

VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY, ODISHA



P.O: Engineering College Burla (Siddhi Vihar), Dist: Sambalpur
Odisha- 768018, India

Website : www.vssut.ac.in, E-mail: registrar@vssut.ac.in, Ph:(0663)2430573, Fax-2430592

No. VSSUT/ ETC/MODROB/ 6920

Date: 31/10/2019

TENDER CALL NOTICE

Sealed Tenders are invited from the intending reputed Original Equipment Manufacturers/Direct Importers/Registered Dealers for supply of Equipment for Communication Laboratories of **Electronics and Telecommunication Engineering Department of VSSUT, Burla under AICTE MODROB Projects**. Detailed information and the tender document are available in the University website www.vssut.ac.in.

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31.10.19
REGISTRAR

Memo No. VSSUT/ETC/MODROB/ 6921 (6)

Date: 31/10/2019

Copy to:

- 1) M/s Display lines, 219, Saheed Nagar, Bhubaneswar-751007 with a request to publish the above advertisement in one issue of the Odisha daily edition (ALL ODISHA EDITION) of THE SAMAJ and The New Indian Express (ODISHA edition) using minimum space at I & PR approved/lowest rates. The bills may be sent to the Comptroller of Finance, VSSUT, Burla- 768018 in TRIPLICATE along with copies of the paper in which the publication is made, for necessary payment.
- 2) The University/Department Notice Board for publicity.
- 3) Dean F&P, with a request to hoist the tender call notice in the University web site www.vssut.ac.in for wide publicity.
- 4) COF, for information and necessary action.
- 5) Steno to registrar for record.
- 6) Dean, SRIC for information. This is as per the sanction of AICTE FN. 9-46/RFID/MODROB/Policy-1/2017-2018, date:04/01/2019 under the project entitled "Modernization of Communication Laboratory".

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REGISTRAR

SECTION - I: INVITATION FOR BIDS (IFB)

Sealed Bids (properly stitched separately) in two separate covers (Technical Bid and Price Bid) are invited by the "The Registrar, Veer Surendra Sai University of Technology, Odisha" from the Original Equipment manufacturers/ Importers/ authorized distributors/ dealers for supply of Instruments, equipment, machineries etc. of reputed make for the Department of Electronics and Telecommunication Engineering, VSSUT Burla, Odisha.

The Bidders may download the Tender Documents directly from the website available at <http://www.vssut.ac.in> and the Tender cost fee of Rs.500/- (Non-refundable) by way of separate Demand Draft drawn in favour of "The Registrar, Veer Surendra Sai University of Technology, Burla" payable at SBI, Burla should be enclosed along with the bid. The Tender cost fee and the EMD amount should be submitted separately in separate demand drafts. In case of any bid clarification, responsibility lies with the bidders to collect the same from the website and the purchaser shall have no responsibility for any delay/ omission on part of the bidder.

TIME SCHEDULE:

- a) Date of commencement of downloading bidding document: **4/11/2019 at 11.00 AM**
- b) Last date and time for Receipt of bids: **6/12/2019 up to 4.00PM**
- c) Time and date of opening of Tender & Technical and Financial bid: **10/12/2019 at 10.30 AM**
- d) PLACE OF OPENING OF TENDER – Conference Hall of VC Secretariat, VSSUT, Burla
- e) ADDRESS FOR COMMUNICATION AND RECEIPT OF BID DOCUMENTS:

THE REGISTRAR
VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY, ODISHA
At- Burla, PO-Burla Engineering College, Dist-Sambalpur-768018
Tel. No-0663-2430211 Fax No-0663-2430204

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VSSUT Burla

SECTION-II: GENERAL TERMS AND CONDITIONS

1. Document Establishing Bidder's Eligibility & Qualification

The Bidders shall furnish as part of the bid the following Documents establishing Bidder's eligibility and qualification to the Purchaser's satisfaction. Non-compliance of any of these conditions shall disqualify the eligibility.

