

Karnatak University, Dharwad **Department of Studies in Physics**



"NAAC Accredited with "A" Grade 2022" Dr. Rajashekhar F. Bhajantri Professor, Chairman &

Principal Investigator

ಕರ್ನಾಟಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಧಾರವಾಡ ಭೌತಶಾಸ್ತ್ರ ಅಧ್ಯಯನ ವಿಭಾಗ **DST-SERB Major Research Project**

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Ref. No.: KAU/2023-24/IND0003

Date: 10-10-2023

Addendum/Corrigendum to e-Tender Notification for Supply and

Installation of Electrochemical Workstation with Electrodes, Sample Holders,

UPS and Accessories

(Through e-Procurement System Only)

Reference to the Karnatak University e-Tender Notification No.: KAU/2023-24/IND0003, dated: 06-10-2023 for supply, installation, testing, commissioning and maintenance of electrochemical workstation with impedance spectroscopy, electrodes, sample holders and accessories and 5 kVA UPS with tubular batteries for 5 hours backup, some technical specifications have been modified. The revised/modified technical specifications are as follows.

Sl. No.	Name of the Items	Qty.	EMD Amount in Rs.
1	Multichannel Electrochemical Workstation with Impedance	1	45,000/-
	Spectroscopy, Electrodes, Sample Holders and Accessories.		
2	Compatible and Branded 5 KVA Online UPS with 12 Hours	1	
	Battery Backup with Inbuilt Isolation Transformer, and		
	Branded Tubular Batteries and Accessories.		

Interested and reputed manufacturers or their authorized agents/dealers/distributors/channel partners are requested to send their offer online in two bid systems (Technical & Financial) through e-procurement portal. The tenders should be addressed to Prof. Rajashekhar F. Bhajantri, Principal Investigator, SERB Research Project, Department of Physics, Karnatak University, Dharwad-580003. Tender processing fees as per e-portal and EMD amount is to be remitted through e-procurement mode. For more details visit websites: https://kppp.karnataka.gov.in and https://www.kud.ac.in. Bidders must mention the make & model number with detailed specifications of the equipments offered by them. Otherwise their tender will not be accepted.

Non-compliance with specifications and instructions in this document may disqualify the bidders from the tender exercise.

The Registrar, Karnatak University, Dharwad reserves the right to accept or 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. Incomplete tenders, amendments and additions to tender after opening or late tenders are liable to be ignored and rejected. The University reserves the right to cancel or reduce the quantity included in the schedule of requirements at any time after acceptance of the tender with a notice.

The performance security of 5% of the contract value in terms of bank guarantee by scheduled banks shall be given by the successful bidder for the total period of warranty. In the case of import, Indian agent has to submit a performance guarantee in INR. The security deposit shall be returned to the supplier after its expiration. Failure of the successful bidder to comply with the requirements shall constitute sufficient grounds for the annulment of the award and forfeiture of the security deposit, in which event the purchaser may make the award to the next lowest evaluated bid submitted by a qualified bidder or call for new bids.

Revised Technical Specifications:

Areas of Application: The multichannel electrochemical workstation should be capable of testing analytical electrochemistry, battery and supercapacitor analysis, sensors, fuel cells, biotechnology, chemical and mechanical polishing, organic and inorganic coatings, corrosion prevention and control with ASTM protocols, dielectric materials, electrodeposition, electrocatalysis, polymeric materials analysis and testing, nanotechnology, semiconductors, sensor development, electrochemical impedance spectroscopy, environmental trace metal detection & speciation analysis, and photovoltaic.

General Techniques: The electrochemical workstation should be a computer controlled bipotentiostat/galvonastat multichannel electrochemical workstation with 2 channels or more for testing, characterizing and evaluating supercapacitors, corrosion, fuel cell and all battery components in single/multiple unit cells simultaneously and photovoltaic (solar cells) I-V characterization with high accuracy and precision.

Two electrodes as well as three electrodes tests should be provided with provision to connect independent reference electrodes for both channels independently and simultaneously and both

channels should work independent as well as simultaneously. Provision to connect 2 working electrodes and measure simultaneously in one cell setup with common reference and common counter electrode in a single experiment. On site calibration of the channels should be available.

