



भारत इलेक्ट्रॉनिक्स लिमिटेड
BHARAT ELECTRONICS LIMITED
केन्द्रीय अनुसंधान प्रयोगशाला
CENTRAL RESEARCH LABORATORY

Bharat Electronics Ltd, a Navaratna category Central Public Sector Enterprise and India's leading Professional Electronics Company, under Ministry of Defence, Government of India, requires experienced research professionals for the post of Member (Research Staff) E-III on Permanent basis for its Central Research Laboratory Unit located at Bangalore. The details are as follows:

Sl. No.	Post / Grade	Job Code	Educational Qualification	Minimum Post Qualification Industrial Experience as on 01.07.2021 (after M.E/M.Tech)	Upper Age Limit as on 01.07.2021	No. of posts	Pay Scale	Reser- vation
1	Member (Research Staff) E-III	J001	Full time M.E/M.Tech with specialization in Signal Processing / Communication & Signal Processing / Electronics Design & Technology along with preceding qualification of BE/B.Tech(Full Time) in the disciplines indicated against the job code in the advertisement	03 years	GEN-32 OBC-35 SC/ST-37	3	Rs. 50000- 3%- 160000 (E-III)	UR:04 OBC:02 SC:01 ST:01
2	Member (Research Staff) E-III	J002	Full time M.E/M.Tech in Computer Science/ Computer Science & Engineering with specialization in Artificial Intelligence/Machine Learning/Computer Graphics/Vision and Multimedia along with preceding qualification of BE/B.Tech(Full Time) in the disciplines indicated against the job code in the advertisement			1		
3	Member (Research Staff) E-III	J003	Full time M.E/M.Tech with specialization in Control Systems & Instrumentation / Control & Computing/ Robotics & Automation along with preceding qualification of BE/B.Tech(Full Time) in the disciplines indicated against the job code in the advertisement			1		
4	Member (Research Staff) E-III	J004	Full time M.E/ M.Tech with specialization in Signal Processing/Signal Processing & Machine Learning/Computer Vision along with preceding qualification of BE/B.Tech(Full Time) in the disciplines indicated against the job code in the advertisement			3		

1.0 UPPER AGE LIMIT AS ON 01.07.2021.

The age should not be more than 32 years for General candidates. The upper age limit will be relaxable for OBC candidates by 03 years and for SC/ST candidates by 05 years. Candidates belonging to PWD category having minimum 40% disability or more will get 10 years relaxation in addition to the relaxation applicable to the categories mentioned above.

2.0 EDUCATIONAL QUALIFICATION:

The candidates should possess the following educational qualification:

I. JOB CODE: J001:

Full time ME/M.Tech with specialization in Signal Processing / Communication & Signal Processing / Electronics Design & Technology with First class for General & OBC Candidates and Pass Class for SC/ST/ PWD (Person with Disability) candidates from an AICTE approved College/Institute or a recognized University. **The Preceding qualification prior to M.E/M.Tech should be Full-Time BE/B.Tech in Electronics/Electronics & Communication/ Electronics & Telecommunication /Telecommunication / Communication Engineering.**

II. JOB CODE: J002:

Full time ME/M.Tech in Computer Science/Computer Science & Engineering with specialization in Artificial Intelligence, Machine Learning, Computer Graphics, Vision and Multimedia with First class for General & OBC Candidates and Pass Class for SC/ST/ PWD (Person with Disability) candidates from an AICTE approved College/Institute or a recognized University. **The Preceding qualification prior to ME/M.Tech should be Full-Time BE/B.Tech in Computer Science/ Computer Science & Engineering/ Computer Science Engineering.**

III. JOB CODE: J003:

Full time ME/M.Tech with specialization in Control Systems & Instrumentation / Control & Computing/ Robotics & Automation with First class for General & OBC Candidates and Pass Class for SC/ST/ PWD (Person with Disability) candidates from an AICTE approved College/Institute or a recognized University. **The Preceding qualification prior to ME / M.Tech should be Full-Time BE/B.Tech in Electronics/ Electrical & Electronics / Electronics & Communication Engineering.**