1.1 Original Equipment manufacturers/ Importers/ authorized distributors/ dealers having valid license / certificates for the quoted item and the direct Importers holding valid Import License Manufacturer / Authorized Distributor / Dealer of the product are eligible to participate in the Bid.

1.2 The Bidder whether manufacturer/ distributor/ dealer must have experience of supply and installation of the quoted items in different Institutes of national repute.

1.3 The Bidder shall quote item of reputed Brand/model with all accessories in complete in all respect to perform functionality of Equipment/Machinery.

2. Document Establishing Goods Eligibility

The instruments and equipment offered against the schedule of requirement of instruments, equipment and Machineries should be in accordance with the stipulated specifications and of one reputed brand/model (N.B: Variation in specification is allowed upto $\pm 5\%$ in case of Machineries/Equipments)

2.1 The documentary evidence establishing the brand and the model may be in the form of literature, pamphlets, manuals, drawing, circuit diagram etc.

2.2 Detailed description of instruments and equipment with essential technical and performance characteristics may also be furnished.

3. Technical Bid (COVER - A)

The following document should be submitted in cover-A.

3.1 Earnest Money Deposit

3.2 Technical details of the equipment and machineries as per Annexure-V

3.3 Copy of the manufacturing license/ import license/ Authorized Distributor/ Dealer certificates

3.4 Copy of the authorization from the Manufacturing Company in case of Authorized Distributor /Dealer in Annexure-III along with Manufacturer Industry Registration and Tax Registration Certificate.

3.5 Copy of the IT PAN Card, GSTN.

3.6 The original bid document signed & sealed by authorized person in each page as a token of acceptance of all terms and conditions of the tender with original receipt.

3.7 Any deviation in the specification of the item including standard accessories / optional accessories in complete for functionality of Machine should be marked in bold letters.(N.B: Variation in specification is allowed upto $\pm 5\%$ in case of Machineries/Equipments)

4. Price Bid (COVER – B)

4.1 The hard copy of price bid giving the rates for various instruments & equipment and other items should be submitted. Price Bid (Cover - B) of the bidders who qualify in Technical Bid (Cover – A) will only be opened.

(Signature of Authorized signatory of Bidder with seal)



4.2 The price of the each item shall be quoted as per the prescribed Price Schedule Format at Annexure-I along with price break up of Taxes admissible, Packing, Forwarding and Handling charges, Insurance charges, ET, Freight up to destination including unloading, commissioning including testing and training with total price per item at FOR VSSUT Burla. The bidders are required to submit the individual price of each instrument(s) and equipment(s) as indicated in the schedule of requirements. For imported equipments the quoted price should be in currency of the country of origin.

4.3 Tax clearance certificate up to date where applicable.

4.4 Each quoted item and all accessories should cover the warranty / guarantee for 1(One) year from the date of commissioning (Annexure-II).

5. BID CONDITIONS

5.1 The quoted rate shall not vary with the quantum of order placed or destination point.

5.2 A copy of the original bid conditions and the schedules should be signed by the bidder at the bottom of each page with the office seal duly affixed and returned along with the bid. Bid schedule should be duly filled in with an index and page number for the documents, enclosures & EMD etc. Paging must be done for all the documents submitted.

5.3 Bids should be type written or Computerized and every correction/ over writing in the bid should invariably be attested with signature of the bidder with date before submission of the bids to the authorities concerned. No revision of price upward or downward will be allowed once the bid is opened. However the purchaser shall have the right for considering the exchange rate of foreign currencies on verification of documents.

5.4 Bid Price

- The contract shall be for the full quantity as described above. Corrections, if any, shall be made by crossing out, initialling, dating and re-writing.
- All duties, taxes, and other levies payable on the raw materials and components, job contract shall be included in the total price.
- Taxes in connection with the sale shall be shown separately.
- The rates quoted by the bidders shall be fixed for the duration of the contract and shall not be subject to adjustment on any account.
- The price shall be quoted in Indian Rupees only.

5.5 Tax clearance

Copies of valid Tax clearance Certificates shall be furnished by the Bidders and the originals of the above certificates shall be produced to the purchaser before placement of notification of award if asked for by the Purchaser.

