The University shall not be responsible for any delay / loss or non-receipt of quotations by post / courier service.

xix. No unsolicited correspondence shall be entertained after the submission of the offer.

xx. If an order is placed with the firm, the purchase shall be governed by an agreement as per the University rules in force at the time.

xxi. Additional terms and conditions will be incorporated in the purchase order, if needed, to safeguard the interests of the University.

xxii. Quotation is not transferable.

xxiii. In case of any dispute in respect of the quotation, all legal matters shall be instituted within the jurisdiction of the place where the purchaser ordinarily resides.

***7. Power to reject the offer:***

i. Pondicherry University reserves the right to accept / reject any offer in full or in part or accept any offer other than the lowest offer without assigning any reason thereof. Any offer containing incorrect and incomplete information shall be liable for rejection.

ii. No Agency commission will be paid to any authorized agent in India.

iii. Liquidated damages: Timely supply of the ordered items, installation, commissioning (wherever is applicable) and training etc. is the essence of the contract. In case of failure to supply within the time specified in the Purchase order, a penalty / LD of 0.5% of the total value

per week or a part thereof shall be levied subject to a maximum of 7.5% in respect of items which are not supplied. The decision of Pondicherry University shall be final in this regard.

iv. Bidder(s) must be authorized business partners of Global / National service providers of the respective furnace.

v. The Bidders must enclose authorization letter from the respective global / national service providers of the above said furnace particularly mentioning an undertaking that in case of default by the Bidder, they (Global Service Provider) shall take over all the responsibilities of the Bidder.

vi. The Bidder should not be involved in any Bankruptcy filing for protection from it.

### **III. Specific Conditions for Imported Equipments**

#### ***1. Payment of EMD:***

The Quotation must be accompanied by EMD as stated above, by means of a Demand Draft, drawn in favor of ***The Finance Officer, Pondicherry University, payable at Puducherry.*** *The Small Scale units are exempted from payment of EMD provided they enclose the proof of their exemption Certificate issued by the competent authority.*

#### ***2. Payments terms:***

Normally a payment 90% will be released after the installation & training. However, 100% payment will be released **if the supplier provides Bank Guarantee** towards performance Security for the 10 % of the total cost of the furnace to cover the warranty period. Bank charges in India shall be borne by the purchaser and outside India shall be borne by the contractor / supplier. The offer must be in English. The rates should be indicated both in figures and words against item specified in the given table. It is preferable that the price be quoted in US Dollars or in major foreign currencies.

## 1. Technical Specifications for Optical Components:

### 1) Lenses:

a) **Bi-Convex Lens:  $\varnothing 1"$ , f = 100.0 mm, ARC: 1050-1620 nm, Material: N-BK7, Diameter Tolerance: +0.00/-0.10 mm, Focal Length Tolerance:  $\pm 1\%$ , Surface Quality: 40-20 Scratch-Dig, Centration:  $\leq 3$  arcmin, Clear Aperture: >90% of Diameter.** Qty 4

b) **Bi-Convex Lens: f = 35.0 mm, ARC: 350-700nm, Material: N-BK7, Diameter Tolerance: +0.00/-0.10 mm, Focal Length Tolerance:  $\pm 1\%$ , Surface Quality: 40-20 Scratch-Dig, Centration:  $\leq 3$  arcmin, Clear Aperture: >90% of Diameter.** Qty 4

c) **Mounted Aspheric Lens: f=6.20 mm, NA=0.40, AR:1064nm, Design Wavelength: 780 nm, Numerical Aperture: 0.40, Clear Aperture:  $\varnothing 5.00$  mm Effective Focal Length: 6.24 mm, Unmounted Working Distance: 3.39 mm, Mounted Working Distance: 2.42 mm Magnification: Infinite, Laser Window Thickness: 0.275 mm, Laser Window Material/Index: N-BK7/1.512 @ 780 nm, Diffraction-Limited Range: 605 – 2055 nm, Surface Quality: 40-20 Scratch-Dig, Glass: ECO-550** Qty 1