IV. JOB CODE: J004:

Full time ME/M.Tech with specialization in Signal Processing/Signal processing & Machine Learning/Computer Vision with First class for General & OBC Candidates and Pass Class for SC/ST/ PWD (Person with Disability) candidates from an AICTE approved College/Institute or a recognized University. **The Preceding qualification prior to ME/M.Tech should be Full-Time BE/B.Tech in Electronics /Electronics & Communication Engineering OR Computer Science/ Computer Science & Engineering/ Computer Science Engineering.**

Please Note:

- a. Candidates applying for the above post should possess First Class for GEN/OBC candidates and Pass Class for SC/ST/ PWD candidates.
- b. Applicants who have acquired M.E/M.Tech & BE/B.Tech in the specializations/disciplines prescribed above **ONLY** are eligible.
- c. Applicants should have completed BE/B.Tech in the disciplines prescribed prior to completing their ME/M.Tech. Applicants who have any other prior qualification before ME/M.Tech will not be considered for selections.
- d. Applicants whose discipline/specialization mentioned in their BE/B.Tech & M.E/M.Tech Degree Certificates does not tally with the discipline/specialization prescribed in the advertisement or with the discipline/specialization mentioned in the application will not be considered for selections.
- e. In case there is no mention of discipline/specialization in the qualifying degree certificate as prescribed in the advertisement, candidates are required to submit a certificate from their University/Institution or college which indicates their discipline/specialization in qualifying degree.
- f. Candidates have to compulsorily attach the Final Degree Certificate of ME/M.Tech as proof of completion of degree and indication of Class Obtained and Percentage of Marks.
- g. In case any University/Institution or college is following an evaluation system of CGPA/DGPA/OGPA or letter grade, wherever applicable, it is mandatory for the candidate to indicate the corresponding percentage obtained in the application format.
- h. Copy of the document indicating the conversion formula declared by the concerned University to be followed for conversion of CGPA/DGPA/OGPA to Percentage (%) should mandatorily be submitted by the candidate.

- i. In case the Class obtained by the candidate in ME/M.Tech is not indicated in the final degree certificate, the candidate should mandatorily submit a certificate/document from their University/Institute/College indicating the equivalent “Class” against the CGPA/Percentage obtained in the final degree.

3.0 RELEVANT POST QUALIFICATION INDUSTRIAL EXPERIENCE: (AFTER COMPLETION OF ME/M.TECH)

I. JOB CODE - J001:- Minimum THREE YEARS relevant post qualification industrial experience in the following domains as on 01.07.2021.

Essential:

- a. Infrared/Thermal Signal Processing with practical experience in working with Thermal/CCD Detectors
- b. Dynamic Range Compression, Image/Video stabilization, Object tracking, Image registration, Artificial Intelligence, Image Sensor fusion and SLAM
- c. Embedded Hardware & Software development with FPGAs /DSP /Snapdragon /IMx Processors etc
- d. Expertise in VHDL/Verilog, MATLAB/Python

Desirable:

- a. Libraries and frameworks: OpenCV, Eigen, Caffe, PyTorch, TensorRT and Tensorflow
- b. Convolutional Neural Networks and classification networks
- c. Accelerated computing languages: CUDA, OpenCL and OpenGL

II. JOB CODE- J002:- Minimum THREE YEARS relevant post qualification industrial experience in the following domains as on 01.07.2021.