Software Requirements: Electrochemical workstation should be provided with a comprehensive licensed software package for control of electrochemical workstation, measurement, analysis, fitting and simulation measurement for cyclic voltamerty, impedance, corrosion, battery, photovoltaic, fuel cell, super capacitor etc. The software should perform data acquisition, storage and analysis and should perform default measurements such as cyclic voltammetry, normal pulse, differential pulse, differential normal pulse, square wave voltammetry, linear sweep voltammetry, staircase voltammetry, chrono potentiometry, chrono amperometry, chrono coulometry, square wave voltammetry, differential pulse amperometry, differential pulse voltammetry, recurrent pulsing methods, fast chrono, chrono charge-discharge, galvanostatic charge-discharge, etc.

Electrochemical impedance spectroscopy (EIS) software should perform real-time fit and simulation analysis as well as live data plotting option for potentiostatic/galvanostatic impedance spectroscopy measurements. EIS measurements at channel with equivalent circuit modeling, internal resistance determination, and time scan measurements in potentiostatic and galvanostatic modes should be provided. The software should perform electrochemical noise tests, fuel cell characterization, battery, supercapacitor and photovoltaic testing. The software should provide Lissajous plot, Nyquist plot, Bode, Admittance and Dielectric & Mott-Schottky Element subtraction, Kramers-Kronig. The fit and simulation software should include basic options such as find circle, element subtraction and an equivalent circuit library with all the modern EIS equivalent circuit models. Minimum visible plots in real time should be 8 or more. EIS modeling with equivalent circuit fits and simultaneous impedance measurement at counter electrode and working electrode should be provided. Voltage versus capacity plot during charge/discharge cycles, galvanostatic charge/discharge with voltage versus time plots should be available. Dummy cells to be provided for internal validation and EIS quality indicator should be available. The software should be compatible in future for rotating disc electrode and free life time upgradation of software should be provided.

Hardware Specifications:

Cell Connections: 2, 3, 4, 5 electrodes (+ ground) or more and at least 1.5m Cell cable.

Interface: USB/Ethernet/LAN connection to access Multiple Computers for data communication.

Maximum Compliance Voltage: ± 20 V or better at ± 500 mA.

Maximum Applied Voltage: ±10V or better.

Measured Voltage Resolution: 3μV or better.

Maximum Output Current: ± 5 nA to ± 500 mA or better at ± 20 V Compliance Voltage.

Maximum Applied Current: \pm 500mA or better.

Current Accuracy: 0.1% or better and Current Resolution: 0.1% or better.

Impedance frequency range: $10 \mu Hz - 5 MHz$ or better with 99% impedance accuracy.

Amplitude: 10uV to 5V or better and Input Impedance: $1T\Omega$ or better

I-V measurements with maximum current and power, fill factor, efficiency, constant power, constant voltage, constant current etc. should be provided.

Provision to connect and control the external devices like furnace, thermal chambers etc.

Electrodes and Accessories Required:

- 1. Electrochemical cell of 50ml with Teflon cap, purge tube 1 No.
- 2. Platinum Working Electrode-1No.
- 3. Platinum wire counter Electrode-1No
- 4. Ag/AgCl Reference Electrode (aq and non-aq) -1No each.
- 5. Glassy Carbon working Electrode-1No.
- 6. Calomel Reference Electrode-1No.
- 7. Swagelok type 2 Electrode test cell-1No.
- 8. Swagelok type 3 Electrode test cell-1No.
- 9. Zinc Air Battery set up-1No.
- 10. Hard Carbon-50 gms.
- 11. Hydraulic Coin Cell Crimping Machine-1No.
- 12. Coin Cell Holder -1No.
- 13. Electrode Polishing Kit & Cell Stand 1No.
- 14. Glass Cells-4, Cell Top-1 and Solid Sample Holder-1
- 15. Separator cutter with 14mm and 16mm die-1No.
- 16. Aluminium foil 16-micron thickness 200mm width 5 meters roll-1No.
- 17. Copper foil 9-micron thickness 200mm width 5 meters roll-1 No.
- 18. Celgard make separator 25-micron thickness 50mm width 5 meters roll-1N0
- 19. Coin cell parts including upper case, lower case, O-ring, spacer-100 sets
- 20. Doctor Blade 100mm width adjustable-1No.