2) a). **Mirror: Dichroic mirror: Reflectance: >90% Average from 750 - 1200 nm, Transmission: >85% Average from 450-645 nm,  $\varnothing 1"$  Diameter** Qty 4

b). **Protected Silver Mirror:  $\varnothing 1"$  ( $\varnothing 25.4$  mm), 0.24" (6.0 mm) Thick, Substrate Material: Fused Silica Clear Aperture: >90% of Diameter, Front Surface Flatness:  $\lambda / 10$  at 633 nm, Front Surface Quality: 40-20 Scratch-Dig, Back Surface: Fine Ground, Damage Threshold: 3J/cm<sup>2</sup> (1064 nm, 10 ns Pulse, 10 Hz,  $\varnothing 1.000$  mm), Diameter Tolerance: +0.0/-0.1 mm, Thickness Tolerance:  $\pm 0.2$  mm, Parallelism :  $\leq 3$  arcmin, Chamfers: 0.50 mm x 45° (Both Sides), Coating: Protected Silver Ravg > 97.5% (450 nm - 2  $\mu$ m) , Ravg > 96% (2  $\mu$ m - 20  $\mu$ m)** Qty 3

c) **Mounted Anamorphic Prism Pair :ARC 1050 - 1620 nm, Mag: 2.0 , Material: N-SF11 or N-KZFS8, Dimensional Tolerances:  $\pm 0.15$  mm, Angular Tolerances:  $\pm 10$  arcmin Surface Quality: 40-20 Scratch-Dig.** Qty 1

d). **Broadband Dielectric Mirror:  $\varnothing 1"$  Dia , 6mm thick, reflection 400-750 nm . Material: Fused Silica, Surface Flatness  $\lambda / 10$ , Surface Quality 10-5 Scratch-Dig, Back Surface: Fine Ground Clear Aperture >85% of Diameter (Round), 90% of Area (Square), Parallelism  $\leq 3$  arcmin, Thickness Tolerance:  $\pm 0.2$  mm, Diameter Tolerance: +0.00 mm / -0.10 mm.** Qty 3

e)  **$\varnothing 1"$  Pellicle Beamsplitter: coated for 50:50 (R:T) Split Ratio for 400-700 nm, Membrane Material: Nitrocellulose, Membrane Thickness 2  $\mu$ m Temperature Range -40 to 70 °C Index of Refraction ( $n_d$ ) 1.5 (@ 550 nm) Surface Quality 40/20 Scratch-Dig Transmitted Wavefront Retardance  $\leq \lambda / 2$  (Typ), Reflected Wavefront Retardance  $\leq \lambda / \text{inch}$  (Typ) Frame Thickness 3/16" (4.8 mm), Inner Diameter, I.D.  $\varnothing 1"$  size:  $\varnothing 1"$  (25.4 mm), Outer Diameter, O.D.  $\varnothing 1"$  size:  $\varnothing 1.38"$  (34.9 mm).** Qty 1

3) a). **Absorptive Neutral density filter: NIR Absorptive Neutral Density Filter:** Filter, OD: 1.0, 2.0, 3.0, Diameter 25.0 mm, Diameter Tolerance +0.0 / -0.25 mm, Clear Aperture 90% of Outer Diameter, Surface Flatness  $\lambda/4$  at 633 nm, Scratch-Dig 40-20, Parallelism 10 arcsec, Optical Density Tolerance  $\pm 5\%$  @ 1550 nm, Transmission Through Visual Range >75%, Damage Threshold 8 J/cm<sup>2</sup> (1064 nm, 10 ns, 10 Hz,  $\varnothing$ 1.040 mm), 20 J/cm<sup>2</sup> (1542 nm, 10 ns, 10 Hz,  $\varnothing$ 0.144 mm). Qty 1 ea

b). **Absorptive Neutral density filter:** for 350-700 nm OD: 1.0, 2.0, 3.0,  $\varnothing$  25.0 mm Qty 1 ea