Essential:

- a. Image processing algorithms, MATLAB/Image processing tools such as OpenCV/ImajeJ
- b. Realization of image processing methods such as segmentation, enhancement, restoration, scaling, edge detection, bilateral filter in real-time systems
- c. Knowledgeable on Pattern recognition methods such as regression, neural networks, kernel methods
- d. Realization of image based inference models in general purpose processors or GPUs (eg. Nvidia Jetson) or Neural Processing Units (eg. Intel Movidius)

Desirable:

- a. Experience in navigation stack development for mobile robots
- b. Sensor registration, and fusion software development (Lidar,IMU,Camera) for autonomous robotic vehicle navigation
- c. Development of visualization software for robotics, AR/VR (augmented/virtual reality)

III. JOB CODE: J003:- Minimum THREE YEARS relevant post qualification industrial experience in the following domains as on 01.07.2021.

Essential:

- a. Control system plant modeling, analysis using bode plot root locus, state space formulation of linear/non-linear systems, proficiency in using MATLAB toolboxes.
- b. Compensator design, simulation, PID (proportional, integral, derivative) controller tuning
- c. Discrete time controller design, and realization in general purpose processors for gimbal based pointing applications
- d. Embedded controller testing and characterization
- e. Selection and interfacing of measurement devices for feedback systems

Desirable:

- a. Working experience with Robotic Operating System (ROS)
- b. Robotic manipulator arm control with inverse kinematics
- c. Nonlinear control systems analysis
- d. Board Design using Processor, Sensors, IO peripherals

IV. JOB CODE: J004:- Minimum THREE YEARS relevant post qualification industrial experience in the following domains as on 01.07.2021.

Essential:

- a. Domain expertise in image processing algorithms like object detection & tracking, edge tracking, Object classification, video analysis, and video analytics
- b. Implementation of Object classification and edge tracking on FPGA based platform
- c. Realization of Artificial intelligence models, SVM, RCNN, HMM
- d. Embedded Framework development for Deep Learning algorithms
- e. Programming skills in C/C++ , Python and CUDA

Desirable:

- a. Image/Video processing libraries like OpenCV, Matlab, Gstreamer and OpenGL
- b. Working experience in Embedded OS like RTOS (VxWorks) and linux
- c. Software/Firmware Development in parallel processing environments (multi-threaded or multi-process)
- d. Knowledge of software engineering processes and software development lifecycle; familiarity with DO-178
- e. Implementation of Object classification and edge tracking on FPGA based platform

Please Note:

- a. Candidates possessing post qualification relevant Industrial experience after M.E/M.Tech only need to apply.
- b. Academic/Teaching/Research work experience will not be considered as relevant industrial experience.
- c. The Cut-off date for deciding the Post Qualification Industrial Experience shall be **01.07.2021**. In order to compute post qualification work experience, the period of work experience starting from the month immediately succeeding the month of final examination in which candidate has acquired the essential educational qualification (i.e. ME/M.Tech) shall be considered.
- d. The decision of the Selection Committee with respect to industrial experience will be final. Work experience indicated without supporting documents will not be considered and is liable to be rejected / cancelled without any prior intimation.

4.0 SELECTION PROCEDURE:

- a. Selection will be through a Written Test for shortlisted candidates based on screening of the application and the documents submitted by the applicant, followed by an Interview, only for those candidates who qualify in the Written Test in the ratio of 1:5.
- b. Candidates have to carefully enter in the details in the application and attach the documents as prescribed. In case, the details mentioned do not tally with supporting documents, the candidate's application will be rejected without any prior intimation.
- c. Candidates are required to possess at least one valid E-mail ID, which is to be entered in the application form. Information pertaining to the written test/interview will be sent only by E-mail to the ID that is furnished by the candidate and also will be published in the Careers section of BEL website. BEL will not be responsible for bouncing of E-mail, non-receipt of E-mail due to invalid E-mail ID's/setting options exercised by the candidates.
- d. In case a candidate applies for more than one post, he/she will be shortlisted for written test/interview for only one post for which his profile is most suited based on the decision of the Selection Committee. The decision of the selection committee in this regard will be final & binding.

