

'Expression of Interest' for Development of Cabin Electrical & Electronic system for BEML Heavy Duty Truck (HDT)



**1. Objective:**

BEML Limited is a Defence PSU under the Ministry of Defence (MoD), Govt. of India. BEML HDT vehicles are mainly used for General Service and special projects carrying super structures as per MOD requirement. As part of indigenous program, the development and production of Cabin Electrical & Electronic system. In this regard, BEML intends to identify reputed developer and supply of Cabin Electrical & Electronic system. Annual consumption of Cabin Electrical & Electronic system will be more than 300 numbers.





**2. Technical Description:**






**i) Cabin Lighting System & other electrical components :**

The Cabin lighting system & other electrical components with brief description mentioned below.

S.No	Description	Specification	Photo
01	Water tight asymmetric Head lamp	131 311 026 000 / Water Tight Asymmetric Head lamp. <b>Specification:</b> Nominal Voltage: 24V Wattage: 75/70W Bulb Category: H4 Qty : 02 No's	
02	Water tight Head lamp in Fog	131 311 065 000 / Water tight head lamp in Fog. <b>Specification:</b> Nominal Voltage : 24V Wattage: 70W Bulb Category: H3 Qty : 02 No's	

03	Rear Cluster lamp LH	131 312 035 000 / Rear Cluster lamp LH side. <b>Specification:</b> Nominal Voltage : 24V Wattage: 21/5W Qty : 01 No's	
04	Rear Cluster lamp RH	131 312 037 000 / Rear Cluster lamp RH side. <b>Specification:</b> Nominal Voltage : 24V Wattage: 21/5W , 21W Qty : 01 No's	
05	Turn Indicator	131 311 119 000 / Turn Indicator <b>Specification:</b> Nominal Voltage : 24V Wattage: 21W Qty : 04 No's	
06	Map reading lamp	131 312 039 000 / Map reading lamp <b>Specification:</b> Nominal Voltage : 24V Wattage: 4W Qty : 01 No's	
07	Width indicator lamp	130 080 361 004 / Width indicator lamp <b>Specification:</b> Nominal Voltage : 24V Wattage: 4W Qty : 02 No's	

08	Air filter Clog indicator	131 743 050 000 / Air filter Clogging Indicator <b>Specification:</b> Nominal Voltage : 24V Set pressure: 6+0.6Kpa Qty : 01 No's	
09	Engine Oil Pressure Sensor	131 429 020 000 / Engine oil pressure sensor. <b>Specification:</b> Nominal Voltage : 24V Measuring Range : 0 to 10 Bar Pressure switch warning Point : 0.8 ± 0.15 bar Qty : 01 No's	
10	Electro Pneumatic Pressure switch	131 400 414 000 / Electro Pneumatic Pressure switch. <b>Specification:</b> Nominal Voltage : 24V Operating Pressure : 15 Bar Set Point : 4.5 ± 10% bar upwards Qty : 01 No's	
11	Electro Pneumatic Pressure switch	131 400 415 000 / Electro Pneumatic Pressure switch. <b>Specification:</b> Nominal Voltage : 24V Operating Pressure : 15 Bar Set Point : 8.3 ± 10% bar upwards Qty : 01 No's	




12	Cabin lock pressure switch	131 999 108 000 / Cabin lock pressure switch <b>Specification:</b> Nominal Voltage : 24V Load : 28W Type : NO/NC Type Qty : 01 No's	
13	Engine start push button	131 853 040 000 / Engine start push button switch. <b>Specification:</b> Nominal Voltage : 24V Nominal Current : 10A Type : NO type Qty : 01 No's	
14	<b>Spotlight (4433110780)</b>	443311078000 / Spot lamp <b>Specification:</b> Nominal Voltage: 24V Wattage: 35W Qty : 01 No's	
15	<b>Beacon Lamp (442079026714)</b> Beacon lamp is used on the cabin for emergency situations during and convey lamp.	Nominal Voltage: 24V Nominal current rating: 3.5A at 24V Bulb: 24V, 70W Bulb Category: H1 Color of lens: Orange Qty : 02 No's	
16	<b>Doom Light (443313108103)</b> Used as cabin light.	Nominal Voltage: 24V Bulb: 24V, 21W Color of lens: clear Qty : 01 No's	

**ii) Cabin Dash board control system:**

Cabin Dash board electrical control and gauges with brief description mentioned below.