4).  **$\varnothing$ 1" Laser Line Filter:** CWL = 632.8  $\pm$  2 nm, FWHM = 10  $\pm$  2 nm Qty 1

5a). **Half wave plate: 1064 -  $\varnothing$ 1" Zero-Order Half-Wave Plate** Material : Crystal Quartz  
Diameter: 25.4 mm  $\pm$  0.1 mm (Unmounted), 30.5 mm (Mounted) Retardance Accuracy: <  $\lambda/300$ , Beam Deviation (Max): <10 arcsec, Clear Aperture:  $\varnothing$ 0.89" ( $\varnothing$ 22.6mm), Transmitted Wavefront Error: <  $\lambda/4$  @ 633 nm, Surface Quality: 20-10 Scratch-Dig, Damage Threshold, - 10 J/cm<sup>2</sup> @ 1064 nm, 10 ns,  $\varnothing$ 0.433 mm, AR Coated: <0.25% Per Surface. Qty 1

5b) **Quarter wave plate: 1064-  $\varnothing$ 1" Zero-Order Quarter-Wave Plate** Material: Crystal Quartz  
Diameter 25.4 mm  $\pm$  0.1 mm (Unmounted), 30.5 mm (Mounted), Retardance Accuracy: <  $\lambda/300$   
Beam Deviation (Max): <10 arcsec, Clear Aperture:  $\varnothing$ 0.89" ( $\varnothing$ 22.6 mm) Transmitted Wavefront Error: <  $\lambda/4$  @ 633 nm, Surface Quality: 20-10 Scratch-Dig, Damage Threshold- 10 J/cm<sup>2</sup> @ 1064 nm, 10 ns,  $\varnothing$ 0.433 mm\* AR Coated: <0.25% Per Surface. Qty 1

6) **Linear polarizer: SM1-Mounted Linear Polarizer, NIR (650 - 2000 nm)** Polarizing Material Nanoparticles in Sodium-Silicate Glass, Substrate Material Schott Glass B270, Diameter (Tolerance) 12.5 or 25.0 mm ( $\pm$ 0.2 mm), Clear Aperture 90% of Surface Dimension Thickness 2.0  $\pm$  0.2 mm, Wavefront Distortion <  $\lambda/4$  @ 633 nm, Surface Quality Surface Imperfections: 5/2 x 0.04 within 1 cm<sup>2</sup> acc. , (ISO 10110-07) , Acceptance Angle, Laser Damage Threshold, 1 W/cm<sup>2</sup> Continuous Block, 5 W/cm<sup>2</sup> Continuous Pass, Operating Temperature -20 to 120 °C. Qty 1

7). **Microscope objective:** 100X Oil Immersion Objective, 1.25 NA, infinity corrected  $\varnothing$ 5 mm Back Aperture , Working Distance: 0.23mm , Transmission: 380-1100nm Recommended Cover Glass thickness: 0.17mm . Qty 1

8). **Beam expander :** Galilean Beam Expander: Expansion: 5X , Input Aperture:  $\varnothing$ 4.5 mm, Input Beam Diameter: 2.25 mm, Output Beam Diameter: 10.91 mm, Wavelength: 1315 nm, AR Coating: 1050 – 1620 nm, AR Coating Reflectivity: <0.5% Over Coating Range, Peak-to-Valley Wavefront Distortion: 0.0002 $\lambda$  , RMS Wavefront Distortion: 0.0009 $\lambda$  , Wavefront Error: <  $\lambda/4$ , Scratch-Dig: 20 – 10, Lens Substrates: N-BK7, N-SK11, Input Housing Dimension:  $\varnothing$ 23.5 mm, Output Housing Dimension:  $\varnothing$ 42.0 mm, Length of Housing: 71 - 79 mm. Qty 1