5.0 APPLICATION FEES:

- a. Candidates are required to make payment of application fee through SBI collect by clicking on the link provided below the advertisement.
- b. General/OBC candidates are required to remit an amount of Rs. 750/- towards application fee through SBI Collect (through online mode or through SBI Branch). SC/ST/ PWD candidates are exempted from payment of application fee.
- c. Candidates are requested to read the details and screenshots for making the payment which is provided below the advertisement.

- d. Candidates can also make the payment by approaching SBI branch. You have to select SBI branch in the payment option and download pre-printed challan generated through SBI Collect and deposit the application fee (as applicable) plus applicable bank charges in any SBI Branch. The candidate should ensure to obtain the seal and signature of the bank official.
- e. General/OBC candidates have to enter the “SBI Collect Reference No.” generated after payment, in the Application Form mandatorily. **SC/ST/PWD candidates are exempted from payment of application fee.**
- f. Candidates may go through all instructions and eligibility criteria carefully before remitting Application Fee and submitting the application. **Fee once paid will not be refunded.**
- g. In case a candidate applies for more than one post, the application fee should be remitted separately for each post.

Instruction for Making Payment:

- a. Go to www.onlinesbi.com and select:- State Bank Collect.
- b. Accept terms and conditions and click on proceed.
- c. Select state of Corporation/Institution:- All India.
- d. Select type of Corporation/Institutions:- PSU- Public Sector Undertaking and press=> Go.
- e. Select PSU- Public Sector Undertaking:- Bharat Electronics Limited and press Submit.
- f. Select payment category: Recruitment of Member Research Staff (E-III) for CRL-BG.
- g. Complete the payment as explained above.
- h. Take a print of the payment receipt and attach it with the application form.

6.0 GENERAL INSTRUCTIONS:

- a. Only Indian nationals need to apply.
- b. The number of posts indicated above, may vary based on the actual requirement at the time of selection. Applications that are not in the prescribed format, incomplete, illegible, without complete enclosures or received after due date or are not meeting any of the criteria indicated above will be summarily rejected without assigning any reason, whatsoever and no correspondence in this regard will be entertained. There will be no separate communication to any candidates on their non-selection at any stage.
- c. Candidates are advised to carefully read the full advertisement for details of eligibility criteria and selection modalities before submission of application.
- d. Candidates working in PSUs/Government/Quasi Government organizations shall produce No Objection Certificate at the time of the interview. Such candidates, who are unable to produce NOC at the time of interview, will not be considered for interview.
- e. In addition to Basic Pay, other allowances like Dearness allowance, House Rent Allowance, 35% of the Basic Pay as perquisites, Performance Related Pay (PRP), Group Insurance, Medical facilities, Provident Fund and Gratuity as per the Company's rules will be part of the remuneration package.
- f. Mere fulfilling the minimum requirement of qualification and experience will not vest any right on the candidates to be called for the Written Test/ interview. BEL reserves the right to shortlist the candidates based on the nature of relevant experience acquired post prescribed qualification.
- g. In the event any applicant has litigated with his/her employer in the past, the same should be clearly mentioned in brief.
- h. Outstation candidates called for interview shall be reimbursed actual expenses incurred on travel to and fro to the place of Interview (shortest route) from their correspondence address, subject to a maximum of Second (II) class train fare on production of receipt or any other supporting documentary evidence in respect of the onward journey.
- i. Application of the candidates without fee payment (Except for SC/ST/ PWD), will be rejected/cancelled without any prior intimation.
- j. All information submitted in the application will be verified with the original documents at the time of document verification or at any other stage of the recruitment process as deemed necessary. If any documents/information provided by the candidate is found to be false or incorrect or in non-conformity with the eligibility criteria, then his/her candidature is liable to be rejected/cancelled at any stage of the recruitment and selection process without any prior intimation.

