



भारत सरकार/GOVERNMENT OF INDIA  
अंतरिक्ष विभाग/DEPARTMENT OF SPACE  
विक्रम साराभाई अंतरिक्ष केंद्र/VIKRAM SARABHAI SPACE CENTRE  
तिरुवनंतपुरम/THIRUVANANTHAPURAM – 695 547

विज्ञा. संदर्भ सं. वीएसएससी/एमवीआईटी क्रय/ईओआई/03-2025

Advvt Ref No:VSSC/MVIT PUR/EOI/03-2025

तिथि/Date : 29.04.2025

डीसी संपर्किटों के विकास के लिए ईओआई हेतु आमंत्रण  
**Invitation for EOI For Development of DC Contactors**

वीएसएससी उच्च धारा डी सी संपर्किटों के स्वदेशी विकास, योग्यताप्राप्ति और आपूर्ति हेतु प्रत्याशित बोली लगानेवालों से ईओआई आमंत्रित करता है। इच्छुक पार्टियां दिनांक **30.05.2025 (14:00 बजे अपराह्न)** को या उससे पहले निम्नलिखित पते पर हमारे संदर्भ संख्या **706J 2024005374** उद्धृत करते हुए मोहरबंद लिफाफे (हार्ड कॉपी) में अपनी ईओआई प्रस्तुत करें।

VSSC invites EoI from prospective bidders for indigenous development, qualification and supply of high current DC Contactors. Interested parties may furnish their EoI in sealed envelope (hard copy) quoting our reference no. **706J 2024005374** on or before **30.05.2025 [14:00hrs]** to the following address

वरि. क्रय एवं भंडार अधिकारी/Senior Purchase and Stores Officer,  
क्रय यूनिट IV /Purchase Unit IV  
एमवीआईटी, वीएसएससी/ MVIT, VSSC  
वलियमला/ Valiamala  
तिरुवनंतपुरम/ Thiruvananthapuram-695547

निबंधन, शर्तें एवं अपेक्षाएं इसके साथ संलग्न हैं। यह ईओआई केवल, उच्च धारा डीसी संपर्किटों के स्वदेशी विकास, योग्यताप्राप्ति और आपूर्ति हेतु सक्षम विक्रेताओं का पता लगाने के लिए मात्र है। उच्च धारा डीसी संपर्किटों के स्वदेशी विकास, योग्यताप्राप्ति और आपूर्ति हेतु आमंत्रित इस ईओआई में योग्यताप्राप्त पार्टियों के लिए एलटी का विमोचन किया जाएगा।

The terms, conditions and requirements are attached herewith. The EOI is only for finding competent vendors for indigenous development, qualification and supply of high current DC Contactors. LT will be released for those parties who qualified in EOI for indigenous development, qualification and supply of high current DC Contactors.

नियत तिथि और समय के बाद प्राप्त प्रस्तावों तथा नियत तिथि बढ़ाने हेतु अनुरोध पर किसी भी परिस्थिति में विचार नहीं किया जाएगा।

Late offers after due date and time, and request for due date extension will not be considered under any circumstances.

ईओआई दस्तावेज़ हमारे वेबसाइट [www.isro.gov.in](http://www.isro.gov.in) और [www.vssc.gov.in](http://www.vssc.gov.in) में उपलब्ध हैं।

EoI documents are available at our website [www.isro.gov.in](http://www.isro.gov.in) and [www.vssc.gov.in](http://www.vssc.gov.in).

हस्ताक्षरित/Sd/-  
वरि. क्रय एवं भंडार अधिकारी  
Sr. Purchase & Stores Officer

# **Invitation for Expression of Interest (Eoi) from (Indian) Industries for the Development, Qualification and Supply of DC Contactor for VSSC**

## **A: Attention to bidders:**

1. The Eoi document shall be carefully read and all points shall be duly addressed.
2. Eoi responses with incomplete/insufficient supporting data shall not be considered further. No further correspondence shall be entertained with respect to this.
3. Bidders can contact/visit VSSC/ISRO with prior appointment from Sr. Purchase & Stores Officer, Purchase Unit-4, MVIT purchase, Valiamala P.O., Thiruvananthapuram - 695022 for any clarifications/discussions. Contact Phone No: 0471-2567967. Email id: spo\_mvrit@vssc.gov.in

## **1. Introduction**

Vikram Sarabhai Space Centre (VSSC) is the lead Centre of Indian Space Research Organisation (ISRO). The centre is actively pursuing research and development for ongoing and future space transportation systems of ISRO. Towards indigenisation of electromechanical components used for space transportation systems, it is proposed to develop a DC Contactor.