## **2. Technical Specifications for Opto-Mechanics**

1) Lens Mount: Lens Mount for  $\varnothing 1$ " Optics, One Retaining Ring Included, thread SM1 (1.035"-40), optic max thickness: 0.28" (7.1 mm), **8-32(M4) Tap**. **Qty 10**

2) **Kinematic Mount for Thin  $\varnothing 1$ " Optics** : SM1-Threaded Kinematic Mount for Thin  $\varnothing 1$ " Optics, Optic Size :  $\varnothing 1.00$ " ( $\varnothing 25.4$  mm , Optic Thickness (Max): 0.14" (3.6 mm), SM Series Threads: SM1 (1.035"-40),, Adjuster Threads: 1/4"-80, Angular Range:  $\pm 4^\circ$ , Resolution: 8 mrad (0.5°) per rev, Clear Aperture:  $\varnothing 0.90$ " ( $\varnothing 22.9$  mm), **Tap 8-32(M4)**. **Qty 2**

3) **Kinematic Cage Mount,  $\varnothing 1$ " Optics** :  $\pm 5^\circ$  Pitch/Yaw,  $\pm 3$  mm Linear Translation Compatible with 30 mm Cage Systems, Independent Locking on All 3 Adjusters, SM1-Threaded (1.035"-40) Threaded Front Plate (Two SM1RR Retaining Rings Included) 8-32 (M4 x 0.7) mounting holes. **Qty 1**

4) **Kinematic Mount for  $\varnothing 1$ " Pellicle Optics** : Resolution: 8 mrad/rev (0.5°/rev) , 1/4"-80 adjusters. **Tap 8-32(M4)**. Strong Springs for Greater Stability, Hardened-Steel Inserts to Reduce Wear, Removable Knobs Expose Hex Socket in Leadscrew, Easy-to-Use Drop-In Design **Qty 4**

5) **Precision Kinematic Mirror Mount:  $\varnothing 1$ " Precision Kinematic Mirror Mount with 3 Adjusters**, Minimum Optic Thickness: 0.20" (5.1 mm), Angular Adjustment:  $\pm 4^\circ$  , Type of Adjusters: Removable Knobs, Thread: 1/4"-80, Resolution: 7.4 mrad/rev, **Tap-8-32(M4)**. **Qty 1**

6) **Rotation Mount, 360° Continuous or 15° Indexed Rotation**: Scale can be Rotated Independently of Mounted Optic for Alignment, Switch Between Continuous Rotation and 15° Step Increments, 2° Gradation Marks, Angle Labeled Every 20°, 5 arcmin Vernier Scale Ideal for Polarization Optics, SM1 (1.035"-40") threaded mounting carriage and includes one SM1RR retaining ring to mount  $\varnothing 1$ " optics. **Taping hole 8-32(M4)**. **Qty 4**

7) **Kinematic Mount for  $\varnothing 1$ " Optics**: For 6mm thickness mirror, Pitch and Yaw Angular Range:  $\pm 4^\circ$ , Improved 1/4"-80 Adjuster Screws for Greater Sensitivity, Removable Adjuster Knobs Expose Hex Sockets, brass bushings, high-quality 1/4"-80 adjuster screws, **Taping hole 8-32(M4)**. **Qty 11**

8) **Precision Kinematic Mirror Mount, 3 Adjusters** :  $\varnothing 1$ " Precision Kinematic Mirror Mount, 3 Adjusters, Adjusters, Minimum Optic Thickness: 0.20" (5.1 mm), Angular Adjustment:  $\pm 4^\circ$  , Thread: 1/4"-80, **Tap-8-32(M4)**. **Qty 1**

9) **Fiber Pigtailed Laser Diode Mount**: 13/32-40 tap through the center of the mounting area, Compatible for EORMS, **Taping hole 8-32(M4)**. **Qty 1**

