



**BHARAT HEAVY ELECTRICALS LTD.**  
 (A GOVT. OF INDIA UNDERTAKING)  
 P.O BHEL Jhansi - 284120, INDIA  
 Tel.:0510-277001/2412260  
 Website : jhs.bhel.com

**PURCHASE ENQUIRY**

ENQ NO/DT:	E96250050	18/07/25	PAGE	1 4
REV NO/DT:	0	18/07/25		

PLEASE SEND YOUR BEST QUOTATION AS PER TERMS & CONDITIONS AND REMARK MENTIONED UNDERNEATH.	
Enq Due on:	28-07-25 MONDAY
Close at:	13:15 Open at:14:00
Matcat:	962050 SPEED-TIME-DISTANCE
Validity:	90 days from Technical bid opening date
IEM:	
TOP:	See Special Remarks
RA:	KA not applicable
Est. Value:	Item wise
Bid Type:	TWO BID
Tot Item:	1
Delivery:	FOR Jhansi
E-Proc:	Yes

REQUIRED: TEST CERT/ GUARANTEE CERT

ITEM NO :	1	PSL QTY/UM:	2.00 ST
MATL CODE :	JS9009516700	PO QTY /UM:	2.00 ST
DESTINATION:	JS		

DESCRIPTION	DELIVERY	QUANTITY (PSL UM)
Microcontroller Based Electronic Speed Indicating and Recording System Generally as Per RDSO Spec No. MP.0.3700.07, Rev-06 Or Latest.	AUG-25	1.00
However, specific Requirement/Scope of Supply shall be considered is as under.	DEC-25	1.00
1. Operating Voltage - 24VDC		
2. Recorder Cum Indicator Unit only (without separate Indicator Unit) A separate Indicator Unit is not required		
3. Speed Sensor		
4. Junction Box with Interconnection Cables		
5. 2 No's of Speed Dependent Contact of 5 Amp @24V with User Setting. which closes at 10Kph and dropout at 8kph shall be provided (adjustable).		
6. Max. Speed Range 0-60 Kph		

**SPECIAL REMARKS :**

FOR ANY CLARIFICATION ON OUR TENDER TERMS AND CONDITIONS/ DRAWINGS, SPECIFICATION, BEFORE DUE DATE OF TENDER OUR CONTACT DETAILS ARE AS UNDER  
 PHONE NO. 0510-241-2324/MOB-08824409266.  
 E-MAIL : yogeshmeena@bhel.in

- ANNEXURE-B TO BE RETURNED DULY SIGNED WITH STAMP OF PARTY ALONG WITH OFFER AS A TOKEN OF ACCEPTANCE.
- RATES ARE TO BE QUOTED FOR BHEL JHANSI (INCLUSIVE OF FREIGHT & INSURANCE).
- TERMS OF PAYMENT :

I- 100% PAYMENT WITHIN 90 DAYS ( WITHIN 45 DAYS FOR MSE REGISTERED SUPPLIERS AS PER RELEVANT ACTION FORCE SUBJECT TO SUBMISSION OF LATEST UDYOG ADHAR MEMORANDUM CERTIFICATE) FROM THE DATE OF RECEIPT MATERIAL AND SUBMISSION OF CLEAR AND ADMISSIBLE BILL, SUBJECT TO ACCEPTANCE OF MATERIAL AT BHEL, ON DIRECT PRESENTATION OF THE DOCUMENTS.



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II- ANY OTHER PAYMENT TERMS WILL BE LOADED FOR DEVIATION PERIOD AS PER FORMULA GIVEN BELOW-

FOR DOCUMENTS THROUGH BANK/COD(CASH ON DELIVERY i.e.(AGAINST DRS):  
FOR 90 DAYS @((BASE RATE OF SBI ON ENQUIRY DUE DATE + 6%)PER ANNUM.

4. Warranty for item shall be 24 months from date of supply,
5. INSPECTION AFTER RECEIPT OF MATERIAL AT BHEL JHANSI.
6. OFFERS SHALL BE SUBMITTED THROUGH BHEL'S E-PROCUREMENT PORTAL WHICH CAN BE ACCESSED THROUGH FOLLOWING URL:  
<https://eprocurebhel.co.in/nicgep/app>.
7. GST SHALL BE LEVIED ON THE LD PORTION (IF ANY), AS APPLICABLE, FOR WHICH BHEL SHALL RAISE A GST RELATED TAX INVOICE ON THE SUPPLIER ACCORDINGLY.
8. SINCE, INPUT CREDIT OF GST WILL BE AVAILABLE TO BHEL-JHANSI ONLY AFTER CORRECT FILING OF RETURN AND PAYMENT OF APPLICABLE GST BY SUPPLIER,REIMBURSEMENT OF GST SHALL BE MADE BY BHEL-JHANSI ON MATCHING OF VENDOR INPUTS AT GST PORTAL AND AFTER ENSURING AVAILABILITY OF INPUT CREDIT TO BHEL-JHANSI.PAYMENT OF TAX SHALL BE DONE ONLY AFTER AVAILING MATCHING ITC,IN ALL CASES WHERE BILLS ARE SUBMITTED DIRECTLY TO BHEL-JHANSI OR THROUGH BANK OR UNDER LC OR THROUGH ANY OTHER MODE.
9. ALL THE TERMS & CONDITIONS OF CONTRACT WITH RESPECT TO TAXES & DUTIES ARE SUBJECT TO THE NEW TAXATION LAWS INTRODUCED FROM 01.07.2017 (e.g GST). THE ITEMS OF PURCHASE ENQUIRY ARE REQUIRED FOR DIESEL LOCO.
10. GUARANTY & TEST CERTIFICATE REQUIRED FOR EACH SUPPLY.
11. LD / PENALTY FOR DELAYED PERFORMANCE IS AS PER GENERAL TERMS AND CONDITION (GTC) CLASUE SL NO8.
12. THE EVALUATION CURRENCY FOR THIS TENDER SHALL BE INR.
13. ALL OTHER TERMS AND CONDITION UNLESS OTHERWISE SPECIFIED AND DIRECTED ARE AS PER GENERAL TERMS AND CONDITION OF PURCHASE ENQUIRY.

In case the bidder has not submitted PAN No, TIN No. and E-mail ID, the bidder has to submit the same along with the copy of PAN No and TIN No. Else his offer will be liable to be rejected.

If you are not in a position to quote due to any reason, you must send regret letter titled enquiry no. etc,failing which you may not be considered for sending future enquiries.

\*\*\*\*\*

ENCLOSERS:



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## PURCHASE ENQUIRY

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FOR AND ON BEHALF OF  
BHARAT HEAVY ELECTRICALS LTD

*Amitesh Kumar*  
18/07/2025

AMITESH KUMAR  
MANAGER (MM-2)  
Email:-AMITESH@BHEL.IN

\*\*\*\*\* END OF PURCHASE ENQUIRY\*\*\*\*\*

### NOTE :

- \* THE BIDDER IS INFORMED THAT THE GENERAL TERMS & CONDITIONS OF ENQUIRY (JHS 2055A Rev 03) WHICH ARE UPLOADED AT <https://jhs.bhel.com/apps/sip/index.php> AT (TERMS & CONDITION -> FOR ENQUIRY ) LINK, ARE TO BE READ BY THE BIDDER BEFORE SUBMITTING QUOTE IN THE ENQUIRY. BHEL SHALL CONSTRUCT THE PARTICIPATION BY THE BIDDER IN ENQUIRY AS ACCEPTANCE TO THE GENERAL TERMS AND CONDITIONS OF ENQUIRY.
- \* SUPPLIERS ARE REQUESTED TO INFORM US WITH VALID CERTIFICATE, IF THEY ARE REGISTERED UNDER MSMED ACT'2006. (APPLICABLE FOR INDIAN SUPPLIERS ONLY).
- \* FOR SUPPLIERS SUPPLYING FROM OUTSIDE THE LOCAL AREA OF BHEL JHANSI, ENTRY TAX WILL BE APPLICABLE. SUPPLIERS SHOULD NECESSARILY INDICATE RATE OF ENTRY TAX SEPARATELY WHEREVER APPLICABLE. THEY SHOULD ALSO MENTION THE ENTRY TAX CHARGED SEPARATELY IN THE INVOICE.
- \* FOR SUPPLIERS SUPPLYING FROM OUTSIDE UP, IN CASE THE OFFER IS SILENT ON ENTRY TAX, IT SHALL BE LOADED SUITABLY WITH THE APPLICABLE RATES
- \* IN CASE IF THERE IS ANY DIFFERENCE BETWEEN THE 'SPECIAL REMARKS/ANNEXURES' OF THE ENQUIRY AND THE PREPRINTED TERMS & CONDITIONS (REF JSC140/M2053), THE REQUIREMENT GIVEN IN REMARKS WILL PREVAIL.
- \* Reference Sl. No. 2(B) of General Terms and Conditions regarding option for offer submission through Email addressed to [tenderbox.jhs@bhel.in](mailto:tenderbox.jhs@bhel.in) , please note that the maximum mail size including attachments should not exceed 15 MB , otherwise the offer shall not be delivered due to size limitation and bidder sending mail attachments more than 15 MB will have no claim whatsoever on the subject tender . Also due to any technical snag , if offer has not reached [tenderbox.jhs@bhel.in](mailto:tenderbox.jhs@bhel.in) , it will be bidder's sole responsibility to ensure offer submission through alternate routes before the due date and time .BHEL will not entertain any such claim for non-receipt of offer on time .

**PRE-QUALIFYING CRITERIA FOR THE TENDER**

Sl.No.	PQR points	Remarks
1.	<p>Bidder should have supplied same or similar item to BHEL, Indian Railways, Loco Manufacture, any other manufacturer of railway rolling stock or any organization/ user for rolling stock application.</p> <p>Bidder to submit a copy of PO and Tax invoice Delivery challan in this regard.</p>	YES/NO
2.	<p>If supply was done to BHEL, Jhansi, bidder should mention the reference PO No. against which supply was completed.</p> <p>Bidder to submit copy of PO, tax invoice/Delivery challan.</p>	BHEL, Jhansi Reference PO No.- _____
3.	<p>If supply was done to a company other than BHEL, Jhansi, bidder to furnish copy of following documents along with their bid:</p> <p>(i) Reference Purchase order Copy</p> <p>(ii) Tax Invoice(s) w.r.t. supplies completed against above submitted Purchase order.</p>	<p>(i) Reference Purchase Order No. with date : _____ _____</p> <p>(ii) Customer Name: ' _____ _____</p> <p>(iii) Tax Invoice No. with date w.r.t. supplies against above PO: _____ ' _____ _____</p> <p>Please ensure submission of above documents along with bid.</p>

Bidder Name with seal:

Contact No: \_\_\_\_\_

**BHARAT HEAVY ELECTRICALS LIMITED JHANSI - 284120**  
(A Govt. of India undertaking)  
Material Management Department

ANNEXURE-B

ENQUIRY NO. -E97250006

**Mandatory sheet regarding instruction to bidders for compliance for enquiry**

**Important: This format is to be submitted, along with Part-1 of bid, duly signed by the bidder. Any deviation from the T&C mentioned below is not acceptable. Offers received without this acceptance will be treated as non-responsive and shall be liable for rejection.**