S.No	Description	Specification	Photo
01	<p><b>Volt Meter (131414016000)</b> Panel Mounted Analogue voltmeter is use to measure the system voltage.</p>	<p>Operating Voltage :18V to 32V Dc Current Consumption (without illumination) : 63mAmp Operating Temp : -30<sup>0</sup> C to +85<sup>0</sup> C Protection :IP64 &amp; Reverse polarity protection Back Light Bulb: 24V, 3W Field Color: 18-20V Red, 20-24V Red-Green, 24-30V Green, 30-32V Red Qty: 01 No.</p>	





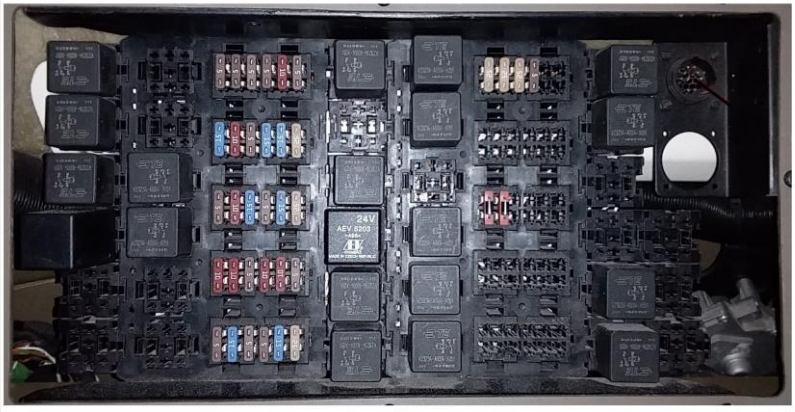


02	<p><b>Fuel Gauge</b> <b>(443422005000)</b></p> <p>Panel Mounted Analogue Fuel Gauge is used to indicate the amount of fuel available in the fuel tank through a fuel float sensor located in the fuel tank.</p>	<p>Operating Voltage :24V Operating Temp : -25<sup>0</sup> C to +65<sup>0</sup> C Protection: IP54 Basic error in the perceptual value of the scale length: 0 (Empty Tank) : -8% ½ (Half Tank) : ±7% 4/4 (Fuel) : ±7% Additional Error : ±2% / 10<sup>0</sup> C Back Light Bulb: 24V, 2W for reserve indication. Qty: 01 No.</p>	
03	<p><b>Air Pressure Gauge</b> <b>(443321011000)</b></p> <p>Panel Mounted Analogue Gauge used to indicate the system air pressure for both front and rear pneumatic circuits of the vehicle.</p>	<p>Operating medium: Air Operating Pressure: 0-10 bar No of Ports: Two Size : M12x1.75 Operating Temp : -25<sup>0</sup> C to +65<sup>0</sup> C No of Needles : Two Needle Color: White &amp; Red Lamp: 24V, 2W bulb Qty: 01 No.</p>	
04	<p><b>Air Pressure Gauge</b> <b>(443415008000)</b></p> <p>Panel Mounted Analogue Gauge used to indicate the air pressure of the tyre.</p>	<p>Operating medium: Air Operating Pressure: 0-10 bar No of Ports: One Operating Temp : -25<sup>0</sup> C to +65<sup>0</sup> C No of Needles : One Color: White Lamp: 24V, 2W bulb Qty: 01 No..</p>	