- 10) Extended RMS to M9 x 0.5 Adapter** : Extended Adapter, RMS Threads OD and M9 x 0.5 Threaded ID threading on mounted aspheric lenses to RMS Microscope threading while also providing an extension tube. **Qty 1**
- 11) Hex key for KM100T Mirror.** **Qty 1 pack**
- 12) Stainless Steel Optical Post,  $\varnothing$ 1/2" x 2" Stainless Steel Optical Post, 8-32 Stud, 1/4"-20 Tapped Hole ,  $\varnothing$ 12 mm Versions Compatible with all  $\varnothing$ 1/2" TR-Related Products.** **Qty 22**
- 13) Post Holder For  $\varnothing$ 1/2" post :  $\varnothing$ 1/2" Translating Post Holder Spring-Loaded Hex Locking Thumbscrew, height L = 2.00", 1/4"-20 Tapped Hole at bottom.** **Qty 22**
- 14) Mounting base for M4 rods: Mounting Base, 2" x 3" x 3/8", 1.00" (25.4 mm) long counter bored slot along the center length that contains a 1/4"-20 (M6) threaded stud ideal for use with our PH Series of post holders.** **Qty 22**
- 15) X-Y stage: - Miniature 1/2" Translator, XY Configuration, Metric Travel: 13 mm, Leadscrew Pitch: 0.25 mm, Max. Static Load: 3.5 kgs, Runout: 3  $\mu$ m Over the Full Range** **Qty 1**
- 16) Complete Periscope Assembly, Metric for 1 inch optics pair of 45 mirror mounts with lockable adjustment knobs to provide 360° rotation of the incoming beam.** **Qty 1**
- 17) Mounting Post Base : Mounting Post Base  $\varnothing$ 2.40" X 0.50" High, center-tapped 1/4"-20 hole.** **Qty 4**
- 18) 1.5" Mounting Post, Length=1.5", 1/4"-20 Taps** **Qty 4**
- 19) Large Area Translation Stage: 6" x 7.66" Manual Translation, Fine Adjustment Using Hex Key, 0.5" (12.7 mm) Deck Height, 2.5" (60 mm) of travel, tapped with 1/4"-20 (M6 x 1.0) threaded holes in the standard 1" (25 mm) offset hole pattern.** **Qty 1**
- 20) Travel stage: 50 mm TravelMax Stage, Differential Drive w/o Graduated Scale, Travel: 2" Horizontal Load Capacity: 66 lbs (30 kg), Vertical Load Capacity: 22 lbs (10 kg) Weight with Drive: 4.2 lbs (1.9 kg), Angular Deviation:  $\pm$ 10  $\mu$ m, Repeatability: 0.8  $\mu$ m** **Qty 1**
- 21) Mounting plate : Tapped Adapter Plate with 1/4"-20 and 8-32 Taps.** **Qty 1**
- 22) Vertical post:  $\varnothing$ 1.5" Damped Mounting Post, 14" Long** **Qty 1**
- 23) Compact  $\varnothing$ 1.5" Post Mounting Clamp: Clamp allows optic mounts with 8-32 (M4 x 0.7) tapped mounting holes to be attached to a  $\varnothing$ 1.5" post** **Qty 2**