5.6 EMD

All bidders are required to submit EMD of Rs. 5000/- in shape of Demand draft drawn in favour of **"The Registrar, Veer Surendra Sai University of Technology, Burla"** payable at SBI, Burla only. The EMD shall be in Indian Rupees.

NOTE: Non-submission of EMD or submission of less EMD than the desired one or submission of EMD in any other form except Demand Draft shall result in rejection of Bid. The EMD deposited against other Bids cannot be adjusted or considered for this Bid. No interest is payable on EMD.



5.7 SUBMISSION OF BIDS

Sealing and Marking of Bids

Bid should be submitted only through REGISTERED POST /SPEED POST in two Bid system containing two parts as detailed below.

Sealed Cover-A: Technical Bid.

Sealed Cover-B: Price Bid

Both the sealed envelopes should then be put in one outer cover and each cover should have the following indication:

- i) Reference No of Bid _____
- ii) Due date & time for submission of the Bid _____
- ii) Name of the Firm _____

NOTE:

A. Bids submitted without following two bid system procedures as mentioned above will be summarily rejected.

B. Please Note that prices should not be indicated in the Technical Bid. The Prequalification document including EMD as required in the Bid document should invariable be accompanied with the Technical Bid (**Cover A**).The outer envelope shall indicate the name and address of the bidders to enable the bid to be returned unopened in case it is declared "late". If the cover containing the outer envelope is not sealed and marked as required, **Purchaser** will assume no responsibility for the bid's misplacement or premature opening.

The above procedure shall be adopted both for the Technical bid and price bid separately. Telex, cable, email or facsimile bids and bids submitted by hand will not be entertained.

5.8 Deadline for Submission of Bids

Bids must be received by the **Purchaser** at the address specified not later than the time and date specified in the Invitation of Bids. In the event of the specified date for the submission of bids being declared a holiday for the **Purchaser**, the bids will be received up to the appointed time on the next working day. The **Purchaser** may, at its discretion, extend this deadline for submission of bids by amending the bid document, in which case all previous rights and obligations of the purchasers and bidders will remain same till the extended date.

5.9 Modification and Withdrawal of Bids

No Modification and Withdrawal of Bids is allowed between the interval of time of submission and the last date and time of the bids.

No bid may be withdrawn in the interval between the deadline for submission of bids and the expiration of the period of bid validity specified by the bidders on the bid form.

5.10 BID OPENING

The **Purchaser** will open all bids, in the presence of bidder's representatives who choose to attend at **10.30 AM on dated 10/12/2019 at the Conference Hall of the VC's Secretariat, Veer Surendra Sai University of Technology, Burla**".

5.11 The bidder's representatives who are present shall sign a register evidencing their attendance. In the event of the specified date of bid opening being declared a holiday for the **Purchaser**, the bids shall be opened at the appointed time and location on the next working day.

5.12 The bidder's names, and the presence or absence of the requisite EMD and such other details as the **Purchaser**, at its discretion, may consider appropriate will be announced at the opening. No bid shall be rejected at bid opening, except for late bids, which shall be returned unopened to the bidders.

5.13 Acceptance of the Bid

(Signature of Authorized signatory of Bidder with seal)

- Bidders submitting bids would be considered who have considered and accepted all terms and conditions. No enquiries, verbal or written, shall be entertained in respect of acceptance or rejection of the bid.
- Genuine equipment and instrument etc. should be supplied. Bidders should indicate the source of supply i.e. name and address of the manufacturers from whom the items are to be sourced.
- Supply of equipment means – Installation and Commissioning (except civil works), Demonstration as well as Training at site. No separate charges will be paid on this account.

5.14 Rejection of the Bid

The Bid document shall be out-rightly rejected under following stipulation and no correspondence will be entertained whatsoever.