This expression of interest is invited from technically competent, financially stable parties with previous experience in the related field for successfully developing DC Contactor for ISRO's applications. The party shall neither commercialise the technology nor supply the product realized through test data/design/technical data provided by VSSC for the development of DC Contactor to a third party without prior written permission from ISRO.

## **2. Back ground of Eoi**

VSSC/ISRO has worked out the preliminary configuration of 600V/250A DC contactor. The baseline configuration and requirement details of DC contactor will be made available to the successful bidder as a starting point for further developments/improvements after entering into a Non-Disclosure Agreement (NDA) with ISRO.

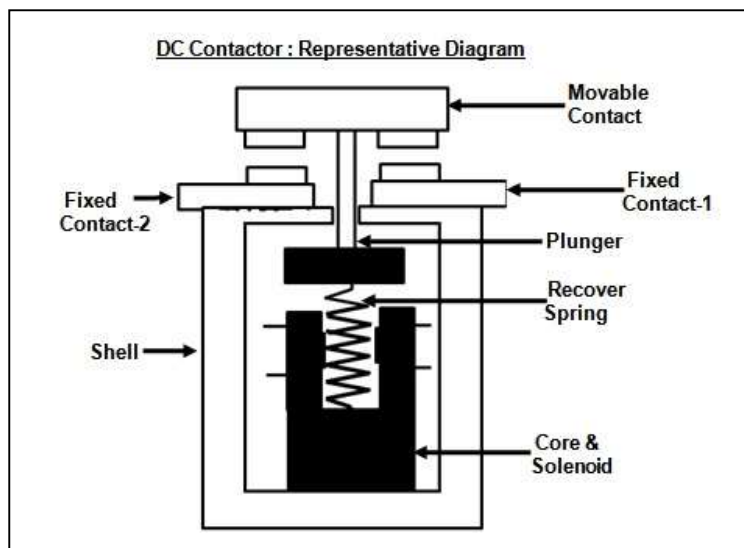
## **3. Product description**

DC contactor is used for switching ON/OFF a high power battery supply to various subsystems. DC contactor functionality requirement is similar to that of a Double Break Contact system. Switching is done by energizing a pick up coil using solenoid winding. The energized solenoid winding will push the plunger rod for making the contact. The pickup coil draws a large current of <5A for initial movement and for holding the contact in place, a hold coil which draws < 200mA is used. The pickup coil/hold coil will be energized using a separate DC supply which is completely isolated from the contact supply (high power battery).

Welding of contacts during make/break operations are functionally critical and are to be avoided during the life cycle operation. Suitable arc quenching mechanisms are to be incorporated in the design to meet the required life specification of the device. Number of cycles to be qualified is minimum 1000 (with load) and 100,000 (without load).

### 3.1 Major Specifications:

SI No.	Parameter	Specification
<b>Electrical</b>		
1.	Contact rating	600V (DC)/250A
2.	Contact resistance	<10m $\Omega$
3.	ON/OFF Operate time	<10ms
4.	Coil voltage	30V Range : 25V to 40V
5.	Nature of connected load	Brushless DC Motor with PWM Inductance : 4-10 mH Resistance : 0.2 to 18 Ohm
6.	Electrical isolation between coil and contact	>100M $\Omega$
<b>Environmental tests</b>		
7.	Vibration	Sine 20g (20 to 2000 Hz)
8.	(all 3 axis)	Random 13.5 grms
9.	Shock (all 3 axis)	50g half sine for 11ms
10.	Temperature range	-55°C to +125°C
	<b>Mechanical :</b>	Please see representative diagram
11.	Mass	< 500gm
12.	Size	80 x 65 x 70 (in mm) Approximately



#### 4. Scope of Work

Scope involves development, qualification and supply of DC contactors for ISRO as follows:

##### **Phases**

1. Development, qualification and realization of 600V/250A DC Contactor based on VSSC requirements
2. The baseline configuration and requirement details will be made available to the party as a starting point.
3. Review of system engineering and design proposals from the party by VSSC experts.
4. Technical improvements/modifications based on test results and review by VSSC experts.
5. Party shall provide comprehensive documents related to product development which includes all the technical details of every component, process, testing evaluation and test results.
6. Qualification of the approved design of DC Contactor by the party as per the Test Plan approved by VSSC
7. Supply of qualification batches (Nos. 50) for evaluation and assessment by VSSC
8. During **development phase** of Contactors, there will be stage clearances and inspection by VSSC experts.
  - a. Development phases includes;
    - Design phase
    - Development of proto model (4 nos),
    - Development of engineering model-1 (10 nos),
    - Development of engineering model-2 (10 nos),
    - Development of qualification model (30 nos)
  - b. For each development phase, Party has to provide design and test results document to VSSC.
  - c. Each development phase will be reviewed by VSSC experts. After VSSC clearances only Party can move on to the next development phase.
9. After successful and full level qualification of contactors, supply of 500 Nos of 600V/250A DC Contactors

## 5. Infrastructure Requirements

It is desirable that the bidder shall have the following manufacturing/test facilities for the developmental activities of DC contactor.

SI No.	Facility	Purpose
1	ESD safe -Dehumidifying chamber <b>(Mandatory)</b>	For storage of procured electronic component (PCB and components shall be procured from VSSC approved vendors)
2	Soldering facility in temperature/RH controlled environment <b>(Mandatory)</b>	Populating the PCB with components
3	ESD safe electrical testing lab consisting of power supplies, digital oscilloscopes, digital multimeters, function generators, Megohmmeter, etc. <b>(Mandatory)</b>	Testing wired PCB/DC Contactor/Life cycle tests
4	Injection Moulding facility <b>(Desirable)</b>	For plastic/nylon components
5	Impact Extrusion/Machining Facility/Power Metallurgy/Inspection Facility <b>(Desirable)</b>	For metallic parts
6	Special coating/plating facilities <b>(Desirable)</b>	To provide appropriate coating for the contact elements.
7	Vacuum/Hermetic sealing and dielectric gas filling facilities <b>(Mandatory)</b>	For sealing the component with dielectric gas
8	Potting facility <b>(Mandatory)</b>	For potting using adhesives
9	Environmental Test Facilities <b>(Desirable)</b>	Vibration Facility(All 3 axis)
		Shock Facility(all 3 axis)
		Digital recorder with 5μs resolution min.
		Vacuum facility
		Thermal chambers (-65°C to +150°C)
10	High Current Voltage Source and loading system <b>(Desirable)</b>	To load the device with the rated voltage and current
11	Gross Leak Test Facility <b>(Desirable)</b>	This test shall be conducted according to MIL-STD-202 method 112

## **6. Qualification Test Requirement**

For the qualification of DC Contactor, the following tests are to be carried out:

<b>Sl.No.</b>	<b>Tests Required</b>
1	External visual Inspection
2	GO/ NO GO check
3	Thermal Cycling
4	Vibration Tests
5	Shock Tests
6	Electrical measurement at Room Temperature
7	High Temperature Miss Test
8	Low Temperature Miss Test
9	Room Temperature Miss Test
10	Electrical Measurements at Room Temperature
11	Switching test at application load (50 cycles 600V, 250A)
12	Electrical Measurements at Room Temperature
13	Seal test
14	Vacuum test
15	Burn in test

## **7. Schedule**

Entire development and qualification activities shall be completed within 9 months from the date of placement of purchase order.

## **8. Other Terms and Conditions**

### **8.1 Intellectual Property Rights**

#### **8.1.1 General Clauses:**

- a. Each party will ensure appropriate protection of Intellectual Property Rights generated from cooperation pursuant to EoI, consistent with their respective laws, rules and regulations and international agreements to which both parties are committed.
- b. This Agreement does not affect the ownership of any Intellectual Property in any Background IP. The Intellectual Property in them will remain the property of the Party that owns it. No license to use any Intellectual Property is granted or implied by this Agreement except the rights expressly granted in this EoI.  
Any/ all new Intellectual property rights such as Patents, Copyrights, design rights etc acquired by the parties through the execution of the project under the scope of this EoI shall be jointly owned by ISRO & the party.
- c. The party shall not assign any rights and obligations arising out of the IPR generated from inventions/activities carried out under the EoI to any third party without consent of ISRO.
- d. ISRO reserves the right to transfer the technology on non-exclusive basis to any third party for production of DC Contactor to meet ISRO requirements.