- 24) SM1-Threaded 30 mm Cage Plate, 0.35" Thick, 1 Retaining Ring** Standard SM1 Series, Cage Plate, 0.35" (8.9 mm)Thick. **Qty 1**
- 25) Adapter with External SM1 Threads and Internal C-Mount Threads** Internal thread C-Mount (1.00"-32), External thread SM1 (1.035"-40). **Qty 1**
- 26) SM1 adapter for SM1A10 and suitable for Nikon objective(100x ,oil immersion,1.25 NA** Ø5 mm Back Aperture Working Distance: 0.23mm ,Transmission: 380-1100nm ). **Qty 1**
- 27) Cage Assembly, XY Translating Lens Mount** Accepts Optics up to 0.3" (8 mm) Thick, 250 µm Pitch Adjusters, 0.01" (0.25 mm) of Translation Per, Revolution , ±1 mm Travel in X and Y Directions. **Qty 1**
- 28) ER3 Rod : Cage Assembly Rod, 3" Long, Ø6 mm.** **Qty 4**
- 29) 45° Optic Holder, 1" Optic :** accommodates Ø1"(Ø25.4 mm) **Beam height:2"** optics including optic housing, Aluminum post, and mounting base for convenient fastening to an optical table or breadboard. **Qty 1**
- 30) Precision Right Angle Plate** **Qty 1**
- 31) Aluminum Breadboard: 24" x 24" x 1/2" , 1/4"-20 Threaded** Flatness: ±0.006" (±0.15 mm) Over any 1 ft<sup>2</sup> (0.3 m<sup>2</sup>) Area. **Qty 1**
- 32) Lab Jack scissor type:** Load capacity:15kg,**300 x 150** ,min height:75mm,max height: 200mmVertical height adjustment by 1mm pitch, lead screw ,Parallelism: 0.1mm for entire travel, M6 tapped holes at the top at 25 mm grid. M6 clearance slots at top and bottom, Aluminium Alloy & Stainless Steel construction Black anodized. **Qty 1**
- 33) Table clamp (CL5)** **Qty 10**
- 34) Table clamp (CL6) - Miniature Rail Clamp** **Qty 10**
- 35) Bolt (M6) ¼ inch-20** **Qty 60**
- 36) Bolt 6-32 (M3)** **Qty 10**
- 37) Bolt 8-32 (M4)** **Qty 10**
- 38) Allen key for M6 and M3** **Qty 1**
- 39) Sample holder:** Accommodates Glass Slides of Variable Width **Qty 1** and a Length ≥ 44.0 mm (1.73"),Compatible Petri Dish Diameters:37 - 41.4 mm (1.46" 1.63"),Spring Clips Hold Sample Firmly in Place, Mounting Hole Compatibility with any Stage with 1/4"-20 (M6) Taps on 2" Centers, Dimensions: 101.6 mm x 68.6 mm x 12.7 mm(4" x 2.7" x 0.5").

### **3. Technical Specifications for Nano-Positioners:**

#### **3-Axis, 4mm Travel, Internal Piezo & Feedback, Metric:**

**Thermal Stability** :1  $\mu\text{m}/^\circ\text{C}$

**Travel** : 4 mm

**Crosstalk** < 20  $\mu\text{m}/\text{mm}$

**Load Capacity**2.2 lbs (1 kg) **Weight**1.65 lbs (0.75 kg)

**Deck Height** **2.46"** (62.5 mm)

**Optical Axis Height** 2.95" (75 mm)

**Piezo Specifications: Piezo Range**20  $\mu\text{m}$ **Piezo Resolution**20 nm (5 nm with strain gauge)

**Piezo Bidirectional Repeatability** Open Loop 0.2  $\mu\text{m}$ , Closed loop 0.05  $\mu\text{m}$

**Piezo Absolute On-Axis Accuracy**1.0  $\mu\text{m}$  **Piezo Drive Voltage**0 to 75 V **Resonant**

**Frequency No Load**375 Hz **with 9.7 oz (275 g) Load**200 Hz **with 20.3 oz (575 g) Load**150 Hz

**+ Compatible Piezo Controllers**

Modular Differential Micrometer Drive, 8 mm Travel : 0.31" (8 mm) of Travel with 300  $\mu\text{m}$ , Fine Travel 50 nm Resolution (Calculated), 8 mm Coarse Adjustment, Compatible with Quick-Connect Adapters,500  $\mu\text{m}/\text{rev}$  Coarse Adjustment,50  $\mu\text{m}/\text{rev}$  Fine Adjustment

## **4. Technical Specifications for Photodiodes and Peizo Systems**

1) Quadrant photodiode: Sensor Type Si, Wavelength Range 400 – 1050 nm, Sensor Size  $\varnothing$ 7.8 mm, Gap Size 42  $\mu$ m, Responsivity 0.4 A/W (@ 633 nm, Detector Bandwidth 150 kHz, Dark Current, (V Reverse = 10 V) 5 nA, Rise Time @ 5 V 40 ns, Breakdown Voltage 15 V, Damage Threshold 100 mW/cm<sup>2</sup>, Housing Dimensions 2.00" x 1.20" x 0.65" (50.8 mm x 30.5 mm x 16.5 mm), Operating Temperature 10 – 40 °C, Cable Length 5' (1.5 m), Mounting Threads 8-32 (M4 Adapter Included).