- If the Bidders has not furnished the required Tender paper cost and EMD or EMD exemption certificate from competent authority.
- If the Bidders has not submitted the Price as per the prescribed format Annexure-I
- If the bid is not supplemented with breakup of standard accessories / Optional accessories & cost of AMC separately for three years after completion of warranty period (In case of major machinery only).
- Photo copy of the up-to-date valid manufacturing license/ import license (if it is imported) /dealership certificate/Distributor certificate of the product along with Tax registration Certificate of Manufacturer issued from competent authority.
- If the bidders, whether manufacturer or authorized distributor/ dealer have not supplied the required quantity for qualification as per the eligibility criteria and not submitted the performance statement at Annexure-IV with supporting documents.
- If the quoted product of the bidders not confirms to technical specification with complete accessories for functional Equipment/Machinery and standard of workmanship required by the Purchaser.
- If the bidder has not furnished technical details of the equipments and machinery with one make & model as per Annexure-V.
- If bidder will quote items of more than one make/model.
- If the bidder has not submitted the detailed catalogue, Foundation drawings & schedule of supply of items, if required.
- If the bidders have not agreed to give bid validity.
- Furnishing of wrong/ambiguous information in the compliance statement may lead to rejection of bid and further black listing of the bidder, if prima-facie it appears that the information in the compliance statement was given with a malafide/fraudulent intent.

5.15 Purchaser's Right to accept any Bid and to reject any Bid

The Purchaser reserves the right to accept or reject any bid and to annul the bidding process and reject all the bids without assigning any reason thereof at any time prior to award of Contract, without thereby incurring any liability to the affected Bidders or Bidders on the grounds of such action of the purchaser. In case no bidder qualifies as per qualifying criteria and standards, purchaser may at his discretion relax qualification criteria for award of contract.

5.16 Evaluation and Comparison of Bids

The comparison shall be of FOR destination price basis including the price of all costs wherever applicable as well as duties and taxes paid or payable on Machinerics, instruments & equipment incorporated or to be incorporated in the items including the warrantee/guarantee period from the date of installation.

- The Purchaser's evaluation of a bid will take into account, in addition to the bid price and the price of incidental services.
- The purpose of bid evaluation is to determine substantially responsive bid with the lowest evaluated cost, but not necessarily the lowest submitted price, which should be recommended for award.
- Evaluation of bids should be made strictly in terms of the provisions in the bid document to ensure compliance with the commercial and technical aspects.
- The past performance of the suppliers will be taken into account while evaluating the bids.
- Cost of the inland transportation, insurance and other costs within the Purchaser's Country incidental to delivery of the goods to their final destination;
- Alternative options of offer shall not be allowed.
- Each Bidder shall submit only one quotation with one make & model.
- The quotation would be evaluated separately for each item
- Sales Tax in connection with sale of goods shall not be taken into account in evaluation.

6.0 Supply Conditions

6.1 Delivery of Goods

The delivery of goods shall be made by the supplier to the Consignee in accordance to the order placed as shall be detailed in the Schedule of requirements & technical specifications.

6.2 Warrantee Period (comprehensive)

The Bidders must quote for a minimum period of **01 (One) years** of comprehensive **warranty** from the date of completion of the satisfactory commissioning as per (**Annexure-II**). This also includes all accessories related to instruments & equipment quoted for.

6.3 Payment Terms

No advance payment will be made by the Purchaser to the supplier for performance of the contract. 100% of the contract price shall be paid within 30 (thirty) days after satisfactory supply, installation, demonstration, Commissioning & training and stock entry of bills of the goods within due date of delivery.

6.4 Transportation

The Supplier shall be required to meet all transport and storage expenses until commissioning of the instrument(s) / equipment covered in the contract.

6.5 Taxes and Duties

The Supplier shall be entirely responsible for payment of all Taxes, Duties etc. incurred until delivery of the contract goods to the Consignee subject to recovery afterwards in the bill as claimed in the Bid offer. Income Tax as applicable shall be deducted at source.

6.6 Period of Validity of Bids

- The bid rates should be kept open/ valid for a period of **180** days from the date the Bids are opened.
- A bid valid for a shorter period i.e less than **180** days shall be rejected, as nonresponsive.
- In absence of any indication of the date of validity in the bid, it will be presumed that the offer will remain valid for the minimum period i.e. **180** days as prescribed above.

