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INSTITUTE FOR PLASMA RESEARCH

An Aided institute of department of Atomic Energy, Govt. of India)
Near Indira Bridge, Bhat. DIST.GANDHINAGAR - 382 428 (INDIA)
PHONE :(079-2396 2000),FAX :91-079-23962277
Web : www.ipr.res.in

MINOR FABRICATION WORKS ENQUIRY

Office Copy

ENQUIRY NO :IPR/MFW/20-21/71

Date : 24-09-2020

Due Date : 20-10-2020 13:00 IST

Please send your offer in sealed envelope specifying Inquiry No, Date & Due Date, ALONG WITH your credentials for the following items:

Important Note:

Please note that e-mail quotations are not acceptable however you may send your queries (if any) to **jghosh@ipr.res.in**

Please Ensure that your sealed quotation reaches this office not later than above mentioned due date and time.

Kindly go through the following document properly before Quoting which are available on the IPR web portal i.e., <http://www.ipr.res.in/documents/tenders.html/> attached here with.

1. Technical specification as enclosed.
2. Instruction to the bidders & terms and Condition (refer Form NO:**IPR-MFW-01-V1**)
3. Bidding format(refer Biddingformat MFW-Bid.pdf)

GST fro Goods and Services (IGST/CGST/SGST TAX BENEFITS): PLEASE REFER clause no:8 of Form No:**IPR-MFW-01-V1**

QUOTATION SHOULD BE ADDRESSED TO **JOYDEEP GHOSH** ONLY.

| Sr.No. | Description | Quantity | Rate |
|--------|--|----------|------|
| 1 | Specification for PLC based EPI control system | 1 | No. |

Free Issue Material

| Sr.No. | Description | Quantity | Unit | Value |
|--------|----------------|----------|------|-------|
| 1 | Not Applicable | 0.00 | No. | 0.00 |

Note : Please quote with complete technical details (Technical Compliance sheet and product data sheet)

Encl:As per attachment

Sd/-
JOYDEEP GHOSH
Associate Professor-F

Specification for PLC based EPI control system

| IPR Requirements | | | |
|-------------------------|---|---|---|
| Sr. No. | ITEM | Specification | Quantity |
| | Make of PLC | Reputed | |
| 1 | CPU with Memory | Integrated with Ethernet communication TCP/IP and MODBUS TCP IP | 1 |
| | | Program Capacity: 150 kb steps or more | |
| | | Instruction Execution Time: 0.06 Micro Second or better | |
| | | ROM Memory card 2 MB or better | |
| 2 | Power Supply | 24 VDC 5 Ampere | 1 |
| 3 | Digital Input | 24 VDC | 1 (As Required for 04 No. of channels) |
| | | No. of channels Isolated inputs 04 | |
| 4 | Digital Output | 24 VDC No. of channels 16 | 1 (As Required for 16 No. of channels) |
| 5 | Analog Input | Analog channels Input -0-10 V dc | 1 (As Required for 08 No. of channels) |
| 6 | Panel Specification | Standard Electronics panel Suitable Panel Dimensions sufficient to Must include all components under the procurements with industrial standard space. | ENCLOSURE :1 Must include all components under the procurements with industrial standard space. |
| | 6.1 | Color | Light Grey (RAL 7035) |
| | 6.2 | LED light 6 watt or more | 1 |
| | 6.3 | Fan with dust covers & protection | 4 |
| | 6.4 | Emergency stop switch | 1 |
| | 6.5 | Audible hooter 24 VDC | 1 |
| | 6.6 | terminal blocks for each input output of PLC | As per Inputs outputs |
| | 6.7 | AC plug sockets with ON/OFF MCB 6A individually | 2 |
| | 6.8 | Panel switch ON /OFF | 1 |
| | 6.9 | Pair of terminal Blocks junction of 24 VDC & 0 VDC | 05 |
| | 6.10 | Pair of terminal Blocks junction of 230 VAC Phase & Neutral | 05 |
| | 6.11 | Metal plate Panel Label must $\frac{3}{4}$ of panel width | 02 |
| | 6.12 | Panel must be movable with minimum four wheels (wheel size must be greater than or equal to 03 inch) with brakes. Panel must be stable with wheels rotation. | 04 |
| | 6.13 | Plastic or Metal Folder box for holding panel drawings | 01 |
| | 6.14 | Panel bottom plate must have cable entry holes with PVC glands for 12 mm cable | 20 |
| 6.15 | Minimum 15 cm x 2 cm x 0.5 (LBT)copper Earthing strip on side of panel for Earthing | 01 | |