SI no	Description	Supplier's comments confirmation/ (Tick appropriate Answer)
1	We confirm that our offer meets all the technical requirements as given in the enquiry item description, technical annexure & remarks of the tender.	<input type="checkbox"/> Accepted
2	Is there any technical deviation from the item specification mentioned in enquiry Note: Offers with technical deviations are liable for rejection	<input type="checkbox"/> YES, Mention the deviation in the technical offer <input type="checkbox"/> No
3	Taxes & duties to be quoted as per GST act 2017	<input type="checkbox"/> Accepted
4	Offer should remain valid up to 90 days from the tender opening date	<input type="checkbox"/> Accepted
5	Rate of GST applicable on item	_____ % Extra GST
6	Shortest Delivery period in number of days/Weeks/months from date of Purchase Order for supply of items.	_____ PO Date
7	Inspection clause as per Purchase Enquiry remark	<input type="checkbox"/> Accepted
8	Prices should be remain firm till execution of the contract	<input type="checkbox"/> Accepted
9	Warranty clause as per Purchase Enquiry remark	<input type="checkbox"/> Accepted
10	Warranty replacement: Goods shall comply with the specifications for material, workmanship and performance. Any replacement of defective/failed item due to unsatisfactory performance and defects in design, materials and workmanship during above warranty period shall be replaced/ repaired free of cost within one month from date of intimation on the basis of FOR BHEL Jhansi/ Customer site. Customs clearance and duty payments, if any, for such cases shall be to the account of vendor only.	<input type="checkbox"/> Accepted
11	Test certificate / Warranty certificate/ Conformance certificate/ Instructions Manuals as specified in enquiry header will be provided along with supply.	<input type="checkbox"/> Accepted
12	BHEL reserves the right to go for reverse auction(RA) for finalisation of purchase order ,Applicability As per enquiry	<input type="checkbox"/> Accepted
13	Vendor to submit GSTIN certificate and copy of PAN card along with Part-1 of bid.	<input type="checkbox"/> Accepted
14	<b>Risk Purchase-</b> If the material is not supplied within the agreed delivery period, BHEL reserves the right to cancel the order and purchase the material (of the undelivered portion from alternate source(s) at the Risk and Cost of the Seller.	<input type="checkbox"/> Accepted
15	The General Terms and Conditions ( GTC) of Enquiry for - JHS 2055A Rev 03 sent along with purchase enquiry as annexure-A as well as uploaded on SIP at <a href="https://www.bheljhs.co.in/apps/sip/enq_terms/enq_terms18042017.pdf">https://www.bheljhs.co.in/apps/sip/enq_terms/enq_terms18042017.pdf</a> has been read by us and we confirm acceptance of all the General Terms & Conditions of Enquiry.	<input type="checkbox"/> Accepted
16	Basic rate quoted is inclusive of packing & forwarding charges NOTE:- If P&F price not mentioned will be treated as zero.	<input type="checkbox"/> YES  No, Mention P&F charges as ..... % of basic Price
17	Supplier identification to be marked on each item for its identification in future	<input type="checkbox"/> Accepted

18	<p><b>Liquidated damage (L.D)-</b>  A. LD shall be 0.5% of the order value per week of delay or part thereof subject to a maximum of 10% of the full order value.  B. In case of any change to the order value, the LD shall be 0.5% of the revised order value per week of delay or part thereof subject to a maximum of 10% of the revised order value.  C. In case of staggered delivery schedule, LD shall be 0.5% per week of delay or part thereof subject to maximum of 10% of the undelivered portion.  Delivery date as per terms and conditions of purchase order shall be considered as reference date for calculation of LD. Reference date shall be HAWB date for calculation of LD for foreign supplier.  <b>In case of non-acceptance of BHEL LD clause, the suitable loading up to 10% shall be done on suppliers quoted rate to arrive at L-1 status</b></p>	<input type="checkbox"/> Accepted <input checked="" type="checkbox"/> Accepted
19	Rates quoted in the price bid are on -: FOR BHEL JHANSI (Freight and insurance up to "BHEL JHANSI " is in vendor Scope and charges are inclusive in quoted price).	<input type="checkbox"/> Accepted
20	<p><b>PAYMENT TERMS</b>  100 % payment within 90 days ( 45 days for MSE (micro and small category ) suppliers as per relevant act in force) from the date of receipt Of material and submission of clear and admissible bill, Subject to acceptance of material at BHEL, on direct presentation of the documents.</p>	<input type="checkbox"/> Within 45 days ( For Micro and Small Category vendor , UDYAM attached ) <input type="checkbox"/> Within 90 days
<p><b>If vendor is MSE (Micro and small category) kindly submit Updated UDYAM cetificate</b></p>		
<p>*Payments to vendors who are seeking benefits under MSE act shall not be entertained if the Udyam registration submitted by them is not valid on the date of Purchase Order and date of supply (SRV Date of BHEL). It is hence in the interest of the vendor that they validate the status of udyam registration regularly with BHEL.  * Benefits earmarked for Purchase from Micro &amp; Small Enterprises (MSEs) – Indigenous Purchase is mentioned in annexure A sl no 22. (Latest Indian government rule shall be applicable)  * Any deviation from the above payment terms, if accepted (by BHEL), shall be loaded @ SBI base rate (as on date of Part I bid opening) + 6% per annum, for the purpose of bid evaluation.</p>		
21	Local content in item if any raw material purchasing or manufacturing is being done outside India. Vendor has to provide a certificate from the statutory auditor or cost auditor of the company(in the case of companies) or from practicing Cost Accountant or from a practicing CA(in respect of suppliers other than companies) giving the percentage for Local content in cases of procurement for a value in excess of Rs. 10 Cr.	Yes _____ % <input type="checkbox"/> Not applicable if all activities performed in India
22	I certify that- (a) I am not suspended by BHEL Jhansi or any other unit/office of BHEL or any other government organization, and (b) I am not guilty by court of law in India for any offence involving fraud, dishonesty and moral turpitude.	<input type="checkbox"/> Yes <input type="checkbox"/> Yes I Certify

<p><b>23</b></p>	<p>Conflict of interest:  The bidder notes that a conflict of interest would said to have occurred in the tender process and execution of the resultant contract, in case of any of the following situations:  i) If its personnel have a close personal, financial, or business relationship with any personnel of BHEL who are directly or indirectly related to the procurement or execution process of the contract, which can affect the decision of BHEL directly or indirectly;  ii) The bidder (or his allied firm) provided services for the need assessment/ procurement planning of the Tender process in which it is participating;  iii) Procurement of goods directly from the manufacturers/suppliers shall be preferred. However, if the OEM/ Principal insists on engaging the services of an agent, such agent shall not be allowed to represent more than one manufacturer/ supplier in the same tender. Moreover, either the agent could bid on behalf of the manufacturer/ supplier or the manufacturer/ supplier could bid directly but not both. In case bids are received from both the manufacturer/ supplier and the agent, bid received from the agent shall be ignored. However, this shall not debar more than one Authorised distributor (with/ or without the OEM) .from quoting equipment manufactured by an Original Equipment Manufacturer (OEM) in procurements under a Proprietary Article Certificate.</p>	<input type="checkbox"/> Accepted
	<p>The Bidder declares that they have read and understood the above aspects, and the bidder confirms that such conflict of interest does not exist and undertakes that they will not enter into any illegal or undisclosed agreement or understanding, whether formal or informal with other Bidder(s), in this regard. This applies in particular to prices, specifications, certifications, Subsidiary contracts, submission or non-submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process. In case, the Bidder is found having indulged in above activities, the same will be considered as a violation of the tender conditions, and suitable action shall be taken by BHEL as per extant policies/ guidelines.</p>	
	<p><b>Signature of Supplier &amp; seal</b></p>	
	<p><b>Name of contact person</b></p>	
	<p><b>Mobile No.</b></p>	
	<p><b>E-mail</b></p>	

Document No.:	MP.0.3700.07	Revision No: 07	Date Issued: Aug, 2017
Document Title: Technical requirements of Micro controller based electronic Speed Indicating and Recording system for Railway application.			

भारत सरकार  
रेल मन्त्रालय  
अनुसंधान  
अभिकल्प और  
मानक संगठन  
लखनऊ  
स्थापित: 1957



Government of India  
Ministry of Railways  
Research Design &  
Standards  
Organization  
LUCKNOW  
ESTT:1957

रेलवे उपयोग में माइक्रोकंट्रोलर आधारित इलेक्ट्रॉनिक  
गति सूचक एवं अभिलेखीय यंत्र  
हेतु  
तकनीकी आवश्यकताएँ

## TECHNICAL REQUIREMENTS OF MICROCONTROLLER BASED ELECTRONIC SPEED INDICATING AND RECORDING SYSTEM FOR RAILWAY APPLICATION

Specification Number	MP.0.3700.07		
Version Number	Rev. 07	Date of Issue	[03/08/2017]

### Brief Description

This document describes the requirements of the Micro controller based electronic Speed Indicating and Recording system for ALCo Diesel Electric Locomotives Electrical multiple units (EMUs) and Diesel Multiple Units (DMUs). The complete specification details the functional requirement of the unit, scope of supply and testing of the equipment ensuring reliability and fail safe operation.



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## FOREWORD

RDSO had revised the specification of technical requirements of Micro controller based electronic Speed Indicating and Recording system for Diesel Electric Locomotives. This revision of the specification mainly focused on requirement of Long term data of approx. 15 hrs. downloadable through Pen drive directly from USB port, which has made in front of the Speed Recorder unit and access without lock and key.

## DISCLAIMER

This specification is based on the studies and meeting conducted by RDSO. Although every care is taken in specifying details adequately and unambiguously, RDSO shall not liable for any kind of damages / losses incurred by any and all due to errors or omissions in this document. When using the information described herein, the user is ultimately responsible for their own actions, as well as the actions of subordinates and assistants, and the consequences arising therefrom.

This document may mention numerous commercial and proprietary trade names, registered trademarks and the like (not necessarily marked as such), patents, production and manufacturing procedures, registered designs, and designations. RDSO wishes to point out very clearly that the present legal situation in respect of these names or designations or trademarks must be carefully examined before making any commercial use of the same.

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## LIST OF AMENDMENTS

Sl. No.	Amendment date	Revision	Details
1.	29 October, 2015	06	Addition of applicable loco in clause 1.1, Page no. 03
			Revision of the Specification in clause 2.2, Page no. 03
			Revision in clause 5.9.3 (b), Page no. 08
			Revision in clause 5.17, Page no. 11
			Revision in clause 9, Page no. 19
			Revision in clause 12, Page no. 19
			Revision in clause 16.9, Page no. 20
			Revision in Annexure-I, Page no. 21, 22
			Drawing (Fig.-1) redrawn, page no. 34
2.	03 August, 2017	07	Addition of new clause 16, page no. 22 Title: Vendor Changes in approved status.
			Addition of new clause in reference 17.10, page no. 23

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## **1. SCOPE**

- 1.1 These technical requirements cover micro controller based electronic speed indicating and recording system for application on ALCo Diesel and Electric locomotives, Electrical multiple units (EMUs) and Diesel Multiple Units (DMUs).
- 1.2 These technical requirements cover basic features of equipment. It is the responsibility of the manufacturer/supplier to develop circuit/detail design to meet the requirements of this specification.

## **2. BASIC DESIGN AND CONSTRUCTION**

- 2.1 The construction shall be mechanically sound so as to assure permanence in all mechanical, electrical, electronic or magnetic adjustments when used in accordance with manufacturer's recommendations.
- 2.2 The design shall conform to IEC-60571 (Latest revision) standard and RDSO specification for "Reliability of electronics used in rolling stock application", Spec. no. ELRS/SPEC/SI/0015, October 2001 or latest revision.
- 2.3 The equipment shall be designed for high degree of reliability, being a safety item.