- 21. Two and Four Probe Conductivity measurement set with gold contact disc of 10mm diameter with temperature up to: 150 °C
- 22. Sample thickness measuring device: up to 5mm-1No.
- 23. Standard Cell: System should be supplied with one basic standard electrochemical dummy cell for calibration.
- 24. The equipment must operate at 230V/50 Hz single phase and /or equivalent three phase electrical power

Technical Specifications of UPS:

Compatible and Branded 5 kVA Online UPS with 5 Hours Battery Backup with Inbuilt Isolation Transformer, and Branded Tubular Batteries and Accessories.

Specifications of Desktop Computer:

A Desktop Computer with Licensed Windows 10 or Higher, Core i7 or above, 8 GB RAM and 1 TB HDD, all accessories including Licensed MS Office Software, graphics, audio-video facility, optical mouse, keyboard with multiple USB/Ethernet/interface ports for system control, data acquisition and analysis. The monitor should be LED display with 20 inch size or above.

Warranty: Comprehensive Warranty for 3 Years and 5 year AMC after Warranty should be provided. Separate quote for AMC for five years should be included.

Installation and Commissioning:

Installation and commissioning of the equipment has to be carried out by supplier at our Lab at Dept. of Physics, K.U. Dharwad and the performance has to be demonstrated.

Onsite training must be provided to Department of Physics, K. U. Dharwad personnel on the installed equipment for operation and data processing.

List of Previous Customers:

List of customers to whom similar units were supplied elsewhere shall be given along with the offer. End user details should include model No, year of supply, end user full contact details (Telephone/Email) to be furnished along with offer

Authorization Certificate:

Vendor shall be original manufacturer/authorized representative of the system. Vendor shall provide the authorization certificate from the principals for the offered system along with the cost quote.

Terms and Conditions:

- 1) The parties are requested to make separate bid (both Technical & Financial) for each quoted equipment along with the requisite amount of EMD.
- 2) The tender should quote the cost of the equipment and all the applicable taxes separately. Transportation/Shipping/Other any Incidental Charges should be borne by the bidder/tenderer (the shipment should be FOB/CIF/CIP at Department of Physics, Karnatak University, Dharwad).
- 3) All the equipments have to be delivered by the supplier/agent to the Department of Physics, Karnatak University, Dharwad within 30-45 days after placement of the purchase order and must be installed, commissioned free of charge immediately after receipt of the equipments. The supply will be subject to comprehensive on-site warranty (as mentioned in the specifications) from the date of installation.
- 4) Interested parties may upload the tender documents through e-procurement portal https://kppp.karnataka.gov.in only. Tender processing fees as per e-portal and EMD amount is to be remitted through e-procurement mode. The bidder must mention make and model number with detailed specification of the equipment offered by them. Otherwise their tender will not be accepted. The tender document should consist of two parts "Technical Bid" and "Financial Bid".

GENERAL TERMS & CONDITIONS:

- 1) Bidder's information such as name, address and contact numbers, PAN No. GST No., email address, bank details etc. should be provided.
- 2) Certified copy of the sales tax registration should be enclosed
- 3) Tender forms must be duly filled in and signed and sealed.
- 4) Certified copy of latest income tax clearance certificate should be enclosed
- 5) If the Tenderer is Trader, authorization from the Manufacturer of the Equipment/Instrument quoted should be enclosed.
- 6) EMD received after specified due date will not be accepted under any circumstance.
- 7) Incomplete specification offered by Tenderer will not be considered and liable to be rejected.
- 8) Compliance Certificate must be provided indicating conformity to technical specifications.
- 9) Tender offering other optional advanced feature facilities available in the quoted equipment over and above to our requirement can be considered at our end.