| | | | |
|----|---|---|---------------------------------------|
| | 6.16 | Standard PLC Electrical wiring for all inputs & output wired up to terminals with tagging Printed Ferule at end of each wires Terminal blocks for each input output of PLC labeling of each terminal block | As per Inputs outputs |
| | 6.18 | 500 VA Isolation transformer for PLC, Reputed make. | 01 |
| | 6.19 | Relay board for Digital Output 16 channels | 2 (As Required for 16 No of channels) |
| 7 | Analog Isolators | 08 channels analog isolators Input -0-10 V dc Output – 0-10 V dc MASIBUS make Field Interface board MAS-AI-08-D or equivalent reputed make Isolator for analog output channels 08 channels –Reputed make | As Required for 8 No of channels |
| 8 | AC Voltage Transducer | 0 to 230 VAC to 0 to 10 VDC Transducer –Reputed make | 4 |
| 9 | Programming Software | Perpetual Full License for 1 PC for Windows OS -10 onwards | 1 |
| 10 | MCB | MCB 1 Phase Two Pole 30 A | 2 |
| 11 | Fuse | Fuse 20 A | 4 |
| 12 | Step-Up Transformer | Step-Up Transformer "High Voltage Transformer 8 kV, 0.5 Amper 10 kV isolation Input: 230 V AC Single Phase 18 Ampere" | 2 set |
| 13 | Current Limiting Resistance | Current Limiting Resistance 100 k Ohm @ 1000 Watt for 0.08 A Capacitor charging Current | 2 set |
| 14 | Voltage Divider | Voltage Divider 10 M Ohm & 10010 Ohm @ 50 Watt | 2 set |
| 15 | Full wave bridge rectifier circuit mounting space provision | Full wave bridge rectifier circuit mounting space provision 60 cm X 80 cm | Space Provision |
| 16 | Programming Code | FAT- Testing Program Code should be provided in LADDER Language with delivery. • Code must be in CD or USB Pen Drive | 1 |

Note:

- Panel pre-dispatch inspection will be carried out by IPR staff for acceptance before delivery.
- FAT- Testing Programming Code should be provided with delivery

PLC based EPI control system

01. INTRODUCTION:

Contractor has to Supply items as per the specifications with panel assembly, panel wiring of the PLC, panel components and all items under the supply.

02. SCOPE OF WORK for the Contractor:

The major scope of works includes the following but not limited to:

1. Supply all items as per the specifications.
2. Electrical drawing of the panel in consultation with IPR Engineers.
3. Assembly & Mounting of the items as per the specifications.
4. Electrical wiring of the all the items as per the approved Electrical drawing.
5. Supply of high voltage transformer as the specifications.
6. Electronic schematic of the bridge rectifier, its lay out, procurement of the circuit components, manufacturing PCB, assembly & soldering of components on the PCB, its testing. PCB mounting inside the Metallic enclosure with provision of input & output connectors for external connections of sufficient current, voltage and isolation ratings.
7. Get approval of PLC control panel electrical & mechanical drawing by IPR engineers.
8. Get approval of bridge rectifier schematic, layout by IPR engineers.
9. Supply, Engineering and Manufacturing of system consisting of items mentioned in BOM.
10. Submission of Drawings for PLC operating panel before manufacturing.
11. Supply of PLC with Software License is considered in the contractor's Scope.
12. Arranging inspection of customized manufactured material and FAT of given Material.
13. Packing, Forwarding, Transport to IPR, Bhat in the contractor's Scope.
14. Cable termination in the contractor's supplied panel.

03. PERIOD OF WORK COMPLETION:

1. Timely completion of the contract is very much essential. The period of completion for the work contract is within 40 days from the date of order (Early completion is preferred).