- 2.4 The equipment shall consist of:

### **A ON BOARD EQUIPMENT**

- .1 Speed Sensor:- Opto-electronic speed sensor to generate pulses with numbers directly proportional to distance covered and with frequency proportional to the speed of locomotive.
- .2 Speed Indicator:- Analog type, one or two, as required by the purchaser.
- .3 Recorder-Cum-Indicator (RCI):- The central control of the equipment with micro controllers and FLASH EEPROM Internal Memory for calculating and recording the journey data, a portable FLASH Memory card and the power supply.
- .4 Junction box:- Connecting the sensor unit to the Recorder-cum-Indicator and the Indicator.
- .5 Odometer:- Incorporated in the Recorder-cum-Indicator (RCI).
- .6 Connecting cables with connectors:-This shall be as per Annexure-I.

### **B EVALUATION EQUIPMENT AND SOFTWARE**

- .1 Memory-Reader Unit (MRU):- To facilitate transfer of the data from Memory-Card to IBM compatible PC.

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.2 Evaluation software:

For every 15 Nos. or part thereof, of ON BOARD EQUIPMENT, 1 No. each of MRU & Evaluation software as above shall normally be procured. The vendors shall, therefore, always quote for the complete set of equipment including MRU & software with individual break-up to enable the indenter to procure Recorder cum Indicator only, Indicator only, MRU only or Evaluation software only or any combination thereof, as per requirement, conforming to these specifications.

- 2.5 The system shall be capable of indicating and recording in both (forward and backward) directions of travel of the Locomotive/EMU/DMU.
- 2.6 The system shall be so designed that, it automatically displays speed in digital form (in digital display), in both the units i.e. `RCI' unit and `Indicator' unit whenever the analog speed indication (Stepper motor) fails in either one of them.
- 2.7 The speed sensor shall have two optical detectors (optical sensor) & the system shall be so designed that when the working detector fails, automatic change over to the second (spare) detector takes place.
- 2.8 The speed sensor shall be so designed as to prevent the ingress of dust, water etc. into it and leaking of lubricant from the axle box. It shall withstand without damage the weather proofness test and water tightness test (Paras 8.5 & 8.6).
- 2.9 The speed sensor, indicators, Recorder-cum-Indicator (RCI) and the Junction-Box shall be contained in rugged and suitable enclosures to afford adequate protection and to ensure permanence of accuracy of the indications and recordings.
- 2.10 In view of limited space\* available in the locomotive/EMU/DMU the equipment shall be designed as compact as possible. Overall dimensions (WxHxD) of the indicator and Recorder-cum-Indicator (RCI) shall not exceed 160x225x160 mm respectively for both the units. The mounting dimensions (WmxHm) for both the units shall be 110x260 mm (Figure 1).
- \* Note: Vendors are advised to study the space availability, location and other requirements, before submitting the offer in their own interest.
- 2.11 The system shall be capable of recording the feature, operation of Tractive Effort limiting switch (ON/OFF), which is mentioned in clause 5.3. One No. type contact (potential free) is available in the existing Tractive Effort limiting switch (ON/OFF) on the locomotive. This potential free contact can be used for taking the signals for recording the feature, operation of Tractive Effort limiting switch. A 6-pin MS connector is provided on the Speed Recorder and in this MS connector, pins are spare to connect this input signal.
- 2.12 The connecting cables shall be of robust construction with heavy protecting sheaths to withstand arduous service conditions and electrical noises and shall end with polarised connectors to eliminate chances of inadvertent wrong connections. Sufficient length of cable connecting various equipments shall be supplied. In case of Electric locomotives and WDP2

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locomotive, the distance between two cabs, where equipments may be mounted is of the order of 20 metres.

- 2.13 The components, materials used in the manufacture of the equipment shall be screened and of high quality and shall comply with relevant Indian Standards or International Standards. The supplier shall indicate specification/particulars in this regard. The rating of all electronic components used shall be marked and be readable clearly.

### 3. MOUNTING

	<u>Components</u>	<u>Location</u>
.1	Speed Sensor Unit	Axle box cover
.2	Speed indicator	Locomotive Cab
.3	Recorder-cum-Indicator	-- do --
.4	Junction box	Locomotive Frame

The equipment shall be suitable for mounting in any position viz. vertical, horizontal or in any inclined position between the horizontal and vertical planes.

### 4. SERVICE CONDITIONS

The equipment shall be capable of working satisfactorily under the service conditions indicated below:

- 4.1 Altitude: Mean sea level to an altitude of 2500 meters.
- 4.2 Temperature (Ambient Air): 5 deg.C to 55 deg.C. The air temperature inside the traction vehicle (in the vicinity of equipment) may reach upto 70 deg. C.
- 4.3 Relative Humidity: Upto 100%.
- 4.4 Ambient conditions: The equipment shall be capable of operating efficiently inspite of dust, dirt, mist, torrential, rain, heavy sand or snow storms, presence of oil vapours and radiant heat etc. to which rolling stock is normally exposed in service.
- 4.5 Vibrations and shocks: The equipment shall be designed to withstand without damage vibrations and shock tests specified in clause 8.12.
- 4.6 Equipment Voltage: Supply voltage for the equipment shall be from a DC supply source normally consisting of accumulator battery and/or auxiliary generator.

The nominal voltages for locomotives are as follows:

Diesel electric locomotive	:	72 volts DC
Electric locomotives, EMUs and DEMUs	:	110 " "
Diesel hydraulic, Narrow gauge locomotives	:	24 " "

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The limits of variations of voltages in which the equipment shall operate satisfactorily are-

Diesel electric locomotives	:	50–90 volts DC
Electric locomotives, EMUs and DEMUs	:	70-125 " "
Diesel Hydraulic, Narrow gauge locomotives	:	20-30 " "

4.7 Spikes & surges: Provision shall be made for suppression of transients (spikes and surges). The equipment shall withstand, without damage, the surge test mentioned in clause 8.11.

4.8 The system shall be interference free from the communication system between the Guard –Driver-Control. The same shall be tested as per IEC 61000 or latest revision for EMC compatibility.

## 5. TECHNICAL REQUIREMENTS

5.1 The RCI and Indicator units shall continuously provide analog indication of speed. They shall have :

- .1 A 16 digit two line Alpha-numeric display which shall show the required parameter by pressing the display key.
- .2 Alpha-numeric Key board.
- .3 Memory full indication which shall be in digital display.
- .4 Audio visual over speed alarm with LED indication.
- .5 Visual indication for Equipment/Recording fail.

5.2 The RCI unit shall also have:

- .1 Memory card
- .2 USB PORT (One No. - Under lock & key)
- .3 USB PORT (One No. - Without lock & key)
- .4 Parameters set button
- .5 Memory freeze switch

5.3 The RCI unit shall continuously record in the memory:

- .1 Speed in Km/h
- .2 Real time in hours, minutes and seconds
- .3 Distance in Km
- .4 Dynamic brake status (ON/OFF)
- .5 Operation of Tractive Effort limiting switch (ON/OFF)
- .6 Train running/stop status
- .7 Fault in system/equipment

5.4 DISPLAY DIAL:- The Dial in both RCI and indicator units shall conform to the following requirements:

- .1 Visible diameter of the dial 120 + 2mm.  
– 0mm
- .2 Ground of the dial white with black numerals and pointer.
- .3 "Aviation Green" LED illuminated back light for illumination of the dial
- .4 The Least Count shall be 2.0 Km/h.

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- 5.5 DRIVE:- Stable and accurate servo controlled stepper motor drive with internal self-check on accuracy of indicator through a feed back potentiometer and comparator circuit, shall be provided. Moving coil type speed indicators shall not be acceptable.
- 5.6 SCALE RANGE
- 5.6.1 Speed indicators/recorders with one of the following speed scale ranges shall be normally required on the Indian Rlys.
- .1 0 - 160 Km/h for broad gauge locomotives.
  - .2 0 - 120 Km/h for meter gauge locomotives, EMUs, DMUs & Rail buses.
  - .3 0 - 75 Km/h for narrow gauge locomotives and WDS4 locos.
- 5.6.2 Scale Spread Over & Direction of deflection:- The scale of the indicator and RCI shall be spread over 240 deg. The direction of deflection of the pointer shall be clockwise for increasing speed when viewed from the front. The marking of the dial shall be as indicated in figure 1.
- 5.6.3 Effective Range:-The upper limit of the effective range of the speed indicator shall be the maximum scale value or at least 95% of the maximum scale value of the indicator. The lower limit of effective range of speedometer system shall be 5 Km/h.
- 5.6.4 Balancing:- There shall be no variation in the reading at zero given by the speed indicator due to change in altitude from that at which it was calibrated, i.e. from the vertical plane to the horizontal or vice-versa.
- 5.7 ODOMETER:- A seven digit kilometre counter shall be provided. This shall be incorporated in the RCI unit as part of digital display.
- 5.8 The time base in the system shall be maintained by a clock chip of minimum life of 5 years.
- 5.9 RECORDING SYSTEM:- The recording system shall consist of-
- 5.9.1 An Internal FLASH EEPROM memory of sufficient capacity to contain the following sub-memories-
- (a) A SHORT-TERM Memory:- To store the most recent data of the last 4 hours of travel in loop (circular) form, in respect of parameters mentioned in Para 5.3, with resolution of one second.
  - (b) LONG -TERM Memory:- To store the most recent speed–time–distance data of the last 45 days of halt and run or 30,000 Kms of distance travel in loop form with resolution of 20 second.
  - (c) FAULT and CONFIGURATION Memories:- To record the equipment status and internal faults and contain customer-specific configuration parameters, to be used for processing the stored data.



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The internal memory shall be accessible through USB port (locked under cover), for downloading of data.

5.9.2 A portable Memory-Card conforming to PCMCIA / PCMCIA compatible (hermetically sealed) / Compact Flash Standard of rugged design containing FLASH EEPROM memory with dimensions (LxB=85x54mm Max), as per ISO 7816, credit card format be supplied. The Memory card shall withstand temperature upto 55<sup>0</sup> C and shall be accessible to only authorised person. Memory card shall be procured from a company of repute/Supplier's own manufacture. Supplier will ensure the availability of spare memory cards for a period of 7 years from the date of supply. The memory card shall be interchangeable from one loco to another loco and also from one unit to another unit (of the same manufacturer). The Memory card shall have sufficient capacity to contain the following sub memories.

- (a) A 4 hours SHORT-TERM memory, with resolution of one second, as in the internal memory.
- (b) A 90 days LONG-TERM memory, with resolution of 20 seconds, as in the internal memory
- (c) FAULT & CONFIGURATION memory, as in the Internal memory.

5.9.3 TRANSFERRING THE JOURNEY DATA:-The data shall be transferred in the following manner-

- (a) Normally the data stored in the portable memory card shall be transferred to a PC. The transfer of data from internal memory shall be only in exceptional cases when the portable memory has been damaged/ lost or can not be salvaged.

The data from the portable memory card shall be down loaded before its reserved capacity (85%) is used, to prevent the recorded data being overwritten. To down load the data the portable memory card shall be removed from the locked cassette compartment of `RCI` unit and inserted into the "Memory Reader Unit", connected to USB port of IBM compatible PC, equipped with evaluation software. After the data is down loaded, the memory card shall be erased for re-use. The "Memory Reader" shall be so designed that it does not require to be disconnected from the PC for normal use of the printer. It shall be possible to down load the data of only SHORT-MEMORY/LONG-MEMORY or both, with suitable commands.