6.7 Penalty against Non Supply

In case of non-supply of Stores within the due date i.e. within the date of delivery the EMD deposited by the bidder shall be forfeited.

6.8 Annual Maintenance Contract

The Cost of Annual maintenance contract for next 3 years after warranty period shall be submitted as per the **Annexure at I(b)** . The after sales service during and after the warranty / guarantee period should be available from companies own engineers.

6.9 Jurisdiction of the Court

The Purchaser and the Supplier shall agree that the competent Court at Sambalpur shall have the jurisdiction to try and decide anything between the parties and they may approach the Competent Court at Sambalpur if required at any time.

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REGISTRAR
VSSUT, Burla

SECTION – III: FORMS AND ANNEXURES

ANNEXURE-I (a)

PRICE SCHEDULE (ITEM WISE)

Name of the Firm: _____

Sl. No.	Name of the Instrument Make: Model No.: Country of origin	
01	(A1) Base Price/Unit	
02	(A2) All Taxes	
03	(A3) Freight Charge (if any)	
04	(A4) Any Other (If any, Mention Details)	
05	(A) Total= A1+A2+A3+A4 in INR	
06	IN WORDS	

Note- (i) Price Bid performa should be provided individually for all equipments.

(ii) Taxes like GST, Freight and or other taxes/ Charges, if any applicable must be explicitly mentioned in this price bid. Any type of correction/ addition in price schedule shall not be permissible. **Taxes mentioned elsewhere except this price bid will not be taken into consideration.**

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(Signature of Authorized signatory of Bidder with seal)

ANNEXURE-I (b)**PRICE SCHEDULE (ITEM WISE) - B****PRICE SCHEDULE FOR ANNUAL MAINTANCE CONTRACT AFTER COMPLETION OF WARRANTY PERIOD.**

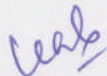
Sl.No	Brief description of Goods Total annual	Quantity in nos.	Annual Maintenance Contract cost 3 years i.e. $3x(4a+4b+4c)$		
			1st yr.	2nd yr.	3rd yr.
1	2	3	4	5	
			(a)	(b)	(c)

Note:-

1. The cost of Annual Maintenance Contract (AMC) which includes preventive maintenance including testing & calibration as per technical/ service/ operational manual, labour and spares, after satisfactory completion of warranty period may be quoted for next 3 years on yearly basis for complete equipment and turnkey (if any).
2. The cost of AMC may be quoted along with taxes applicable on the date of bid opening. The taxes to be paid extra should be specifically stated. In absence of any such stipulation the price will be taken inclusive of all taxes and no claim for the same will be entertained later.
3. Cost of AMC will not be added for Ranking/Evaluation purpose. However, the cost of AMC for lowest evaluated bidder is subject to negotiation.
4. The payment of AMC will be made as per payment terms of the bid document.
5. The uptime warranty and down time penalty shall be as per the bid document.
6. All software update should be provided free of cost during AMC period.
7. The stipulations in Technical Specification will supersede above provisions.
8. The supplier shall keep sufficient stock of spares require during Annual comprehensive Maintenance Contract period. In case the spares are required to be imported, it would be the responsibility of the supplier to import and get them custom cleared and pay all necessary duties.

Place:

Date:



Signature of Bidder
Business Address
Seal of the Bidder

ANNEXURE - II

WARRANTY MAINTENANCE CONTRACT AGREEMENT.

THIS AGREEMENT made the.....day of, 20__ between the "The Registrar, Veer Surendra Sai University of Technology, Burla" (hereinafter "the Purchaser") of the one part and M/s..... (Hereinafter called "the Supplier") of the other part: WHEREAS the Purchaser invited bids for certain Goods & ancillary services viz, supply and commissioning of the instruments & equipment at Burla including Comprehensive Warranty Maintenance Services and has accepted a bid by the Supplier for the instruments & equipment specified below at the Consignee site including Comprehensive Warranty maintenance Services for a period of 2 (Two) year from the date of installation & commissioning of the instruments & equipment as per award of Contract No..... Dated.....