- 10) Name of the Institutions/Universities where the requisite equipments have been supplied by the firm should be given along with the full postal address and telephone numbers.
- 11) No Tender is considered if sent by Fax
- 12) The Registrar, Karnatak University, Dharwad reserves all the rights to accept or reject any lowest tenders in full or in parts or all Tenders without assigning any reasons. No interim queries will be entertained.
- 13) Late Tender shall not be considered under any circumstances.
- 14) The Tenderer should quote only one rate against the tender enquiry.
- 15) If the equipment is not supplied within specified date, next lowest quoted party will get the order and all the losses incurred will be collected from your EMD.
- 16) EMD amount will be refunded after completion of tender procedures without any interest if tender is rejected.
- 17) If the tender is accepted, the EMD will be refunded without any interest after completion of the delivery, installation and successful operation of the equipment for one year at the institute in good condition.
- 18) Delivery period mentioned in the Purchase Order should be strictly adhered to; otherwise the bidder will forfeit EMD.
- 19) If the supplier fails to Supply, Install and Commission the equipment as per specifications mentioned in the order within the due date, the supplier is liable to pay liquidated damages of 1% of order value per every week of delay subject to a maximum of 10% beyond the due date. Such money will be deducted from the EMD.
- 20) The bidder should be a licensed dealer of the product. Manufacturers' Authorization Form (MAF) should be furnished in the technical bid.
- 21) Karnatak University, Dharwad will not deal with any entity other than the authorized bidder, whatsoever the nature of its relationship with the bidder.
- 22) The bidders should not be under a declaration of ineligibility for corrupt and fraudulent practices issued by the Government of Karnataka.
- 23) The Technical Bid should be complete in all respects and contain all the information about the equipments. It should not contain any price information. However, it should confirm that all the required rates have been quoted in Financial Bid without showing the actual amounts in the Technical Bid. It is mandatory to submit all the details in the prescribed formats duly filled in, along with the offer.

- 24) K.U. Dharwad at its discretion may not evaluate the technical bid in case of non-submission or partial submission of technical details. The technical bid submitted by the bidder to K.U. Dhawrad through e-portal must be in an organized and structured manner.
- 25) The bidder should fill the complete details in the technical bid format and should be submitted in the company letter head with contact details.
- 26) Educational offer (if any) is to be provided.
- 27) Annual turnover, GST Registration Certificate, PAN Card, Authorization Letter of the bidder should be provided.
- 28) Incomplete specification/documents offered by the bidder will not be considered and tender is liable to be rejected. Quoted amount in tender should include all the applicable taxes, transport charges, installation charges, and warranty. The net rate quoted per unit in respect of indigenous goods shall be for FOB Destination, which should include all taxes, GST, insurance, freight charges etc.
- 29) The custom duty as applicable after considering eligible concessions based on DSIR exemption etc will only be paid by the purchaser. The University can provide the copy of the DSIR customs and excise duty exemption certificate upon request.
- 30) If any time before the delivery of the equipment, it is found that the same equipment have been offered to another party in India at a lower rate, payment shall be restricted to the extent of such lower rate and the Supplier shall be liable to pay the Purchaser the difference in two rates i.e. excess charged over such lower rate, if payment had been made by the purchaser. The University will look into a reasonable past period to ensure this.
- 31) The bidder shall not charge extra for additional items required to meet the operational requirement at the stage of installation and commissioning.
- 32) The supplier warrants that the equipment, including all subassemblies and components provided, shall be free from defects in the design, engineering/manufacturing, workmanship and performance that prevent the Equipment and/or any of its subassemblies and components from fulfilling the Equipment Requirements or that limit in a material fashion the operation, reliability, accuracy, sensitivity and precision of the Equipment, its subassemblies and components. Commercial warranty provisions of products supplied under the Contract shall apply to the extent that they do not conflict with the provisions of this Contract. Response time for attending to defects shall be 24-48 hours after they are reported to the supplier or its designated service agent.

- 33) The supplier shall inform to the University about the site preparation, if any, needed for the Installation of equipment, immediately after the receipt of the purchase order. The supplier must provide complete details regarding space and all the other infrastructural requirements needed for the equipment like ambient temperature, humidity, civil work, weather specifications, power specifications, etc., which the University shall arrange before the arrival of the equipment to ensure its timely Installation and smooth operation thereafter. The supplier shall visit the University and see the site where the equipment is to be installed and may offer his advice and render assistance to the University in the preparation of the site and other pre Installation requirements.
- 34) In case of any mishappening/damage to equipment and supplies during the carriage of supplies from the origin of equipment to the Installation site, the supplier has to replace it with new equipment/supplies immediately at his own risk. Supplier will settle his claim with the insurance company as per his convenience.
- 35) If any of the equipment supplied by the Tenderer is found to be defective, substandard, refurbished, unmerchantable or not in accordance with the description/specification or otherwise faulty, the University will have the right to reject the equipment or its part. The prices of such equipment shall be refunded by the Tenderer with 18 % interest if such payments for such equipment have already been made. All the damaged or unapproved goods shall be returned at suppliers cost and risk and the incidental expenses incurred thereon shall be recovered from the suppliers. Defective part in equipment, if found before Installation and/or during warranty period shall be replaced within 30 days on receipt of the intimation from the University at the cost and risk of supplier including all other charges.
- 36) In case of any dispute arising out of this contract, the decision of the Hon'ble Vice Chancellor, K.U. Dharwad is final.