- (b) The additional USB port shall be provided on Speed Recorder without lock & key to access only last 4 hours short term and 15 hours long term data required by the inspectorial staff / officer's foot plating on the locomotive. The data from this USB port shall be accessed by the foot plating officer through an external pen drive without having the need to open the speed recorder lock. This additional USB port shall be used for the last 4 hours short term and 15 hours long term memory of speed recorder and shall copy the desired data by allocation of another memory sector in the existing memory. Transfer (downloading) of data in the external pen drive shall be done automatically.

#### 5.9.4 REPORTING FORMAT

- .1 Printing of data of long-term and short-term memories shall be in continuous printing format, instead of screen by screen printing, to cut down printing time. Normally, the display and printing of data of the long-term memory shall be selectable and shall print out events like violation of pre-determined speed thresholds, starts, stops and speed data between specified time or distance intervals.
- .2 The printing/plotting of the data of short-term memory shall be in detail, with resolution of one second in digital or analog (graphical) format, as desired.
- .3 The analog (graphical) plotting of the data shall be possible in following configurations:-

a)	Speed Vs time at constant time interval	Plotting of speed data at desired constant time intervals, the smallest intervals being 1 second.
b)	Speed Vs Distance at Constant distance interval	Plotting of speed data at desired constant distance intervals, the smallest interval being 5 meter.

It shall also be possible to have above analog (graphical) print outs for desired time or distance intervals, on enlarged / amplified scale, for better clarity.

- .4 The software shall also provide for printing of the data in the following selective formats:
  - a) Only the page desired to be viewed.
  - b) Continuous print out of all pages.
  - c) Between desired time/distance intervals.
  - d) Data above/or below a specified speed threshold.
  - e) Data for a particular Driver/Train No.

Sample format for digital reports of long and short memory data and graphical reports of short memory data are given in Annexure II to V.

- 5.9.5 Necessary software for data retrieval, analysis and printing, in the above manner shall be developed and supplied by the manufacturer of the speed recorder. The software shall be menu-driven and shall not require knowledge of any programming and shall be suitable to be operated with minimum computer literacy. The software shall have file management system for retaining the data in the file name assigned by the operator. The file management shall not require any knowledge of DOS.

#### 5.10 MEMORY FREEZE

"Memory Freeze" facility shall be provided to allow the locomotive to be moved after an incident, without over writing the data stored during last 3 hours of travel. The switch for freezing the data shall be under a sealed glass cover on the 'RCI' unit. The glass shall be broken, when required, for operating the switch. A LED freeze indication shall also be provided.

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#### 5.11 MEMORY FULL INDICATION

The indication shall be provided in both 'RCI' and Indicator units to give advance warning for down loading the data from portable Memory -Card when 85% of the memory capacity has been utilised.

#### 5.12 PERIOD OF MEASUREMENT

The average speed of locomotive is the ratio of the distance travelled to the time required to cover that distance. Thus determining the average speed involves the measuring of a distance and a time period. The shorter the time period, the closer is the average speed to the instantaneous speed. With a view to have average speed indicated as well as recorded very close to instantaneous speed, measuring time period shall be of the order of 0.4 seconds or less.

#### 5.13 WHEEL WEAR ADJUSTMENT

The wheel wear adjustment between the new and fully worn wheel dia shall be provided in the 'RCI' unit in steps of 1 mm from 640 to 1220 mm. This shall not be accessible to the driver.

#### 5.14 OVER SPEED ALARM

Provision shall be made to give audio-visual warning at pre-desired maximum permitted speed. It shall be possible to set this limit at any desired value. However, it shall not be possible for the locomotive crew to interfere with this setting.

#### 5.15 INITIAL SETTINGS

Provision shall be made in both the 'RCI' and Indicator units for manual input by the alpha numeric key board of:-

- (A)
  - i) The Train No./Name in 8 digits.
  - ii) Driver ID/ No./Driver's name in 12 digits.

The data once entered by the locomotive operator, either in Indicator or in Recorder unit shall be acceptable by the other unit also.
- (B) Loco No., max. permitted speed, wheel diameter, time and date by the locomotive maintenance depot only in 'RCI' unit only through parameter set button (locked under cover).

#### 5.15 SEQUENCE OF DATA FEEDING

This shall be in the following manner:-

- i) Shed / Maintenance depot staff
  - a) Loco No.
  - b) Wheel dia.
  - c) Maximum permitted speed
  - d) Date
  - e) Time

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ii) Driver / Operator

- a) Train No.
- b) Driver ID/ No./Driver's name.

5.17 CALIBRATION

The master speedometer shall be used as a reference to calibrate the speedometer in the shed/ Maintenance depot. The Manufacturer/ supplier will calibrate the master speedometer by using function generator. The function generator shall be duly calibrated by NABL accredited agency or any Govt Lab.

5.18 ACCURACY

The accuracy of the speedometer system when tested at a temperature of  $42 \pm 3$  deg. C after a warming up period of not less than 30 minutes shall not be worse than  $\pm 1.0\%$  of the maximum scale value. The additional error introduced by wheel diameter adjustment device shall not exceed  $\pm 0.5\%$  of full scale deflection. The error of the odometer shall be within  $+1\%$  when tested at any wheel diameter. For recommended method of testing, see clause 8.2.2.

5.19 OPTIONAL REQUIREMENTS

The equipment shall have the following optional features to cater for various operating requirements:-

- .1 Speed dependent output relays with potential-less contacts.
- .2 Distance dependent transistor output. To facilitate operation of devices such as wheel flange lubricator.

The details of speed distance interval and number of contacts etc. shall be indicated by the purchaser, if required.

**6. INSPECTION**

6.1 The whole of the materials or fittings used in the construction of the equipment shall be subjected to inspection by the Inspecting officer and shall be to his entire satisfaction.

6.2 The Inspecting officer shall have the power to:-

6.2.1 Adopt any means he may consider necessary to satisfy himself that all the materials or fittings specified are actually used throughout the construction.

6.2.2 Visit at any reasonable time and without previous notice, either Contractor's Works or his Sub-contractor's works, to inspect the manufacture and quality of the work at any stage.

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- 6.2.3 To reject any materials or fittings those do not conform to the relevant standard specifications or have not been manufactured in accordance with approved practices. The rejected materials or fittings shall be marked in a distinguishable manner and shall be disposed off in such manner as the Inspecting officer may direct to avoid its inadvertent use in the product ordered as per this specification.
- 6.3 Testing of equipments and fittings shall as far as possible be carried out at the works of the manufacturer. Testing of bought out components may also be carried out at sub-contractors premises, if so required. The contractor shall provide free of charge, such materials or fittings as may be required for testing whether at his own or his sub-contractors premises. The tests for which facilities are not available may be carried out at RDSO or any other approved laboratory, for which the testing charges shall be payable by the supplier.
- 6.4 All equipments and fittings required for tests shall be selected by the Inspecting officer and the tests shall be carried out in his presence.
- 6.5 No work shall be packed or dispatched until it has been passed by the Inspecting officer, but the contractor's responsibility for its efficiency in every way shall remain the same as if the work had been manufactured and tested by himself.
- 6.6 Should any part requires alteration or any defect appear during the tests or trials, the contractor shall without any extra charge make such alterations or rectify the defect to the satisfaction of the Inspecting officer.
- 6.7 Copies of Maker's test certificate, guaranteeing the performance of the equipment shall be supplied in duplicate along with the delivery of each set of equipment.

## **7. CATEGORIES OF TESTS**

- 7.1 Type Tests:- Type tests shall normally be carried out on one unit of equipment of the approved design. If there is any change in design or source of supply of any component/sub-component/assembly, units made to the changed design or from new source shall be treated as a separate batch for the purpose of conducting type tests.
- 7.2 Routine Tests:- Routine tests shall be carried out on all the pieces of equipment of each order.
- 7.3 Investigation Tests:- Whenever considered necessary by the engineers or the Inspecting officer, the investigation tests are to be carried out on a single piece or more as desired by Inspecting officer in order to obtain additional information on its performance.

## 8. TESTING DETAILS

Tests mentioned in Table 1 shall be carried out on the speed indicating and recording system.

**Table-1**

S. No	Kind of test	Clause		
		Type Tests	Routine Tests	Investigation Tests
1.	Visual Inspection	8.1	8.1	-
2.	Performance Test	8.2	8.2	-
3.	Reversal of Polarity	8.3	8.3	-
4.	Effect of voltage variation	8.4	8.4	-
5.	Weather proofness test	8.5	-	8.5
6.	Water tightness test*	8.6	8.6 #	-
7.	Temperature variation .1 Cooling test .2 Temperature rise test	8.7	-	8.7
8.	Insulation resistance test	8.8	-	-
9.	High voltage test (Flash test)	8.9	8.9	-
10.	Di-electric test	8.10	8.10	-
11.	Surge test	8.11	-	-
12.	Vibration & shock tests	8.12	-	8.12
13.	Endurance test	8.13	-	-
14.	RFI radiated	8.14	-	-
15.	Inducted RF field conducted	8.15	-	-
16.	Electrical fast transient/ burst (capacitive coupling)	8.16	-	-
17.	Electrical fast transient/ burst (direct injection)	8.17	-	-
18.	Power frequency magnetic field	8.18	-	-

NOTE:- \* For Sensor unit only. # In routine test, the sensor will be tested for water tightness test @ 10% of order quantity subject to a minimum of 1 no. per order.

### 8.1 VISUAL INSPECTION

Visual inspection shall be carried out to ensure that the equipment under test is of acceptable workmanship and in conformity with manufacturers design specification accepted by the purchaser.

Checks shall be made for:-

- .1 Fitment of 'Speed Sensor' unit on the axle box.
- .2 Dial illumination, diameter, scale range and spread over of speed indicator.
- .3 Functioning of the odometer.
- .4 Provisions for locking of 'RCI' unit.
- .5 Cable sockets and terminals.
- .6 Indication for "Memory full", over speed and equipment fault.
- .7 Wheel wear adjustment arrangement.

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- .8 Display arrangements for time, distance and date.
- .9 Mounting arrangement.
- .10 Identification markings.

## 8.2 PERFORMANCE TEST

These tests are carried out to check and ensure that the performance of the equipment is in order and meets the specification requirements. These tests shall be carried out at temperature of  $42 \pm 3$  deg. C, relative humidity between 45% and 80% and magnetic field not significantly different from that of the earth. The operating voltage shall be the nominal voltage specified in Para 4.6.

Following tests shall be carried out:-

### 8.2.1 GENERAL WORKING

Run the complete system on a test bench with a variable constant speed drive at mean wheel diameter and nominal operating voltage. Connect the speed sensor to the control unit, via the junction box, and the recorder unit and two speed indicators simultaneously connected to the control unit. Length and type of connecting cables/terminals etc. shall be the same as to be supplied. Run the system for 30 minutes over the full scale range. Check for working of the speed indicator, odometer. The working of 'RCI' unit shall be checked by connecting it to P.C. to check that the recordings are being carried out as required.

### 8.2.2 ACCURACY

The accuracy of the speedometer system shall be measured for the mean wheel diameter at a temperature of  $42 \pm 3$  deg. C, after a warming period of not less than 30 minutes. One of the following means shall be adopted for these tests:-

- a) Against a 'Stroboscope' controlled by a master tuning fork or quartz crystal oscillator, monitoring the same shaft as that under test.
- b) By means of digital frequency meter, operated in parallel to the sensor unit by toothed wheel or other means of obtaining a succession of pulses as used for the sensor unit.
- c) By calibrating against a standard speedometer system of known accuracy driven from the same shaft as that under test. The standard speedometer shall have an accuracy of  $\pm 0.15\%$ .