2) T-Cube Quadrant Detector Reader: **X & Y Difference Outputs**<sup>†</sup> -10 to 10 V, **Sum Output**<sup>†</sup> 0 to 10 V **Quadrant Detector Input** 6-Pin HRS Connector **X & Y Position Demand Outputs**<sup>†</sup> -10 to 10 V **Closed-Loop X and Y Position Control PID Closed-Loop Bandwidth**\*1 kHz\***Open-Loop Bandwidth (-3.0 dB)**100 kHz, **Dimensions (W x D x H)**60 mm x 60 mm x 47 mm (2.4" x 2.4" x 1.8").

3) T-Cube Piezo Driver: **Drive Voltage**0 - 150 V, **Drive Current, Max, Continuous**7.5 mA, **Stability**100 ppm Over 24 hrs (After 30 min Warm-Up)**Noise**<2 mV<sub>RMS</sub>, **Typical Piezo Capacitance**1 - 10  $\mu$ F, **Bandwidth**1 kHz (1  $\mu$ F Load, 1 V<sub>p-p</sub>), **External Input (SMA Male)**0 - 10 V (BNC), **Output Monitor (SMA Male)**0 - 10 V (BNC)**USB Port**Version 1.1 mini, **T-Cube Controller Hub Connector**26-Way ERNI, **Input Power**+15 V @200 mA, -15 V @100 mA, +5 V @400 mA

4) T-Cube Strain Gauge Reader: **Bridge Type**AC **Excitation Frequency**18 kHz**Supply, Voltage** $\pm$ 15 V**Monitor Output**0 - 10 V (SMA Connector), **Reading Resolution : Position Mode**1 nm,**Force Mode**1 mN **Voltage Mode**1 mV **Sampling, Bandwidth**500 Hz **Position Output Monitor** 0 - 10 V (SMA) **Comms:** USB 1.1 (mini), **Reading Display**5 Digit, 7 Segment LED, **Input Power Requirements Voltage (Current)**+15 V (200 mA), -15 V (100 mA), +5 V (400 mA)

5) T-Cube Controller Hub and Power Supply Unit : : **USB Hub Circuit** :Fully Compliant USB 2.0 Hub, **Enclosure** : Rigid, Slim-Profile Baseplate Construction **Finish** Black, **T-Cube Bays** Six, Double Wide T-Cubes Use Two Bays, **Table Mounting :Orientation** Horizontal (Brackets Included) Edge or Vertical (with [AP90](#) Bracket)**Mounting Threads**Universal Metric (M6) or Imperial (1/4"-20) Design, **Input Power Requirements, Voltage (Current)**+15 V (6 A), -15 V (1 A), +5 V (5 A).

## **5. Technical Specifications for CCD Camera**

**CCD camera:** 1024 x 768 Resolution, Color, USB 2.0 1024 x 768 or 1280 x 1024 Pixel Resolution, 1/3" or 1/2" Image Sensor with Square Pixels, 30 fps or 15 fps (Full Frame Mode), Color Versions with Removable IR Filter, C-Mount Objective Connector Global Shutter, Universal Trigger Input, Digital Output, compatible with SM1 thread Including Two SM1 adapters with external thread and with internal tread for the objective C threading and a mounting adapter plate, M4 x 10 mm or UNC8-32 x 3/4", four M3 x 6 mm screws for mounting the adapter plate to the camera, a USB 2.0 cable, a software CD, and a manual. compatible with TR series post