Name of the Equipment & machineries Qty

(To be filled in as per details of goods in the award of Contract)

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

1. Maintenance Services shall consist of Preventive and Corrective maintenance of equipment specified above & will include repair and replacement of parts free of cost.
2. Preventive maintenance, monthly once, which includes:
 - 2.1 Check-up to ensure that device connection is proper, cabling is at proper condition etc.
 - 2.2 Cleaning of the above instruments & equipments and checking the System Performance.
3. The Supplier is to furnish the tentative schedule of the preventive maintenance of Warranty Maintenance Contract (WMC) to be carried out.
- 4 The parts replaced must be new parts or equivalent in performance to new parts.
5. The Supplier will also provide the same maintenance service in case of the movement of equipment from the place of original installation to a different place or location, if the equipment is shifted by the Purchaser to another place or location at the cost and risk of the purchaser.
6. Any complaint informed through telephone must be acknowledged with a Complaint No. by the Supplier which will be noted by Consignee. All further contact with the Supplier on such complaint will be initiated through that Complaint No. Once rectification is done; that number will be cancelled by both parties. A register is to be maintained by the Supplier where complaints are to be noted along with Complaint No.
7. The maintenance shall normally be done at the earliest.



8. The Service Engineer of the Supplier will be allowed to handle the respective plant & machineries only in presence of the officer in charge at the Consignee site.
9. The Supplier should ensure that maintenance job is not hampered/delayed due to paucity of spares/inadequate manpower etc.
10. The Supplier should submit the services call report, to the Consignee for each and every service call without fail.
11. The Supplier evaluation data format for the WMC of Consignee systems may be filled up for necessary action.
12. All formats after filled up should be signed at the end of each page by the Supplier.
13. After completion of the work/repair/maintenance, the Purchaser shall issue a certificate of completion to the supplier to that effect.

Signature

Signature

For the Purchaser

For the Supplier

Name:

Name:

Designation:

Designation:

Address:

Address:

Telephone No:

Telephone No:

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ANNEXURE-III

MANUFACTURES' AUTHORISATION FORM

No. _____ / Date _____ /

To
The Registrar,
VSSUT Odisha
Burla, Sambalpur.

Dear Sir, Bid No. _____

We _____ who are established and reputable manufacturers of _____ having factories at _____ (Address of Factory) thereby authorize M/s. _____ (Name and address of Agent) to submit a bid and sign the contract with you against the above bid.

* No company or firm or individual other than M/s. _____ are authorized to bid and conclude the contract in regard to this business against this specific invitation for bid.

We hereby extend our full guaranty and warranty as per general conditions of contract for the goods and services offered by the above firm against this bid.

Yours faithfully,
(Signature for and on behalf of Manufacturers)

Note: This letter of authority should be on the letterhead of the manufacturer and should be signed by a person, competent and having the power of attorney to bind the manufacturer. It should be included original by the Bidders in its bid.

• This para should be deleted for simple items where manufacturers sell the product through different stockiest.



ANNEXURE-IV

DETAILS OF THE BIDDERS

Bid Reference No.

Name and address of the Bidder:

01 Name of the bidder

- a) Full postal address
- b) Full address of the premises
- c) Telegraphic address
- d) Telephone number
- e) Fax number
- f) E mail:
- g) PAN No
- h) TIN No
- i) GSTN

02 Total annual turn-over (value in Rupees)

03 Quality control arrangement details

04 Test certificate held

- a) Type test
- b) BIS/ISO certification
- c) Any other

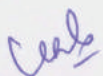
05 Details of staff

- a) Technical
- b) Skilled
- c) Unskilled

06 Branch Office/ Contact Person/ Liaisoning Office in Odisha.

- a) Address
- b) Telephone No.
- c) e-mail,
- d) Fax


Signature and seal of the Bidder



ANNEXURE-V**Technical details of the Machineries & Equipments to be supplied by the bidder**