<p>05</p>	<p><b>Oil Pressure Gauge (4434140210)</b> Panel Mounted Analogue Gauge used to measure the Engine oil pressure senses through the Engine Oil pressure sensor.</p>	<p>Operating Voltage: 24V dc Operating Temp : -25<sup>0</sup> C to +65<sup>0</sup> C Working pressure range: 0- 5 bar Scale : Linear Lamp: 24v, 2W bulb for low pressure warning indication. Qty: 01 No.</p>	
<p>06</p>	<p><b>Revolution Counter (443415035000)</b> Panel Mounted Analogue cum Digital Gauge used to measure the Engine RPM by Analogue Scale and Engine Hour through the Digital Display/ Scale.</p>	<p>Operating Voltage: 24V dc Operating Temp : -25<sup>0</sup> C to +65<sup>0</sup> C Scale : 0 - 3000 RPM Scale : Linear Field Color: 0-800 RPM, 800-1000 RPM Yellow, 1000-1600 RPM Green, 1600-2200 RPM Yellow, 2200-3000 RPM Red. Lamp: 24V, 2W Qty: 01 No.</p>	
<p>07</p>	<p><b>Speedometer (443400143000)</b> Panel Mounted Analogue cum Digital Gauge used to measure the Vehicle Speed by Analogue Scale and KM through the Digital Display/ Scale.</p>	<p>Operating Voltage: 24V dc Gauge Scale: 0-125 Km/h Qty: 01 No.</p>	

<p>08</p>	<p><b>Switches:</b> <b>Momentary</b> (switches should be provide with relevant symbol)</p>	<p>Operating Voltage: 24V dc Nominal current : 1Amp Switch: Momentary Type : Normally Open (NO) Inbuilt built : 24V, 2W Qty: 02 No. Cut out size: Provision for Spare switches (05 No's) with dummies is to be made for future add'ons.</p>	
<p>09</p>	<p><b>Switches</b> <b>2 Position ON-OFF</b> (switches should be provide with relevant symbol )</p>	<p>Operating Voltage: 24V dc Nominal current : 1Amp Switch : ON-OFF Type : 2 Position Inbuilt built : 24V, 2W Qty: 10 No. Cut out size:</p>	<ol style="list-style-type: none"> <li>1. Dome light</li> <li>2. Fog lamp</li> <li>3. Upper head lamp</li> <li>4. Fuel pump</li> <li>5. Dash board back light</li> <li>6. Hazard warning lamp</li> <li>7. Work lamp</li> <li>8. Beacon</li> <li>9. PTO</li> <li>10. HAK</li> </ol>
<p>10</p>	<p><b>Switches</b> <b>3 Position ON - OFF- ON</b> (switches should be provide with relevant symbol)</p>	<p>Operating Voltage: 24V dc Nominal current : 1Amp Switch : ON-OFF- ON Type : 3 Position Inbuilt built : 24V, 2W Qty: 01 No.</p>	<p>Rabbit/ Neutral / Tortoise</p>
<p>11</p>	<p><b>Switches</b> <b>3 Position OFF- ON - ON</b> (switches should be provide with relevant symbol)</p>	<p>Operating Voltage: 24V dc Nominal current : 1Amp Switch : OFF- ON-ON Type : 3 Position Inbuilt built : 24V, 2W Qty: 01 No.</p>	<ol style="list-style-type: none"> <li>1. 2 speed fan switch</li> <li>2. Head lamp switch.</li> </ol>



<p>12</p>	<p><b>Switch</b> <b>Rotary switch</b></p>	<p>Operating Voltage: 24V dc Nominal current : Amp Switch : OFF- ON-ON- ON Type : 4 Position Inbuilt built : - Qty: 01 No.</p>	 <p>For winch operation</p>
<p>13</p>	<p><b>Indication lamps</b> (indication lamps should be provide with relevant symbol)</p>	<p>Operating Voltage: 24V dc Watt: 2 Watt Type : LED Qty: 15 Nos etc., Provision for Spare indication slots (05 No's) with dummies is to be made for future add'ons.</p>	 <p>Indication lamps for</p> <ol style="list-style-type: none"> <li>1. cabin lock</li> <li>2. air filter clog indicator</li> <li>3. Parking</li> <li>4. 60% air</li> <li>5. 90%air</li> <li>6. High beam</li> <li>7. Battery charging</li> <li>8. Directional indicator</li> <li>9. Directional indicator</li> <li>10. Differential lock</li> <li>11. Inter Axle - lock</li> <li>12. oil Pressure</li> <li>13. Engine Over heat</li> <li>14. Mal – function</li> <li>15. Air filter clog etc.,</li> </ol>
<p>14</p>	<p><b>Mobile charging socket :</b> Panel mounted socket used for charging the mobile phones.</p>	<p>Operating voltage: 24 Vdc Output rating : 1.5 Amp/ 9-12 Vdc Qty: 01No.</p>	