Ideally, accuracy shall be checked by setting the pointer of the speedometer system under test to the appropriate scale mark and reading the correct speed from the standard source. In case of method (a) above, the correct speed shall be set on the stroboscope and reading of the speedometer under test shall be taken.

Each system shall be tested at a minimum of five approximately equidistant settings over the full scale range, both in ascending and descending order

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of the speed. A variable speed drive with constant angular velocity at any chosen setting shall be used for this purpose.

The accuracy of the speedometer and odometer shall confirm to the requirements of clause 5.18.

For checking the error introduced by wheel dia adjusting device, the shaft under test shall be rotated at different RPMs corresponding to varying wheel dia (covering new to worn-out wheel dia in 5 steps) but representing a fixed road speed. The reading of the speedometer under test shall then be taken by setting the wheel wear compensation device to various steps of wheel dia. The speed tables are available in Annexure-VI.

The difference between the speed observed for a particular setting of wheel diameter and input speed to sensor shall not exceed  $\pm 0.5\%$  of the full scale deflection.

### 8.2.3 CHECK FOR OVER SPEED ALARM

Run the system to the maximum speed to which the over speed alarm is set and check if the alarm is operating.

### 8.3 REVERSAL OF POLARITY

Where reversed polarity protection is provided, the effectiveness of this shall be tested over a period of not less than 1 minute within the specified voltage range. After this test the system shall be connected correctly and the accuracy shall comply with the requirements of clause 8.2.2.

### 8.4 EFFECT OF VOLTAGE VARIATION

The complete speed indicating and recording system shall be operated for mean wheel diameter at three equally spaced speeds covering the full range. At each setting of the speed the operating voltage shall be varied between the limit specified in clause 4.6. The variation in the voltage shall not effect the speed indication.

### 8.5 WEATHER PROOFNESS TEST

The weather proofed parts of the system shall be placed in a simulated installed position in a chamber at a temperature of  $55 \pm 5$  deg. C for a period of 30 minutes, and then subjected to a fine air borne spray of ordinary tap water for 15 minutes. The temperature shall then be allowed to recover the  $37 \pm 5$  deg. C after which the water shall be found not to have penetrated the system. The system shall operate correctly throughout this test.

### 8.6 WATER TIGHTNESS TEST

The water proofed parts of the system (the sensor unit) shall be placed in a simulated installed position and immersed for one hour under water at a pressure of 0.13 bar (1.5 m head of water) at  $37 \pm 3$  deg. C, after which they shall be dismantled and examined to see that there has been no penetration of water.



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## 8.7 TEMPERATURE VARIATION TESTS

### 8.7.1 COOLING TESTS

Complete speedometer system shall be placed, without any voltage applied, in a chamber where the temperature is progressively lowered from ambient to the lowest agreed temperature (at least up to 0 deg. C) over a period of time not less than 30 minutes. The assembly is kept for 2 hours, at the lowered temperature with a tolerance of  $\pm 3$  deg. C (this period starting from the time when the temperature inside the thermal enclosure is uniform throughout).

At the end of this period the accuracy test (clause 8.2.2) shall be carried out keeping the equipment at low temperature.

### 8.7.2 TEMPERATURE RISE TEST

The complete system, normally energized, is placed in a chamber where the temperature is progressively raised from the ambient temperature to 70 deg. C or to highest agreed temperature with tolerance of  $\pm 2$  deg. C over a period of time not less than 30 minutes. The assembly shall then be kept for 3 hours at this temperature with tolerance of  $\pm 2$  deg. C (this period starting from the time when the temperature inside the chamber is uniform).

At the end of this period, accuracy test (clause 8.2.2) shall be carried out.

The accuracy of the speed indicator under the above tests conditions shall be as under:-

Sl. No.	Temperature range - deg. C	Accuracy % of Maximum Scale Value
1.	0 - 34	$\pm 1.5$
2.	34 - 40 ( $37\pm 3$ )	$\pm 1.5$
3.	40 - 70	$\pm 1.5$

## 8.8 INSULATION RESISTANCE

The insulation resistance shall be measured by applying 500 V DC for 15 sec. between all terminals coupled together and the body of the electrical/electronic equipment also between the windings and the body of electrical speed sensor. The insulation resistance shall be not less than 10 M $\Omega$  in both cases.

## 8.9 HIGH VOLTAGE TEST (FLASH TEST )

The insulation between all terminals coupled together and earthed, shall withstand for one minute, 1000V r.m.s. 50 Hz. supply applied in such a manner as to avoid any over voltage produced. During this test the maximum leakage current shall be measured which shall not exceed 0.005A.

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#### 8.10 DIELECTRIC TEST

The dielectric test of the assembly which is to contain the equipped printed circuit boards, itself consisting only a rack and its wiring, shall be carried out in accordance with the rules of IEC Publication 77, Rules for Electric Traction Equipment (clause 24 - See Annexure VII)

#### 8.11 SURGE TEST

Surges and electrostatic discharge shall be as per clause 3.4 of IEC 60571. The surge waveform shall be generated as per clause 10.2.6.2 of the IEC-60571. The test circuit given in figure 4 of IEC-60571 shall be followed. The waveform A is mandatory.

#### 8.12 THE VIBRATIONS AND SHOCKS

The complete assembly or a sub-assembly together with its auxiliaries and mounting arrangements (including shock absorbing devices, if used) shall be subjected to the following tests under the prevailing ambient conditions of the testing area in three mutually perpendicular planes. For these tests, the equipment shall be secured in a suitable position, to a machine producing vibrations of sinusoidal form with adjustable amplitude and frequency.

- .1 Determination of resonance frequency:- In order to determine the possible existence of critical frequencies producing resonance, the frequency shall be varied progressively over the range 1 Hz - 50 Hz within a time of not less than four minutes and the amplitude of oscillation (a) expressed in millimetres should be varied as a function of frequency (f) according to the relation.

$a = 25/f$  for values of 'f' from 1 Hz to 10 Hz

$a = 25/f^2$  for values of 'f' exceeding 10 Hz & up to 50 Hz.

If resonance is produced, the corresponding frequency shall be maintained for ten minutes in each case with the apparatus alive. A check shall be made that no ill effects result on the operation of the apparatus.

- .2 Test with Sustained Vibrations:-The equipment in operation is then subjected to sustained vibration for a period of 2 hours either at the critical frequency, if any detected during the above test, or alternatively at a frequency of 25 Hz. The amplitude of the vibration shall be the value corresponding to the frequency concerned (as given in 8.12.1 above).

- .3 Tests to simulate the effect of shunting shock:-The equipment, in operation, is subjected for 2 minutes to 50 Hzs vibration of such nature that the maximum acceleration is equal to 30 m/sq. Secs (amplitude a = 0.3 mm). At the end of the above tests, the assembly shall be subjected to performance tests (clause 8.2) and di-electric test (clause 8.10)

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### 8.13 ENDURANCE TESTS

The equipment shall be continuously worked for 100,000 Kms at a scale reading of approximately 75% of full scale. These tests shall be carried out at the nominal operating voltage and for mean wheel diameter. The tests shall be acceptable if the equipment performs satisfactorily throughout the tests and also after the tests.

### 8.14 RADIATED, RADIO FREQUENCY, ELECTRO-MAGNETIC FIELD, IMMUNITY TEST

The test shall be done as per IEC61000-4-3. The signal shall be applied to the enclosure of the equipment. The frequency shall be varied progressively over the range 80 -1000 MHz and the field strength of the unmodulated signal be 3 V/m (Level 2). During or after the test no degradation of performance shall be allowed.

### 8.15 IMMUNITY TO CONDUCTED DISTURBANCES, INDUCED BY RADIO FREQUENCY FIELD

The test shall be done as per IEC61000-4-6. The signal shall be applied to DC power in lines. The frequency shall be varied progressively over the range 0.15-80 MHz and the voltage level is 3V (Level 2). During or after the test no degradation of performance shall be allowed and the system shall work normally after the test.

### 8.16 ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

The test shall be done as per IEC61000-4-4. The signal shall be applied to all data lines and voltage applied 0.25 KV (Level 1), (capacitive coupling). Degradation of performance shall be allowed during the test but there should not be loss of function and the system shall work normally after the injected signals are removed.

### 8.17 ELECTRICAL FAST TRANSIENT/BURST IMMUNITY TEST

The test shall be done as per IEC61000-4-4 The signal shall be applied to DC power lines and voltage applied is 2KV (Level 3), (direct injection). Degradation of performance shall be allowed during the test but there should not be loss of function and the system shall work normally after the injected signals are removed.

### 8.18 POWER FREQUENCY MAGNETIC FIELD IMMUNITY TEST

The test shall be done as per IEC61000-4-8. The signal shall be applied to the enclosure of the equipment. The magnetic field applied shall be 30A/m (Level 3). During or after the test no degradation of performance shall be allowed.

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## **9. FIELD TRIALS**

After successful completion of type tests, the equipments shall be subjected to field service trials for a minimum period of one year. The number of trial equipments and venue shall be as agreed to between the purchaser and the supplier or guide line issued by the RDSO (if any). The installation and commissioning of the equipments for field trials shall be carried out by the supplier at his own cost.

## **10. MODIFICATIONS**

Modification, if any required on the basis of the experience gained during the field trials of prototype equipment, shall be incorporated by the suppliers on the further units without any extra cost and such modification shall be finalised in consultation with RDSO.

## **11. TEST CERTIFICATES AND MARKINGS**

### **11.1 TEST CERTIFICATES**

The manufacturer shall provide test certificate of the systems/parts procured from outside and used in the equipment supplied to the purchaser.

### **11.2 IDENTIFICATION MARKING**

The following particulars shall be clearly and indelibly marked on the appropriate location of the equipment:-

- .1 Manufacturer's/Supplier's identification or trade mark.
- .2 Manufacturer's/Supplier's designation (type, symbol or code etc.).
- .3 Manufacturer's serial No./Batch No. and year of manufacture.
- .4 Speed scale range.

### **11.3 MARKING OF TERMINALS**

The correct operation of the equipment depends upon the specific connections of the terminals on speed indicator, speed recorder, and sensor unit. As such terminals shall be marked appropriately.

## **12. WARRANTY**

Equipment warranty shall be as per the IRS standard conditions.

## **13. INSTALLATION INSTRUCTIONS**

Installation instructions shall be provided in a suitable form e.g. instruction card. These instructions shall include the method of inter-connection, type of wire and weight of wire, maximum resistance and whether the wire is screened. The maximum safe transmitter speed shall be indicated. Details of any special precautions necessary shall also be stated.

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#### **14. INSTRUCTIONS MANUAL**

Sufficient copies of Instructions Manual shall be supplied by the manufacturer or supplier. This shall include system description and operating, maintenance, calibration and installation instructions. List of spares with part Nos. or Tech. Specifications shall also be included.

#### **15. PROVEN DESIGN & TECHNICAL COLLABORATION**

The system offered shall be of proven design. The Indian supplier shall furnish documentary evidence of technical collaboration, if any, with a manufacture abroad whose system of proven design has been used by other Rail Roads. In case of offers from foreign bidders, they must indicate the plan for indigenisation in a phased manner and must enclose a copy of MOU with an Indian firm and Reserve Bank of India's clearances.

#### **16. VENDOR CHANGES IN APPROVED STATUS**

All the provisions contained in RDSO's ISO proceeding laid down in document no. QO-D-7.1-11 dated 19.07.2016 or latest (titled: "**Vendor changes in approved status**") and subsequent version/amendment thereof, shall be binding and applicable on the successful vendor/ vendors in the contract floated by Railway to maintain quality of products supplied to Railways.