#### 8.1.2 Non-Exclusive License for Commercialisation

Upon successful completion of development, if the party so desires, ISRO shall transfer the technology through a separate Technology Transfer Agreement (TTA) with NSIL and INSPACE, wherein the Party shall be given a non-exclusive license for manufacturing and marketing the product with applicable TT fees and royalty.

#### 8.1.3 Publication

If the party intends to publish any material related to any development under the scope of this EoI, party must notify ISRO in writing of its intention to publish, accompanied by a draft of the proposed publication. On receipt of the notice, ISRO will convey its views/decisions on the matter to be published.

#### 8.1.4 Confidential Information

- a. All information and documents to be exchanged pursuant to the EoI will be kept confidential by the parties and will be used subject to such terms as each party may specify. The parties will not use the information for purposes other than that specified without prior written consent of the other party.
- b. All confidential information shall remain the exclusive property of the disclosing party. The parties agree that this agreement and the disclosure of the confidential information do not grant or imply any license, interest or right to the recipient in respect to any intellectual property of the other party.
- c. Unpublished information, whether oral, in writing or otherwise, discovered or conceived by the scientists or technicians and exchanged under the provisions of this EoI will not be transmitted to a third party unless otherwise agreed by the parties.
- d. The party submitting the EoI shall comply with all the security regulations and safety stipulations of ISRO.
- e. The party shall abide by the Indian Official Secrecy Act in vogue and shall provide information of awareness of the above in writing.
- f. Party has to sign a Non-Disclosure Agreement (NDA) with ISRO for receiving the design/test data of current developmental activities of DC Contactor at VSSC/ISRO.

### 8.2 Confidentiality

- 8.2.1 All documents, information and any items related to product that are received from VSSC shall be kept confidential and shall not be tampered with or disclosed to third parties without explicit written permission from VSSC/ISRO.

### **8.3 Criteria for scrutiny of EoI proposals**

- 8.3.1 **Party shall submit the EoI with all technical details duly filled in the Compliance Matrix attached with the EoI.** Incomplete/insufficient data in the Compliance Matrix shall be considered as a disqualification. In addition, if the technical details provided were found incorrect at a later stage, the party shall get disqualified.
- 8.3.2 Prior experience with development of DC contactor is mandatory. Party must have the experience in developing DC contactors for Aerospace industries. Completed order details of DC Contactors for Aerospace industries should be provided during submission of EoI.
- 8.3.3 Parties having maximum in-house facilities under those listed as “desirable” shall be given due weightage while screening. Bidders with in-house R&D facilities and man power shall get added advantage. Details shall be provided in the EoI.
- 8.3.4 If essential, Environmental Test Facilities at VSSC can be shared during the initial phase which shall be indicated specifically in the EoI. Usage cost for each facility shall be charged as per the existing norms.
- 8.3.5 If any mandatory infrastructure is not available currently, party can indicate the procurement plan in the EoI which shall be duly considered. However, this shall not affect the development schedule (9 months).
- 8.3.6 In the case of desirable facilities which are not available in-house, party shall clearly indicate the plan for 3<sup>rd</sup> party tie up and proposed locations.
- 8.3.7 For parties who have executed ISRO contracts/ other government contracts previously, necessary documentary evidences shall be attached with the EoI. This shall have due weightage.
- 8.3.8 The party should be financially stable to undertake the proposed project and shall provide supporting documents. The party shall have a minimum yearly turnover of 10 crores. (last 3 years balance sheets / income tax statements)
- 8.3.9 No mention of price shall be given in the EoI. If any mentioning about the cost /price is made in the EoI, the same will be summarily rejected
- 9 Technical competence will be evaluated by a committee constituted by VSSC which will short list the qualified bidders based on the inputs (Annexure -1: Compliance Matrix) submitted by the party and the presentation provided to VSSC team at Thiruvananthapuram. If required a visit to the facility may be conducted by VSSC team for assessment and evaluation.
- 10 Short listed bidders from the EoI shall be allowed to participate in further tendering procedures through Request For Proposal (RFP) wherein technically suitable, lowest offer will be considered for development of DC Contactor.
- 11 The decision of VSSC shall be final and binding, based on inputs furnished by parties backed up with documentary evidence, assessment based on facility visits (if required) and discussions at VSSC.