TECHNICAL CRITERIA

- 1) Copy of PAN Card issued by I.T Department and GST Certificate should be provided.
- 2) Full address and telephone number of the office of the Assessing Authority under the GST/Sales Tax Act., should be provided.
- 3) GST Clearance Certificates of last three years i.e., 2020-21, 2021-22 and 2022-23.
- 4) Annual Turnover Certificate for the last three years i.e., 2020-21, 2021-22 and 2022-23.
- 5) Income Tax Returns for the last three years i.e., 2020-21, 2021-22 and 2022-23.

- 6) Number and date of the certificate/dealership authorization letter issued by original equipment manufacturers for having bidders as the authorized seller/distributor of equipment.
- 7) The Bidder must be a reputed supplier/manufacturer/authorized dealer/authorized distributor/ authorized stockiest/channel partner in the business of supply, installation and demonstration of Electrochemical Workstation for a period not less than 3 years. The certificate of incorporation or any other relevant certificate to this effect is required to be enclosed.
- 8) Name/s, contact number/s of authorized person/s of any two-government organization/s to which the bidder has supplied similar equipments.
- 9) Copies of performance certificate (along with purchase order) of supply, installation and demonstration of Electrochemical Workstation to any IITs/NITs/IISc/IISERs/Central Universities/laboratories of national importance.
- 10) A Certificate/Undertaking on the letter head of the Company to the effect that the bidder/Manufacturer had not been blacklisted or debarred anywhere in India or abroad by any organization.
- 11) List of documents submitted for technical bid.
- 12) The compliance sheet comparing the specifications as stated in the tender document and as offered by the bidder shall be submitted. Deviation if any along with explanation shall be clearly mentioned.
- 13) Any legal disputes arising out of any breach of contract pertaining to the whole process of this tender shall be settled in the court of competent jurisdiction of Dharwad, Karnataka.

TERMS & CONDITIONS

- 1) The parties are requested to make separate bid (technical & financial both) for each quoted equipment along with the requisite amount of EMD.
- 2) EMD amount (on equipment price) D.D. should be drawn in the name of Finance Officer K.U. Dharwad and should be enclosed with the tender form only.
- 3) Certified copy of the sales tax registration should be enclosed.
- 4) Tender form duly filled in and signed and sealed.
- 5) Certified copy of latest income tax clearance certificate should be enclosed
- 6) If the Tenderer is Trader, authorization from the Manufacturer of the Equipment/Instrument quoted should be enclosed
- 7) EMD received after specified due date should not be accepted under any circumstance

- 8) Incomplete specification offered by the Tenderer will not be considered and liable to be rejected.
- 9) Tender offering other optional advanced feature facilities available in the quoted equipment over and above to our requirement can be considered at our end.
- 10) Name of the Institution where the requisite equipment has been supplied may also be given along with full postal address and telephone numbers.
- 11) No Tender is considered if it is sent by Fax
- 12) The Registrar, Karnatak University, Dharwad reserves all the rights to accept or reject any lowest tenders in full or in parts or all Tender without assigning any reasons.
- 13) No interim queries will be entertained.
- 14) Late Tender shall not be considered under any circumstances.
- 15) All the equipments and accessories will have to be delivered, installed and commissioned by the supplier/agent in the Department of Physics, Karnataka University, Dharwad within 30 days from the receipt of the equipment and training for at least 4 users should be given free of charges.
- 16) Supply will be subject to unconditional comprehensive onsite warranty for the entire equipment for the period of three years from the date of satisfactory installation. Warranty shall include free maintenance of the whole equipment supplied including free replacement of parts.
- 17) The training for operating the equipment will also have to be given to the Research Scholars and University employee by the Tenderer without further charges.
- 18) The Tenderer should be quoted the cost of the equipment and all the applicable taxes separately. Institute is applicable to central government taxes against Form D. Transportation/shipping/other any incidental charges should be borne by the tenderer.
- 19) The Tenderer should quote only one rate against the tender enquiry. The Tenderer should quote for optional items separately if any.
- 20) If the equipment not supplied within specified date next lowest quoted party will get order and all the losses incurred will be collected from your EMD
- 21) EMD amount will be refunded after completion of tender procedures without any interest if tender is rejected.