#### **17. REFERENCES**

Assistance has been received from the following British and Indian Standard Specifications in the formation of this specification:-

- .1 BS: 3403 -1972  
Specification for indicating tachometer and speedometer systems for industrials, Railways and Marine use.
- .2 BS:3190 -1972  
Specification for speedometer and odometer systems for road vehicles.
- .3 IS:3202 - 1965  
Code of practice for climate proofing for electrical equipment.
- .4 IEC: 60571  
Rules for Electronic equipment used on rail vehicles.
- .5 IEC: IEC-60077  
Rules for Electronic Traction Equipment.
- .6 IEC: 61000  
Electro-magnetic compatibility-immunity tests.
- .7 RDSO Specn. No. Spec. No. ELRS /SPEC/SI/0015 (Latest revision)  
Reliability assurance Specification for Electronic Components for use in Rolling Stock.

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- .8 ISO: 7816  
International standard related to electronic identification cards.
  
- .9 Document No. MP-M-7.1-1-Ver-8.0 (Latest revision)  
Master List of Qualifying Quantity for Part I approval and Qualifying Quantity & Qualifying Periods for Part II Approval of items controlled by MP Directorate.
  
- .10 QO-D-7.1-11 (Latest revision)  
Document Title: Vendor - Changes in approved status.

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**ANNEXURE-I**

**Connector & Cable Configuration**

S. No.	Equipment	Signal Name	No. of pins	MS connector type on equipment body	MS connector type on cable	Pin connection details and Cable colour	Cable details
1.	Recorder cum Indicator unit	# Battery supply and Dynamic brake	6	MS 3102 R 18-12P	MS 3106 F 18-12S	Pin A=Battery (-ive) ,Black Pin B=Unused Pin C= Battery (+ive), Red Pin D= Unused Pin E= DB1, Green Pin F= DB2, Yellow)	6 core shielded FRLS cable each core 1.5 mm2 multi strand PTFE insulated with colour Black, Red, Green & Yellow.
		Speed Signal	5	MS 3102 R 16S-8P	MS 3106 F 16S-8S	Pin A=Sensor-1 (output) Black Pin B= Sensor-2 (output)Red Pin C= Unused. Pin D= Supply (+ive) Green Pin E= GND (sensor supply) Yellow	4 core shielded FRLS cable each core 1.5 mm2 multi strand PTFE insulated with colour Red, Green, Yellow & Black.
		Communication to Indicator	3	MS 3102 R 10SL-3P	MS 3106 F 10SL- 3S	Pin A=RS485 Signal White Pin B=Unused Pin C=RS485 Signal Blue	3 core shielded FRLS cable each core 1.5 mm2 multi strand PTFE insulated with colour White & Blue.
2.	Indicator Unit	Battery supply	2	MS 3102 R 12S-3P	MS 3106F 12S-3S	Pin A=Battery (-ive) (Black) Pin B= Battery (+ive) (Red)	2 core shielded FRLS cable each core 1.5 mm2 multi strand PTFE insulated with colour Black & Red.
		Communication to RCI Unit	3	MS 3102 R 10SL-3P	MS 3106 F 10SL-3S	Pin A=RS485 Signal White Pin B=Unused. Pin C=RS485 Signal Blue	3 core shielded FRLS cable each core 1.5 mm2 multi strand PTFE insulated with colour White & Blue.
3.	Speed Sensor	Speed Signal	10	----	MS 3106 F 18-1S	Pin E=Sensor-1 Output Red Pin B=Sensor-2 Output Yellow Pin A=Ground (Sensor supply) Green Pin G= Sensor supply (+ive) Black Pin C, Pin D, Pin F, Pin H, Pin I & Pin j = Unused.	4 core shielded FRLS cable each core 1.5 mm2 multi strand PTFE insulated with colour Red, Yellow, Green & Black.

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S. No.	Equipment	Signal Name	No. of pins	MS connector type on equipment body	MS connector type on cable	Pin connection details and Cable colour	Cable details
4.	Junction Box	Speed Signal	10	MS 3102 R 18-1P	----	Pin E=Sensor-1 Output Red Pin B=Sensor-2 Output Yellow Pin A=Ground (Sensor supply) Green Pin G= Sensor supply (+ive) Black Pin C, Pin D, Pin F, Pin H, Pin I & Pin j = Unused.	4 core shielded FRLS cable each core 1.5 mm <sup>2</sup> multi strand PTFE insulated with colour Red, Yellow, Green & Black.

# Note: To record Tractive Effort limiting switch (ON/OFF) status Pin B or Pin D or both of 6-Pin connector mounted on Recorder cum Indicator unit may be used. The 6 core shielded FRLS cable may be used.



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**ANNEXURE-II**

**SPEED INDICATING-CUM-RECORDING SYSTEM**  
**LONG TERM MEMORY : DIGITAL REPORT**

START DATE: \_\_\_\_\_ LOCO NO: \_\_\_\_\_  
 START TIME: \_\_\_\_\_ MAX. SPEED: \_\_\_\_\_  
 END DATE: \_\_\_\_\_ WHEEL DIAMETER: \_\_\_\_\_  
 END TIME: \_\_\_\_\_ EQUIPMENT NO: \_\_\_\_\_  
 (MAKE)

<b>DATE</b>	<b>TIME</b>	<b>Inst. Speed Km/h.</b>	<b>Inst. Distance Meters</b>	<b>D B Status (ON/OFF)</b>	<b>T E Limit (ON/OFF)</b>	<b>Events/Remarks Start/Stop Train No.: Driver No.: Over speeding</b>

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**ANNEXURE – III**

**SPEED INDICATING-CUM-RECORDING SYSTEM**  
**SHORT TERM MEMORY : DIGITAL REPORT**

START DATE:

LOCO NO:

START TIME:

MAX. SPEED:

END DATE:

WHEEL DIAMETER:

END TIME:

EQUIPMENT NO:  
(MAKE)

<b>DATE</b>	<b>TIME</b>	<b>Inst. Speed Km/h.</b>	<b>Inst. Distance Meters</b>	<b>D B Status (ON/OFF)</b>	<b>T E Limit (ON/OFF)</b>	<b>Events/Remarks Start/Stop Train No.: Driver No.: Over speeding</b>

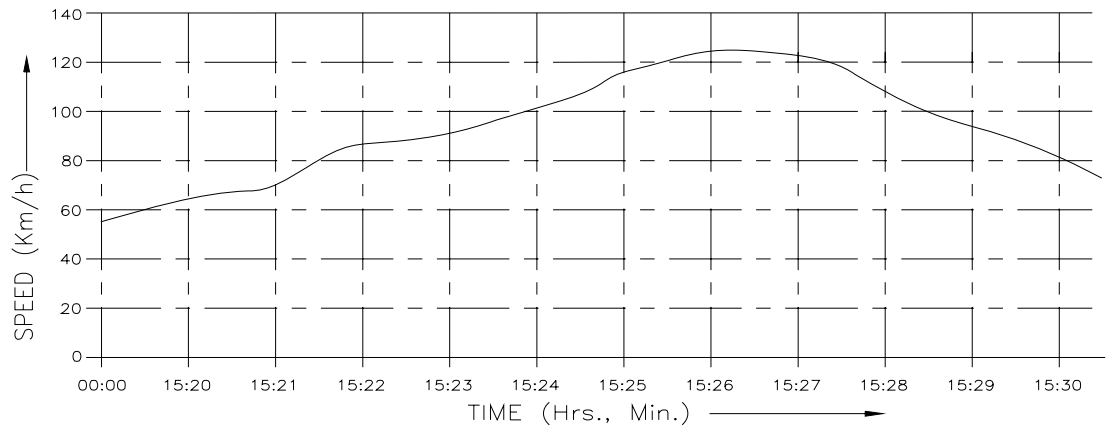
**ANNEXURE – IV**

SPEED INDICATING – CUM – RECORDING SYSTEM  
SHORT – TERM MEMORY: GRAPHICAL REPORT

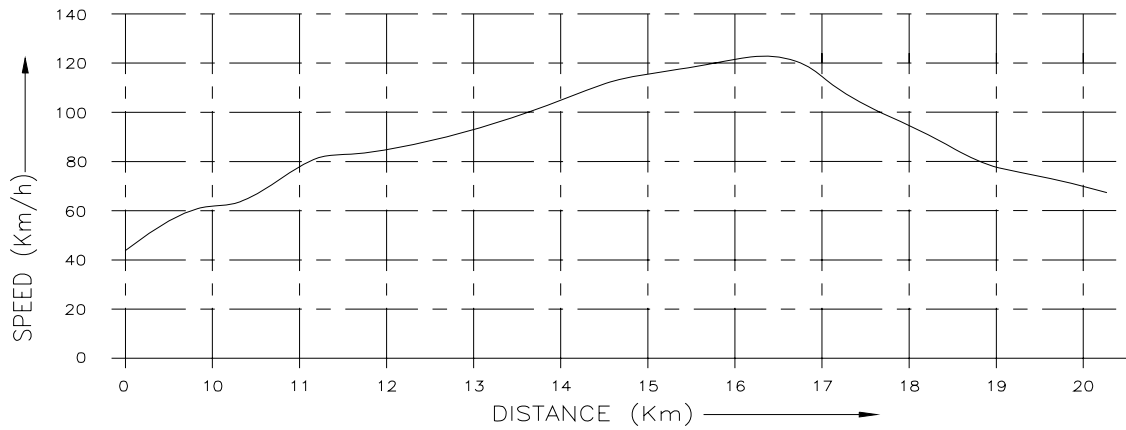
START DATE :  
 START TIME :  
 END DATE :  
 END TIME :

LOCO NO. :  
 MAX. SPEED :  
 WHEEL DIAMETER :  
 EQUIPMENT NO. :

SPEED Vs TIME



SPEED Vs DISTANCE



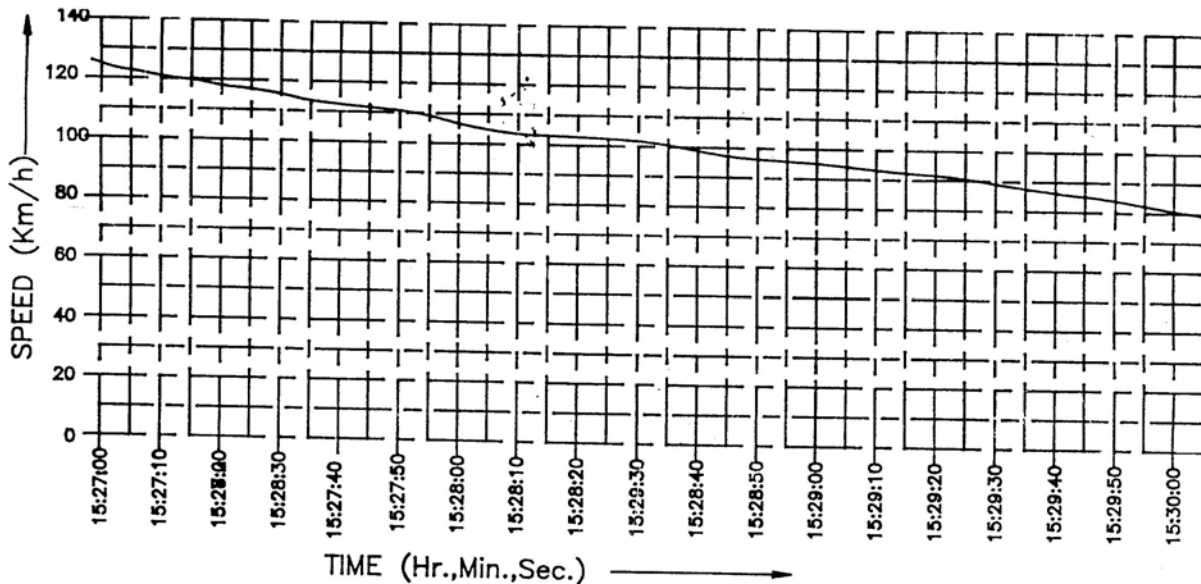
Document No.:	MP.0.3700.07	Revision No: 07	Date Issued: Aug, 2017
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**ANNEXURE – V**