04. ACCEPTANCE CRITERIA

1. The work executed by the contractor will be approved & tested at different stages for its qualifications viz. Factory Acceptance Test, Site Acceptance Test at IPR, Bhat.
2. **Control Panel Drawing Approval:** Contractor must get Control Panel Drawing approval of IPR Engineer.
3. **Schematic & PCB layout Approval:** Contractor must get Control Panel Drawing approval of IPR Engineer.
4. **Factory Acceptance Test:** Visual inspection, Factory Acceptance test of all items for functionality, any defects, flaws etc. will be done by the IPR personnel in the presence of contractor at contractor's site to qualify delivery at IPR. Before supply, Inspection of all items at vendor site will be carried out by IPR to verify the final panel, Step-up transformer & bridge rectifier as per the specifications.
Site Acceptance Test:
5. **Site Acceptance Test:** Visual inspection, Site Acceptance test of all items for functionality, any defects, flaws etc. will be done by the IPR personnel IPR after delivery of the material.
6. Contractor should submit Standard test reports/Certificates of items against the Compliance of

Standard & quality as mentioned in the technical specifications.

05. Delivery:

All the items as per the specifications must be delivered at IPR, Bhat after Factory Acceptance Test by IPR.

06. Warranty Period:

12 months: Warranty will be in effect from the date of acceptance of work given by IPR.

07. STANDARD OF WORKMANSHIP AND MATERIAL USED FOR WORK

The contractor shall be required to execute the work in accordance with the standard of specifications for the workmanship and materials as per relevant Indian Standards and no deviation thereof shall be permitted without written permission from the Engineer in charge. The entire work shall be free from poor and faulty workmanship and the contractor shall be liable to rectify all faults and defects if occurred and noticed within one year (Defect liability period) from the date of completion of the work.

08. DEFECTS LIABILITY PERIOD

The contractor will be required to rectify any defects caused during the period of **1 year**. The period of 1 year shall be reckoned from the date of final completion & acceptance of work as per Warranty clause. He will not be paid any extra amount whatsoever required for rectifying those defects. If the contractor does not agree for rectifying those defects the Institute shall rectify the same and the amount incurred on rectifying the defect will be deducted from his Security Deposit.

09. The Tenderer should sign all pages of the tender in token of acceptance of the terms and condition and return the same to us.

10. It is advised that the contractor should fully understand specifications, requirements, scope of supply work in consultation with engineer-in-charge.

11. The Director, Institute for Plasma Research reserves the right to accept or reject the Contract in full or in part without assigning any reasons thereof.



Form No: IPR-MFW-01.V1

INSTRUCTIONS TO BIDDERS AND TERMS AND CONDITIONS

1. The Quotation and any order resulting from this enquiry shall be governed by our Conditions of Work Order and Contractor quoting this enquiry shall be deemed to have read and understood the same completely.
 2. Where counter terms and conditions have been offered by the Tenderer, the same shall not be deemed to have been accepted by IPR unless our specific written acceptance thereof is obtained.
 3. **Quotation:** Quotation should be submitted in the prescribed QUOTATION FORMAT attached with this Enquiry and the same should be submitted in a sealed envelope super-scribing the same with our enquiry No., date, due date and brief description of item on or before the due date. Late/delayed/incomplete/unsigned quotations will not be considered. Envelopes received without Enquiry number, date, due date and brief description of item may be rejected. The quoted prices should be firm for a period of 90 days from due date for placing order. IPR is not bound to accept lowest rate/s. IPR reserves the right to place on one or more parties. The scope of supply includes insurance by the Contractor.
 4. **Specifications:** Goods should be offered strictly conforming to our specifications/drawings. Deviation, if any, should be clearly indicated by the contractor in their quotation. The Tenderer should also indicate the Make/Type number of the goods offered and catalogues, technical literature and samples, wherever necessary should accompany the quotation. Clarification/s on drawings should be obtained before submitting quotation.
 5. **Terms of Prices:** Quotation should be submitted on door delivery basis without extra charge wherever possible. For quotations on Ex-Works, Ex-godown basis the approximate packing and forwarding charges should be indicated by the contractor. In the case of local contractors, the goods are to be delivered at our stores free of charge.
 - 5.1 In respect of tenders on Ex-works basis, in case the tenderer has not mentioned in the offer packing, forwarding and transportation charges for safe delivery up to Purchaser's site, 2% of the price quoted towards packing (in respect of both local and outstation firms), 1% of the basic price quoted towards safe delivery charges in respect of local tenderer and 3% of the basic price quoted towards safe delivery charges in respect of outstation firm will be added for comparison of offers on safe door delivery at Purchaser's site.
 - 5.2 Prices are required to be quoted according to the units indicated in the tender form/Enquiry. When Quotations are given in terms of units other than those specified in the tender form, relationship between the two sets of units must be furnished
 6. Tender should be free from Correction and Erasures. Corrections, if any, must be attested. All amounts shall be indicated both in words as well as in figures. Where there is difference between amounts quoted in words and figures, amount quoted in words shall prevail. Unsigned quotations will summarily be rejected. If there is a discrepancy between the unit price and total price, unit price shall prevail.
 7. IPR shall be under no obligation to accept the lowest or any tender and reserves the right of acceptance of the whole or any part of the tender or portion of the quantity offered and the tenderers shall supply the same at the rate quoted.
 8. **Goods & Services Tax (GST):** The details of Taxes/GST and other levies legally applicable and intended to be claimed should be clearly indicated in the tender. Where this is not done, no claim on these accounts would be admissible later.
 - a) **GST for Goods (IGST/CGST/SGST TAX BENEFITS):**