- k. Candidature is liable to be rejected at any stage of recruitment /eligibility /selection process or after joining, if any information provided by the candidate is not found in conformity with criteria mentioned in the advertisement. The candidature is also liable for rejection at any stage if BEL comes across any evidence/knowledge that the qualification, experience and any other particulars indicated in the application / other forms / formats are not recognized /false / misleading and/or amounts to suppression of information/particulars, which should have been brought to the notice of BEL.
- l. There will be no separate communication to any candidates on their non-selection at any stage.
- m. Mere submission of application does not guarantee the adequacy of the candidature for being considered for the selection process.
- n. Decision of BEL in all matters regarding eligibility of the candidate, the stages at which such scrutiny of eligibility is to be undertaken, qualification and other eligibility norms will be final and binding on the candidate.
- o. Relaxation and Concession will be applicable to the candidates belonging to SC/ST/OBC/PWD as per the Government directives.
- p. BEL reserves the right to debar/disqualify any candidate at any stage of the selection process for any reason whatsoever.
- q. Request for change of category (GEN/OBC/SC/ST) once declared in the application will not be entertained.
- r. Management reserves the right to cancel/restrict/enlarge/modify/alter the recruitment/selection process, if need so arises, without issuing any further notice or assigning any reasons thereafter.
- s. Canvassing in any form will result in disqualification.
- t. All candidates are requested to keep checking our website www.bel-india.in for all updates and authentic information.

7.0 **HOW TO APPLY:**

Interested candidates meeting all the criteria mentioned above, should submit their application in the format appended to this advertisement and send the applications through post, **superscribing on the envelope “Member Research Staff (E-III) CRL-BG” and the relevant Job Code.** The following documents should be compulsorily enclosed along with the application.

- a. SSLC/SSC/10th Marks Card as proof of date of birth.
- b. PUC/12th Class Marks Card.
- c. Semester wise marks cards of BE / B Tech (Candidates who have completed bachelor’s degree after Diploma have to enclose all the semester wise marks sheet & Final Diploma Completion certificate).
- d. BE / B. Tech Degree Certificate. The class secured and the discipline should be clearly mentioned in the Degree Certificate.
- e. Semester wise marks cards of ME/ M.Tech or consolidated marks card.
- f. ME/ M.Tech Degree Certificate. The class secured and the specialization should be clearly mentioned in the Degree Certificate.
- g. Document indicating the formula/methodology for conversion of CGPA/DGPA/OGPA or letter grade into Percentage (%) issued by the concerned University/Institution.
- h. In case the Class obtained by the candidate in ME/M.Tech is not indicated in the final degree certificate, the candidate should mandatorily submit a certificate/document from their University/Institute/College indicating the equivalent “Class” against the CGPA/Percentage obtained in the final degree.
- i. Post qualification Industrial experience certificate/s from previous / current employer clearly indicating period of employment and post held. Wherever, experience certificate from current employer cannot be produced, offer of appointment in respect of the current employment, latest pay-slip, employee ID Proof should be compulsorily attached.
- j. Caste/Tribe/Community/Disability certificate in case of candidates belonging to SC/ST/OBC/ PWD respectively. Candidates claiming reservation under any of the above categories are required to submit the certificate in the prescribed format. The formats of various certificates are provided as link to the advertisement. Candidates belonging to OBC category should produce the certificate issued on or after **01.07.2020**
- k. Receipt for having remitted the application fee through SBI Collect.

Note: Candidates working in PSUs/Government/Quasi Government organizations should compulsorily produce **No Objection Certificate** at the time of the interview. Such candidates, who are unable to produce NOC at the time of interview, will not be considered for interview.

8.0 Applications complete in all respect should be sent to **Manager (HR), Central Research Laboratory, Bharat Electronics Limited, Jalahalli Post, Bengaluru - 560013**, latest by **31.08.2021**. Applications that are incomplete, not in the prescribed format, not eligible, without the required enclosures will be summarily rejected without assigning reasons and no correspondence in this regard will be entertained.

9.0 For clarifications if any in respect of the above advertisement, you may write to **crlbghr@bel.co.in** or contact on 080-28385817.