- 22) If tender accepted, EMD will be refunded without any interest after completion of the delivery, installation and commissioning of the consignment at the institute in good condition.
- 23) Clearly mention the mode of payment, transportation, taxes, etc.
- 24) Interested parties may attend the Tender Opening Session.
- 25) The Technical bids will be opened in the presence of the bidders on the specified time and date. The commercial bids of only the short listed eligible bidders shall be considered for further processing.
- 26) Only technically accepted competitive bids will be considered for placing Purchase Order.
- 27) The deliveries, installation of the equipments at the Department of Physics, Karnatak University, Dharwad-580003 must be completed within 30-45 days after placement of purchase order.
- 28) For Indigenous supplies, 100% payment shall be made by the Purchaser against delivery, inspection, successful installation, commissioning and acceptance of the equipment at the Department of Physics, Karnatak University, Dharwad-580003. In case of imports, 100% payment will be made through Letter of Credit (LC). 80% will be paid after submission of original shipping documents & balance 20% will be released after satisfactory installation and commissioning along with submission of performance Bank Guarantee.
- 29) The equipments to be supplied will be insured by the vendor against all risks of loss or damage from the date of shipment till such time it is delivered at the Department of Physics, Karnataka University, Dharwad in case of Rupee/Foreign currency transaction.
- 30) For equipment ordered in foreign currency, opening of LC, Payment of Customs Duty and clearance of goods shall be done/assisted by the supplier or its authorized Indian agent. The custom duty as applicable after considering eligible concessions based on DSIR exemption etc will only be paid by the purchaser. The University can provide the copy of the DSIR customs and excise duty exemption certificate upon request.
- 31) Delivery period mentioned in the Purchase Order should be strictly adhered to; otherwise the bidder will forfeit EMD.
- 32) If the supplier fails to Supply, Install and Commission the equipment as per specifications mentioned in the order within the due date, the Supplier is liable to pay liquidated damages of 1% of order value per every week of delay subject to a maximum of 10% beyond the due date. Such money will be deducted from the EMD.

SERVICE, WARRANTY AND TRAINING

- 1) The system should be accompanied with Conformity Certificate.
- 2) Taxes and Duties: Tendered price should include all kinds of taxes and other charges viz delivery, installation, commissioning and training (at least 4 users) at customer's location. The vendor should ensure payment of all taxes, duties, levies and charges assessed by all municipal, state or national government authorities, in connection with the Goods and Services supplied under the Contract.
- 3) On-site installation, commissioning and training shall be conducted by a qualified factory-trained engineer and the vendor must ensure complete support for the equipments for at least a period of 5 years. This shall include the following at no extra cost: Travel and Labor expenses of Customer Engineer. Service Parts used for repairs. The warranty shall commence only upon successful completion of the Acceptance, Test or Commissioning.
- 4) Vendor to provide service guarantee: should the system require service during the warranty period, vendor must guarantee or replacement of instrument for free.
- 5) Vendor to have logistic support to ensure that over at least 95% of the service parts are readily available and upkeep delivery within 24 hours. Support should be available from Monday to Friday, 10.30am to 5.30pm (excluding Public Holidays), local time.
- 6) Vendor to provide a copy of site-preparation checklist and the vendor should provide both on-site and operator training for users on the system start-up, usage, maintenance, quality control, trouble shooting, etc. including comprehensive classroom training.
- 7) Vendor must demonstrate that it has a proven appropriate set-up and capability to provide after-sales service efficiently and effectively. The supplier should have in his facility a similar system to that proposed in this tender for training purpose.

Sd/-PRINCIPAL INVESTIGATOR Sd/-REGISTRAR