IPR is entitled to avail tax benefit as per the following notifications issued by Ministry of Finance, Department of Revenue, Government of India:
(1) No: 47/2017-INTEGRATED TAX (RATE) DATED 14/11/17 for IGST
(2) No: 45/2017-CENTRAL TAX (RATE) DATED 14/11/17 for CGST
And,
IPR is entitled to avail tax benefit as per the following notifications issued by Finance Department, Government of Gujarat:
(1) No. 45/2017-STATE TAX (RATE) DATED 15/11/17 for SGST
As per above notifications IPR will bear only 5% IGST for procurement of goods from outside Gujarat & 2.5% CGST and 2.5% SGST (total 5%) for procurement of goods within Gujarat. Vendors are required to charge tax as per these notifications while quoting/supplying the goods. Deviations, (if any) should be clearly mentioned in the quotation/offer.
- Please specify the HSN codes while quoting.**
- b) **GST for Services:**

As applicable. **Specify the SAC codes wherever services are involved.**
9. **Delivery Date:** Delivery period is essence of the Contract. Contractor must indicate the firm delivery date by which the goods will be dispatched or delivered by them from the date of our order. Delivery period shall be clearly indicated against each item separately.
10. **Price/ Purchase Preference:** Purchase/Price preference to industries will be given as per the policy of the Government of India in force at the time of evaluation provided their offer is in compliance with the conditions of the policy.