Annexure -1

**Compliance Matrix for the development and production of DC Contactor for VSSC**

SI No.	Parameters	Reference no. in EoI	Details	Response	Remarks
1	Attention to bidders	A, page 1	Ensure party has read completely.	Yes/No	
2	Major Specifications & components	3.1 page 2	Whether clearly understood?	Yes/No	
3	Scope of work and development phases	4, page 3	Whether clearly understood?	Yes/No	
4	Infrastructure Requirements (Whether available or not? If Yes, provide details and If No, further plans may be detailed in Remarks)	5, page 4	ESD safe electronic component storage facility -	Yes/No	
			ESD safe soldering facility (in temperature/RH controlled environment)	Yes/No	
			ESD safe electrical testing lab	Yes/No	
			Injection Moulding facility	Yes/No	
			Impact Extrusion/Machining facility	Yes/No	
			Special coating/plating facility	Yes/No	
			Facility for vacuum/Hermetic sealing and filling with inert gas	Yes/No	
			Facility for Potting using adhesives	Yes/No	
			Environmental Test Facilities	Vibration facility (all 3 axis) - Sine	Yes/No
				Vibration facility (all 3 axis) - Random	Yes/No
				Shock facility (all 3 axis)	Yes/No
				Thermo vacuum facility	Yes/No
				Thermal chambers (-65°C to 150°C)	Yes/No
			High Current Voltage Source and loading system		Yes/No
			Gross leak test facility		Yes/No
		8.3.4, page 7	Whether planning to use VSSC Environmental Test Facilities		Yes/No
		8.3.6, page 7	Whether planning to have tie up with 3 <sup>rd</sup> party, if so provide details		Yes/No
		8.3.5, page 7	Whether all 'mandatory' infrastructures are currently available? If No, provide detailed plan of action to execute the project without affecting the schedule.		Details of 3 <sup>rd</sup> party and proposed locations
					Details of plan of action.
5	Qualification Test Requirements	6, page 5	Whether clearly understood the tests mentioned in EoI and compliance?	Yes/No	
6	Schedule	7, page 5	Whether schedule of 9 months from date of placement of purchase order can be honoured?	Yes/No	

SI No.	Parameters	Reference no. in Eol	Details	Response	Remarks
7	Confidentiality & Confidential Information	8.2, page 6 8.1.4, page 6	Whether clearly understood and comply with?	Yes/No	
8	Intellectual Property Rights, Publication, Non-Exclusive License for Commercialization	8.1, page 5 8.1.2, 8.1.3, page 6	Whether clearly understood and agree with?	Yes/No	
9	Criteria for scrutiny of Eol proposals	8.3, page 7	Whether clearly understood and comply with?	Yes/No	
10	Dedicated R&D team	8.3.3, page 7	Available or not. If yes, provide details	Yes/No	Details of R&D activities carried out
11	Past experience in executing ISRO/Govt contracts	8.3.7, page 7	Whether party has executed ISRO/government contracts? If yes, provide details	Yes/No	Details of executed order with ISRO/Govt. organizations shall be provided in detail
			Whether blacklisted by any Govt/PSUs?	Yes/No	
12	Prior developmental experience in DC Contactors	8.3.2, page 7	Prior developmental experience in DC Contactors is mandatory. Whether prior developmental experience available or not? Provide details with letter of reference and completed order details of DC Contactors for Aerospace industries	Yes/No	Details of the developmental activity carried out shall be provided in detail
13	Financial stability	8.3.8, page 7	Whether party is financially stable or not? If yes, provide details of last 3 years balance sheets / income tax statements/Turnover	Yes/No	Last 3 years balance sheets / income tax statements/Turnover