Bid SI No. of the item	Tender specification	Bidders Specification with make and model no (Enclose manufactures catalogue / brochure for each item)	Deviation if any With university specification

Signature and seal of the Bidder



SECTION-IV: SCHEDULE OF REQUIREMENTS AND TECHNICAL SPECIFICATIONS

Sl no	Name & Specification of articles/equipment	quantity
COMMUNICATION LAB		
1	<p>LabVIEW Software</p> <p>This Software is executable for data acquisition & Generation compatible with different computer based DAQ system and signal conditioning cards with graphical program execution.</p> <p>Including features and toolkits for – Digital Signal Processing, Control System, PID & Fuzzy Logic, Communication, Embedded, Mathematics, Real-time execution, Soft Motion, Vision Development & analysis, Bio-medical, Hardware Integration & Drivers, Sensor & Transducer data analysis and actuator control features are included.</p> <p>License Type Perpetual</p>	10Nos
2	<p>NI myDAQ</p> <p>USB Powered Multipurpose Multimode Data acquisition (DAQ) System with inbuilt DMM feature, Specification –</p> <p>Analog Input</p> <p>2 Differential input and 1 Stereo audio input with 16 bit resolution and 200 kS/s sampling rate and 10 ns timing resolution. AI range:±10 V, ±2 V, DC-coupled and Audio Input :±2 V, AC-coupled ;</p> <p>Analog Output</p> <p>2 Ground ref Analog Output and 1 Stereo audio output, 16 bit resolution with 200 kS/s sampling rate and Analog range :±10 V, ±2 V, DC-coupled and Audio range ±2 V, AC-coupled with maximum current output (AO) 2mA;</p> <p>Digital I/O</p> <p>08 Bidirectional programmable Digital I/O , 75 kΩ pull down resistor and 5 V compatible LVTTTL input; 3.3 V LVTTTL</p>	02Nos
3	<p>Sensor and Transducer Pack</p> <p>A. Vision System with Image sensor and Frame Grabber:</p> <p>PCI express computer connectivity frame grabber with Vision camera USB3 Based with CMOS, global shutter IMX273 Sensor 1/2.9" based camera with Resolution (H×V pixels) – 1440X1080; C-Mount Lens with focal length of 4.0 mm, Working Distance 0.5 mm, aperture range - f/1.8 to f/22</p> <p>B. Bio-Sensor Measurement Package</p>	01No

- Gas Pressure Sensor Input Range 20 - 250 kPa Output 0.2V to 4.8V
- Blood Pressure Sensor Output 0V to 0.7341V, Input 0 - 300 mmHg
- Hand Dynamometer Diameter: 2", Length: 4.25"
- Pulse Sensor Output: 200mV
- Temperature Sensor 0 - 50oC, scaling oC = 9.875*Volt + 31.98
- Spirometer (with flow head) Input -2 kPa to 2 kPa, Output 0.5V- 4.5V
- Heart Sounds Sensor a differential air pressure sensor
- Respiration Belt is a transducer used to measure the relative depth and frequency of breathing in a human
- Event Marker produces a voltage change on its dedicated channel as long as the button is pressed. It can be used to measure reaction time in psychophysiological and human nervous system experiments.
- Polar Heart Rate Monitor the voltage changes that take place during an electrocardiogram are picked up by two electrodes on the inside of a band around the subject's chest.
- Goniometer Input 45o to 180o, Output -2V to 3.5V

C. Sensor & Actuator package

- ❖ Geared motor 19:1 (includes encoder for rotation and speed, 12 V)
- ❖ Ultrasonic range finder (accurate readings of 0 in. to 255 in. or 6.45 m)
- ❖ Digital Compass
- ❖ Servo motor: standard (215 degrees rotation)
- ❖ Servo motor: continuous rotation
- ❖ Accelerometer (3 axis, digital - SPI and I2C)
- ❖ Motor Adapter (compatible with gear motor and servos)
- ❖ Gyroscope (3 axis, digital - SPI and I2C)
- ❖ Infrared proximity sensor (10 cm to 80 cm)
- ❖ Ambient light sensor (SPI)

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