11. **Liquidated Damages:** The successful Vendor/Bidder should pay liquidated damages @ ½% (half percent) of the total work order value for the delay of each week in the scheduled date of completion of the work envisaged in the Work Order subject to a maximum of 5% (Five percent) of the total Work Order value.
12. **Inspection:** Goods on its arrival at IPR will be inspected by Stores, and his decision in the matter will be final. However, where the items are required to be inspected at the Contractors Premises, Contractor has to give advance notice regarding readiness of the Goods to enable us to depute our representative for inspection.
13. **Payment:** Payment will be arranged for accepted goods only within 30 days from the date of receipt of goods at IPR and bills in our accounts section, completed in all respects.
14. No correspondence will be entertained within 30 days from the date of receipt of good and bills, whichever is later.
15. **Guarantee:** The Stores offered should be guaranteed for a minimum period of twelve months, from that date of acceptance, against defective Goods, design, workmanship, operation or manufacture. For defects noticed and communicated during the Guarantee period, replacement/rectification should be arranged free of cost within a reasonable period of such notifications. In case where our specifications call for a guarantee period more than 12 months specifically, then such a period shall apply.
16. **Performance Bank Guarantee:** If demanded by IPR, the successful bidder will have to furnish Performance Bank Guarantee for 10% of the order value (basic price) from a Nationalized/Scheduled Bank/State Bank of India, valid throughout the Guarantee/Warranty period. The scheduled banks approved by IPR are Axis Bank, HDFC Bank, ICICI Bank and IDBI Bank. Bank Guarantees submitted other than from banks approved by IPR will not be accepted.
17. **Security Deposit:** If demanded the successful Bidder will have to furnish to the Purchaser an interest free security deposit for 10% (Ten percent) of the order value in the form of Bank Guarantee of an equivalent amount from a nationalized/ scheduled Bank/State Bank of India within 15 days from the date of work order and the said Guarantee should be valid till the goods are accepted by IPR. The scheduled banks approved by IPR are Axis Bank, HDFC Bank, ICICI Bank and IDBI Bank. Bank Guarantees submitted other than from banks approved by IPR will not be accepted. The Security deposit shall be forfeited in case the selected Bidder does not start the work within the time limit specified or fail to complete the work within the stipulated delivery period or fail to comply with any of the terms and conditions in the work order. On successful completion of scope of work and its acceptance by IPR, Contractor should send a letter requesting return of the original BG.
18. The Contractor shall at all times indemnify the purchase against all claims which may be made in respect of the stores for infringement of any right protected by Patent Registration of design or Trade Mark and shall take all risk of accidents or damage, which may cause failure of supply from whatever cause arising and the entire responsibility for sufficiency of all means used by him for the fulfilment of the contract.
19. **Free Issue Material (FIM):** Successful tenderer will have to arrange insurance showing beneficiary as "Institute for Plasma Research" at their risk and cost towards adequate security for the materials/property provided/issued by the Purchaser as Free Issue Material for the due execution of the contract.
20. The Director, IPR reserves the right to accept or reject any quotations fully or partly or to cancel the enquiry without assigning any reason.
21. **Jurisdiction:** The contract shall be governed by the Laws of India for the time being in force. The Courts of Gandhinagar only shall have jurisdiction to deal with and decide any legal or dispute arising out of this Contract.

Specification for PLC based EPI control system

| IPR Requirements | | | | Vendor Specifications Make/model is compulsory wherever applicable | Quantity |
|------------------|---------------------|--|---|---|----------|
| Sr. No. | ITEM | Specification | Quantity | | |
| | Make of PLC | Reputed | | | |
| 1 | CPU with Memory | Integrated with Ethernet communication TCP/IP and MODBUS TCP IP | 1 | | |
| | | Program Capacity: 150 kb steps or more | | | |
| | | Instruction Execution Time: 0.06 Micro Second or better | | | |
| | | ROM Memory card 2 MB or better | | | |
| 2 | Power Supply | 24 VDC 5 Ampere | 1 | | |
| 3 | Digital Input | 24 VDC | 1 (As Required for 04 No of channels) | | |
| | | No. of channels Isolated inputs 04 | | | |
| 4 | Digital Output | 24 VDC No. of channels 16 | 1 (As Required for 16 No. of channels) | | |
| 5 | Analog Input | Analog channels Input -0-10 V dc | 1 (As Required for 08 No. of channels) | | |
| 6 | Panel Specification | Standard Electronics panel Suitable Panel Dimensions sufficient to Must include all components under the procurements with industrial standard space. | ENCLOSURE :1 Must include all components under the procurements with industrial standard space. | | |
| | 6.1 | Color | Light Grey (RAL 7035) | | |
| | 6.2 | LED light 6 watt or more | 1 | | |
| | 6.3 | Fan with dust covers & protection | 4 | | |
| | 6.4 | Emergency stop switch | 1 | | |
| | 6.5 | Audible hooter 24 VDC | 1 | | |
| | 6.6 | terminal blocks for each input output of PLC | As per Inputs outputs | | |
| | 6.7 | AC plug sockets with ON/OFF MCB 6A individually | 2 | | |
| | 6.8 | Panel switch ON /OFF | 1 | | |