**SPEED INDICATING-CUM-RECORDING SYSTEM**  
**SHORT MEMORY : GRAPHICAL(EXPANDED) REPORT**

START DATE:	LOCO NO:
START TIME:	MAX. SPEED:
END DATE:	WHEEL DIAMETER:
END TIME:	EQUIPMENT NO: (MAKE)

SPEED V/S. TIME



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**Annexure-VI**  
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**A) Speed Chart for Broad Gauge (Para 8.2) :-**

**i) For input speed of 10 km/h :-**

Input to sensor unit Wheel dia (mm)	RPM	Indicator reading (km/h) with wheel dia. adjustment device set at				
		1016	1030	1050	1070	1092
1016	53	10	--	--	--	11
1030	52	--	10	--	--	--
1050	51	--	--	10	--	--
1070	50	--	--	--	10	--
1092	49	9	--	--	--	10

**ii) For input speed of 30 km/h :-**

Input to sensor unit Wheel dia (mm)	RPM	Indicator reading (km/h) with wheel dia. adjustment device set at				
		1016	1030	1050	1070	1092
1016	156	30	--	31	--	32
1030	154	--	30	--	31	32
1050	151	29	--	30	--	31
1070	149	--	28	--	30	31
1092	145	28	--	--	29	30

**iii) For input speed of 70 km/h :-**

Input to sensor unit Wheel dia (mm)	RPM	Indicator reading (km/h) with wheel dia. adjustment device set at				
		1016	1030	1050	1070	1092
1016	365	70	71	72	74	75
1030	360	69	70	71	73	74
1050	354	68	69	70	71	72
1070	347	66	67	69	70	71
1092	340	65	66	67	69	70

**iv) For input speed of 100 km/h :-**

Input to sensor unit Wheel dia (mm)	RPM	Indicator reading (km/h) with wheel dia. adjustment device set at				
		1016	1030	1050	1070	1092
1016	522	100	101	103	105	107
1030	515	99	100	102	104	106
1050	505	97	98	100	102	103
1070	495	95	96	98	100	101
1092	485	93	94	96	98	100

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v) For input speed of 130 km/h :-

Input to sensor unit Wheel dia (mm)	RPM	Indicator reading (km/h) with wheel dia adjustment device set at				
		1016	1030	1050	1070	1092
1016	679	130	132	134	137	140
1030	670	128	130	133	135	138
1050	657	126	128	130	133	135
1070	645	124	126	128	130	133
1092	632	121	123	125	127	130

vi) For input speed of 150 km/h :-

Input to sensor unit Wheel dia (mm)	RPM	Indicator reading (km/h) with wheel dia adjustment device set at				
		1016	1030	1050	1070	1092
1016	783	150	152	155	158	161
1030	772	148	150	152	156	159
1050	758	145	147	150	152	156
1070	743	142	144	147	150	153
1092	728	139	141	144	147	150

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**B) Speed Chart for Meter Gauge:**

i) For input speed of 10 km/h :-

Input to sensor unit Wheel dia (mm)	RPM	Indicator reading (km/h) with wheel dia adjustment device set at				
		890	910	930	950	965
890	60	10	--	--	11	12
910	58	--	10	--	--	11
930	57	--	--	10	--	--
950	55	9	--	--	10	--
965	54	--	--	--	--	10

ii) For input speed of 30 km/h :-

Input to sensor unit Wheel dia (mm)	RPM	Indicator reading (km/h) with wheel dia adjustment device set at				
		890	910	930	950	965
890	179	30	--	31	32	33
910	175	--	30	--	--	32
930	171	29	--	30	31	--
950	168	28	29	--	30	31
965	165	--	28	29	--	30

iii) For input speed of 50 km/h :-

Input to sensor unit Wheel dia (mm)	RPM	Indicator reading (km/h) with wheel dia adjustment device set at				
		890	910	930	950	965
890	298	50	51	52	53	54
910	291	49	50	51	52	53
930	285	48	49	50	51	52
950	279	47	48	49	50	51
965	275	46	47	48	49	50

iv) For input speed of 70 km/h :-

Input to sensor unit Wheel dia (mm)	RPM	Indicator reading (km/h) with wheel dia adjustment device set at				
		890	910	930	950	965
890	418	70	72	73	74	76
910	408	68	70	72	73	74
930	399	67	68	70	71	73
950	390	65	67	68	70	71
965	385	65	66	67	69	70

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v) For input speed of 100 km/h :-

Input to sensor unit Wheel dia (mm)	RPM	Indicator reading (km/h) with wheel dia adjustment device set at				
		890	910	930	950	965
890	596	100	102	104	106	107
910	583	98	100	102	104	106
930	570	96	98	100	102	104
950	558	94	96	98	100	101
965	550	92	94	96	98	100



**C) Speed Chart for Narrow Gauge:**

i) For input speed of 10 km/h :-

Input to sensor unit Wheel dia (mm)	RPM	Indicator reading (km/h) with wheel dia adjustment device set at				
		640	650	660	680	700
640	83	10	--	--	--	11
650	82	--	10	--	--	--
660	81	--	--	10	--	--
680	79	--	--	--	10	--
700	76	9	--	--	--	10

ii) For input speed of 30 km/h :-

Input to sensor unit Wheel dia (mm)	RPM	Indicator reading (km/h) with wheel dia adjustment device set at				
		640	650	660	680	700
640	249	30	--	31	32	33
650	245	--	30	--	31	32
660	242	29	--	30	31	--
680	235	28	--	29	30	31
700	228	--	28	--	29	30

iii) For input speed of 50 km/h :-

Input to sensor unit Wheel dia (mm)	RPM	Indicator reading (km/h) with wheel dia adjustment device set at				
		640	650	660	680	700
640	415	50	51	52	53	55
650	409	49	50	51	52	54
660	402	48	49	50	52	53
680	391	47	48	49	50	51
700	379	46	--	47	49	50

iv) For input speed of 60 km/h :-

Input to sensor unit Wheel dia (mm)	RPM	Indicator reading (km/h) with wheel dia adjustment device set at				
		640	650	660	680	700
640	498	60	61	62	64	66
650	490	59	60	61	63	65
660	483	58	59	60	62	64
680	469	56	57	58	60	62
700	454	55	56	57	58	60

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v) For input speed of 70 km/h :-

Input to sensor unit Wheel dia (mm)	RPM	Indicator reading (km/h) with wheel dia adjustment device set at				
		640	650	660	680	700
640	581	70	71	72	74	77
650	572	69	70	71	73	75
660	563	68	69	70	72	74
680	547	66	67	68	70	72
700	531	64	65	66	68	70

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## ANNEXURE -VII

(SPECN. No. MP.0.3700.07)  
(Clause 8.10)

### Extracts of IEC Publication 77 -

"Rules for Electric Traction Equipment."

#### 24. Dielectric Tests

##### 24.1 General:

Dielectric tests are routine tests.

They are carried out with alternating current on every single piece of apparatus, then on the equipments when mounted on the vehicle. In certain cases to be agreed between user and manufacturer, they may also be carried out on assemblies of equipment connected in groups.

The tests shall be carried out at the normal temperature of the test site.

The test voltage at a frequency of 50 Hz or 60 Hz shall be of approximately sinusoidal form.

The methods of test and the r.m.s. values of the test voltage, the time of application which is fixed at 1 min. in all cases, are defined below:

NOTE-In all the formulae giving test voltage, U represents the rated supply voltage of the circuit in which is connected in service the apparatus subject to the test.

However, where the circuit contains a mid-point permanently connected to earth, U shall be taken to be one-half of this supply voltage.

##### 24.2 Tests on single pieces of apparatus:

###### 24.2.3 Apparatus in circuits with rated voltages below 300 V d.c. or 100 V ac-

Dielectric tests of apparatus and component parts shall be made to earth at a voltage of 1500 V r.m.s.

However, for apparatus in circuits of rated voltage less than 30V, the test shall be carried out at 750 V.

##### 24.3 Tests on apparatus Groups:

When it is necessary to carry out a dielectric test on a group of apparatus, this test shall be made with a voltage equal to 0.85 times the test voltage of the apparatus taken singly.

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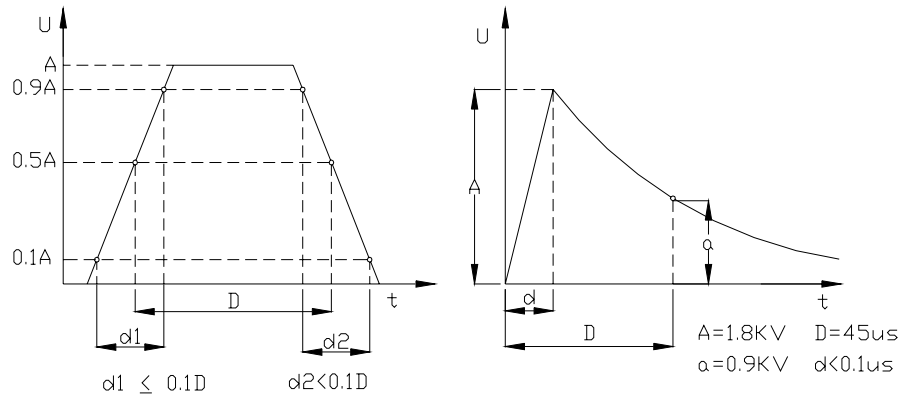