<p>15</p>	<p><b>Fuses &amp; Relays :</b></p>	 <p>Suitable rating of fuses (i.e., 5Amps, 8Amps, 16Amps, 25Amps Etc) and relay to be used for protection against short circuit and over load protection of electrical and electronics component of dash board control and electrical system of the equipment . Along with the above timers, interrupts &amp; flashers are used for some of the system functional.</p>	
<p>16</p>	<p><b>Ignition key switch</b> /Steering closure set <b>(549451707000)</b> Main key switch used to ignite the engine and same key can be used for door locking.</p>	<p>Nominal voltage: 24Vdc Nominal Current : 25A No of positions: 4 positions No of pins: 5 pins Qty: 01 No.</p>	
<p>17</p>	<p><b>Circuit Breaker</b> <b>(443815432020)</b> Battery cut off switch/ circuit breaker is mounted in Cabin for making and breaking the negative line.</p>	<p>Nominal Voltage : 24Vdc Nominal Current : 150A Safe Switching Current :1200A Type: Single pole Operating temperature: -55<sup>0</sup>C to 65<sup>0</sup>C Terminal size: Connector terminals : Terminals are for 95Sq mm cables. Qty: 01 No.</p>	

<p>18</p>	<p><b>High Low switch (443853128000)</b> Switch is mounted in gear shift lever assy for changing the mode of operation of gears either in High or Low.</p>	<p>Operating Voltage : 24Vdc Switching action : Rotary  Qty: 01 No.</p>	
<p>19</p>	<p><b>Socket ZAB (3455110010)</b> Socket is used for Auxiliary power supply for other vehicle and for start receptacle</p>	<p>Voltage: 24Vdc Current rating: 200A No Of leads: Two Type of leads: Copper Mounting : screw mounted.  Qty: 01 No.</p>	
<p>20</p>	<p><b>Electrical motor for wiper (4431220250)</b> Electrical motor used for wiper application and should be able to operate at 3 speed.</p>	<p>Nominal Voltage: 24Vdc, 35W Nominal Current : Application: Wiper No of speeds: 3 speed Modes: Fast , Slow, &amp; Interval mode.  Qty: 01 No.</p>	
<p>21</p>	<p><b>Electric Wind Screen (4438310190)</b> Electrical motor used for water sprinkler on the wind screen.</p>	<p>Nominal Voltage: 24Vdc Nominal current : Application: Sprinkler motor No of speeds: 1 speed Working fluid: water  Qty: 01 No.</p>	

22	<p><b>Contactless switches</b></p>	<p>Nominal voltage : 24V                  Nominal current : 1mA                  Type: Normally open type                  Application:                  Used for Break and clutch.</p> <p>Nominal voltage : 24V                  Type: Normally Closed type                  Application:                  Accelerator pedal</p>	
23	<p><b>Independent Heater</b></p> <p>Separate fuel tank is used for independent heater to burn and generate the heat and blower fan will blow the hot air to cabin space.</p>	<p>Nominal Voltage : 24V</p> <p>Control :</p> <p>Application :                  For cabin heating.</p> <p>Qty: 01 No.</p>	

**iii) Cabin Wiring harness:**

Cabin wire harness to be developed by the manufacturer as per the Technical Specifications / Drawings provided by BEML.