| | | | | | |
|----|-----------------------|---|---------------------------------------|--|--|
| | 6.9 | Pair of terminal Blocks junction of 24 VDC & 0 VDC | 05 | | |
| | 6.10 | Pair of terminal Blocks junction of 230 VAC Phase & Neutral | 05 | | |
| | 6.11 | Metal plate Panel Label must $\frac{3}{4}$ of panel width | 02 | | |
| | 6.12 | Panel must be movable with minimum four wheels (wheel size must be greater than or equal to 03 inch) with brakes. Panel must be stable with wheels rotation. | 04 | | |
| | 6.13 | Plastic or Metal Folder box for holding panel drawings | 01 | | |
| | 6.14 | Panel bottom plate must have cable entry holes with PVC glands for 12 mm cable | 20 | | |
| | 6.15 | Minimum 15 cm x 2 cm x 0.5 (LBT)copper Earthing strip on side of panel for Earthing | 01 | | |
| | 6.16 | Standard PLC Electrical wiring for all inputs & output wired up to terminals with tagging Printed Ferule at end of each wires Terminal blocks for each input output of PLC labeling of each terminal block | As per Inputs outputs | | |
| | 6.18 | 500 VA Isolation transformer for PLC, Reputed make. | 01 | | |
| | 6.19 | Relay board for Digital Output 16 channels | 2 (As Required for 16 No of channels) | | |
| 7 | Analog Isolators | 08 channels analog isolators Input -0-10 V dc Output – 0-10 V dc MASIBUS make Field Interface board MAS-AI-08-D or equivalent reputed make Isolator for analog output channels 08 channels –Reputed make | As Required for 8 No of channels | | |
| 8 | AC Voltage Transducer | 0 to 230 VAC to 0 to 10 VDC Transducer –Reputed make | 4 | | |
| 9 | Programming Software | Perpetual Full License for 1 PC for Windows OS -10 onwards | 1 | | |
| 10 | MCB | MCB 1 Phase Two Pole 30 A | 2 | | |

| | | | | | |
|---|---|---|-----------------|--|--|
| 11 | Fuse | Fuse 20 A | 4 | | |
| 12 | Step-Up Transformer | Step-Up Transformer "High Voltage Transformer 8 kV, 0.5 Amper 10 kV isolation Input: 230 V AC Signle Phase 18 Ampere" | 2 set | | |
| 13 | Current Limiting Resistance | Current Limiting Resistance 100 k Ohm @ 1000 Watt for 0.08 A Capacitor charging Current | 2 set | | |
| 14 | Voltage Divider | Voltage Divider 10 M Ohm & 10010 Ohm @ 50 Watt | 2 set | | |
| 15 | Full wave bridge rectifier circuit mounting space provision | Full wave bridge rectifier circuit mounting space provision 60 cm X 80 cm | Space Provision | | |
| 16 | Programming Code | FAT- Testing Program Code should be provided in LADDER Language with delivery. <ul style="list-style-type: none"> Code must be in CD or USB Pen Drive | 1 | | |
| Panel pre-dispatch inspection will be carried out by IPR staff for acceptance before delivery. | | | | | |
| FAT- Testing Programming Code should be provided with delivery | | | | | |

(This need to be printed in Bidders letter head)

1. Please quote with complete technical details along with technical compliance sheet.
2. Quotation should be submitted in the format given below, else IPR shall not consider the offer by the vendor.

NAME OF PARTY : _____

ENQUIRY NO: _____

QUOTATION No. & DATE : _____

Currency of Quotation: **Indian Rupees**

| Sr. No. | Item Description | HSN/SAC Code | Quantity | Unit Rate (Basic) | Packaging & forwarding (P&F) | Applicable GST | Rate (incl P&F and GST) | Total Value |
|---------|------------------|--------------|----------|-------------------|------------------------------|----------------|-------------------------|-------------|
| | | | a | b | c | d | e = b + c + d | f = a * e |
| 1 | | | | | | | | |
| 2 | | | | | | | | |
| 3 | | | | | | | | |
| 4 | | | | | | | | |
| 5 | | | | | | | | |
| 6 | | | | | | | | |

| Sr. No. | Particular | Remarks |
|---------|--------------------------------|---------|
| I. | Ex-works / FOR Destination | |
| II. | Freight | |
| III. | Insurance | |
| IV. | Delivery Period | |
| V. | Payment (IPR terms will apply) | |
| VI. | Guarantee / Warrantee | |
| VII. | Validity Period | |
| VIII. | Discount (if any) | |
| IX. | Remarks | |

Place: Authority Signatory

Date: Company Seal

Note:

1. Bidder should submit the copy of GSTIN / ARN Certificate along with the offer
2. Bidder should specify the SUPPLY and SERVICE rates/ charges separately wherever applicable