S.No	Description	Specification	Photo
01	Cabin wire harness	<p>Cabin wire harness is consisting of number of nodes and branches which will be connecting them to vehicle harness side and cabin side, which includes electrical and electronic components, Drivers panel board, fuses and relays.</p> <p>Terminating connectors should</p>	

		<p>be of dust proof and water tight which can withstand entry of water ingress.</p> <p>25Pin Amp connector is used in the harness which will connect and interact with the ECU and engine harness of the Vehicle.</p> <p>Harness to be insulated with FRHR bandage in order to protect provide with heat proof tape</p>	
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### Scope of work:

Based on the response from Interested Firms for this EOI, Separate RFQs will be floated to shortlist one capable firm for development of NDA and MoU will be signed with the final firm evaluated in the RFQ. BEML will issue drawing & specifications to the firm.

- A. The development and Production is planned in three phases
  - 1) Development stage: 5 set to be developed within 1 months of contract.
  - 2) Pilot Production stage: 10 set to be produced based on feedback of prototypes within 1 months from prototype clearance.
  - 3) Bulk Production stage: More than 600 numbers in the first year after pilot batch clearance by BEML/MoD.
- B. The brief scope of work is,
  - a. The firm has to offer the finished one for inspection and clearance by BEML.
  - b. Supply the cabin Electrical & Electronic system to BEML along with quality inspection records for having complied for all the standards.
- C. Firm has to provide certificates for all the electrical & electronic components as per CMVR, JSS55555 & MIL standards.

## 2. Pre-Qualification Criteria:

Interested firms shall fulfill the following criteria while submitting the Eol.



- i. Firm having more than 5 years of experience in design, development of Electrical & Electronic control system for the Cabin.
- ii. Firm with sound financial status – Consistently profit making for the past 3 years.
- iii. Firm should be certified for the latest Quality Management System.
- iv. EOI may be responded by individual firm or a consortium of firms represented by a lead member. In case of consortium, lead member shall respond to the EOI and will be responsible for the success of the program.
- v. The firm shall have the following basic and essential facilities to qualify to this EOI.
  - a) Latest CAD software & hardware for handling Design & Documentation
  - b) Capability to design and development of modular type.

**3. Details of the firm to be provided with necessary supporting documents:**

- i. Company Registration certificate indicating name of the firm, year of establishment, incorporation details, Members of the Board, URL of the firm's website.
- ii. Name of the contact person, address, Telephone, Fax & email
- iii. Number of years of experience in design and development of Electrical & Electronic control system for the Cabin
- iv. Copy of the Supply Orders to brief the past and similar ongoing projects, if any.
- v. Details of IT infrastructure and certificates of quality management system of the firm.
- vi. Financial performance documents (Audited Balance sheets and Profit & Loss statements etc.) with details of turnover for last three (3) years
- vii. Details of Contract(s) or order(s) terminated before completion, if any
- viii. Details of any premature termination of job/supply order/contract for Min of Defence, India or any other Government / Quasi Government organization in India.
- ix. Value of largest two projects executed in last 5 years
- x. Capability to furnish Bank guarantees.
- xi. Details of important customers

**Note:** The responses from Firms/OEMs that are black listed/restricted by Government of India or its Agencies will not be considered.

#### 4. Submission of EOI:

In this context, EoI in sealed cover, Providing manufacturing capability details, documents, similar existing product development details, covering letter and certificates (MSME,ISO etc) shall be submitted by interested reputed firms, superscribing “**Expression of Interest’ for development of ”** on or before 14:00 hours of 17.09.2019, to

**Deputy General Manager –Materials  
BEML LIMITED,  
KINFRA Park, Menon Park Road,  
Kanjikode East,  
Palakkad – 678 621**

**Kerala  
India.**

**For any queries please contact below mentioned details:  
Tel (Off): 0491 2568178  
Email: pm@beml.co.in**

The last date for receipt of EOI at the above address will be as per the information published and will be opened on the same date at 1515 hrs.

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