FIG-2.1

FIG-2.2

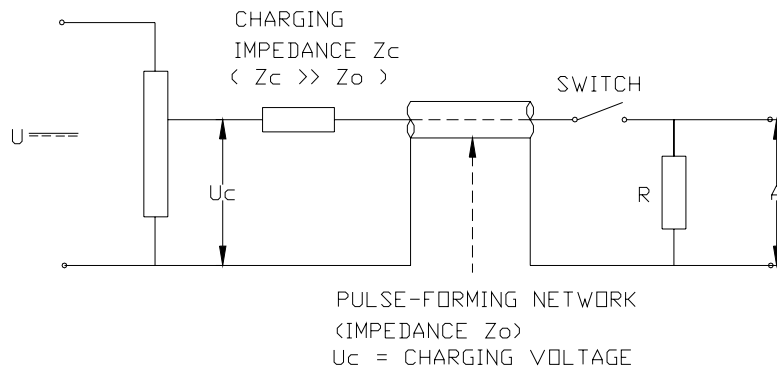


FIG-2.3

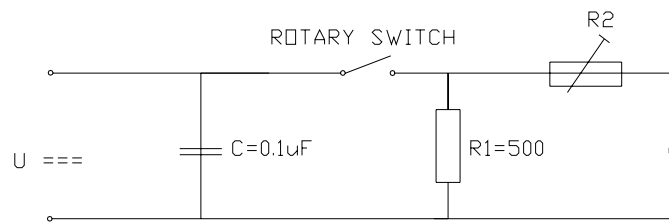
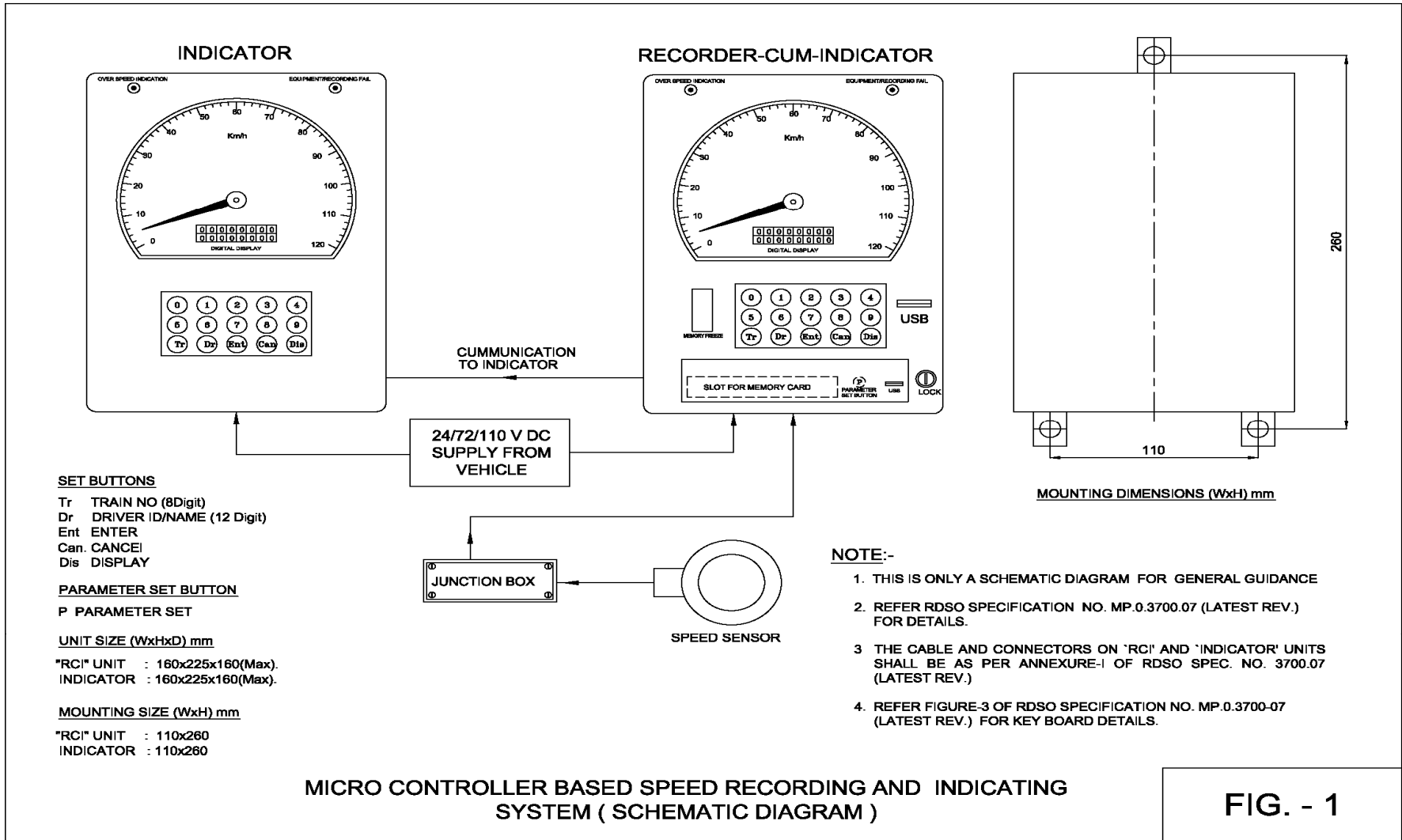
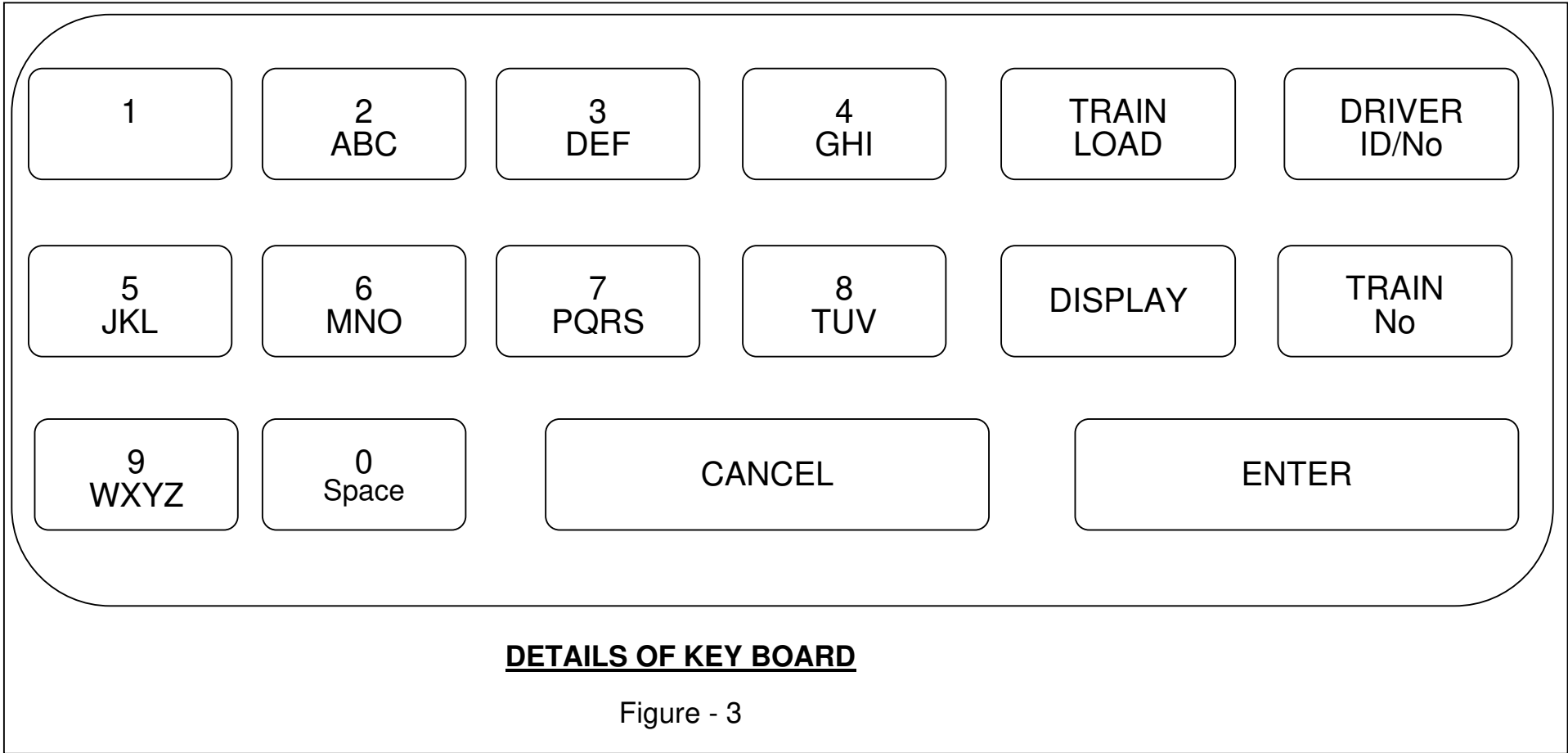


FIG-2.4

## SURGE TEST

( CLAUSE '22' OF IEC-571-1977 )  
 ( CLAUSE 8.11 OF SPECIFICATION No.MP.0.3700-07 )  
 ( FIG. 2 )





SN	Description
<b>1</b>	<b>General:</b>
<b>A</b>	These general terms & conditions shall apply to all enquiries, notice inviting tenders, request for quotations concerning the supply of goods and / or rendering of services to Bharat Heavy Electricals Ltd., Jhansi (hereinafter referred to as BHEL or the Purchaser) or its Projects / Customers.
<b>B</b>	Special / supplementary enquiry conditions& Mandatory Sheet requirements, if any, covered in the respective enquiry, will override the relevant conditions mentioned in this document.
<b>C</b>	Commercial Conditions quoted by the vendor in any place including as stated in bidder's 'General Terms and Conditions' if any, shall not be binding on the Purchaser. Only the conditions contained in this document, including special conditions, if any, for this enquiry shall prevail.
<b>2</b>	<b>General Instructions - Common for Indigenous &amp; Foreign enquiries</b>
<b>A</b>	Sealed bids are invited for scope of Supply / Services as detailed in the enquiry. The quotation should be neatly typed and free from over writing/ erasures. Any correction or addition must be authenticated.. Relevant enclosures, supporting documents, catalogue, samples, if any, as required as per Notice Inviting Tender (NIT) conditions shall be sent along with technical offer. Rate should be quoted in the units asked for in the enquiry. The rates should be quoted both in figures and words. In case of discrepancy in figures and words, the rates quoted in words shall be considered.
<b>B</b>	<p>Bids shall be submitted in a Sealed cover with Enquiry No., Due date and Bidder's name indicated on the Cover. The Cover should contain both <b>Part-I</b> and <b>Part -II</b> bids, as the case may be.</p> <p><b><u>Part – I bid</u></b></p> <p>In case of Two part Bid, <b>Part – I</b> bid i.e. <b>Technical bid</b> containing (i) technical offer, (ii) Mandatory Sheet, (iii) <b>un-priced copy</b> of the Price Bid, (iv) EMD ( if called in NIT),and (v) Relevant documents of PQR ( if called in NIT), all duly filled-in &amp; signed; should be kept in one envelope. The Part – I bid Cover items should have Enquiry No., Part I Bid, Due date, and Bidder's name indicated on the Cover</p> <p><b><u>Part –II Bid wherever Reverse Auction is not called for</u></b></p> <p><b>Part – II</b> bid i.e. <b>Price Bid</b> containing only the price (as called for in the price format where required), duly filled-in &amp; signed; should be kept in a <b>separate envelope</b>. The Price bid Cover items should have Enquiry No., Part II Bid, and Bidder's name indicated on the Cover</p> <p><b><u>Part –II Bid wherever Reverse Auction is called for</u></b></p> <p><b>Part – II</b> bid i.e. <b>Price Bid</b> containing only the price (as called for in the price format where required), duly filled-in &amp; signed; should be kept in a <b>separate envelope</b>. Wherever, BHEL informs that it proposes to conduct Reverse Auction for many items in the tender and where evaluation of the tender is on individual item basis, separate Part – II bids are to be submitted for each of the item. The Price bid Cover for each of the items should have Enquiry No., Part II Bid, Item no of Enquiry, and Bidder's name indicated on the Cover</p> <p>The envelopes indicating Part –I or Part-II, as the case may be, to be put in a bigger envelope, which should be addressed to In-charge, Tender Room, Bharat Heavy Electricals Ltd., Administration Building, Jhansi 284120. Enquiry No., due date and bidder's name must be mentioned on the bigger envelope. Offer must reach tender room of BHEL Jhansi latest by 13.15 hrs of the enquiry due date.</p> <p>In case, the bids are not submitted in the manner stated above, the offer of the bidder(s) are liable to be rejected.</p> <p>It is preferred that offers are sent in sealed envelope. However, if the bidder choses to send the offer through E-mail, offers received through E-mail shall be considered only when such offers are complete in all respects.. In cases of offers through E-mail, the offers shall be sent to <a href="mailto:tenderbox.jhs@bhel.in">tenderbox.jhs@bhel.in</a> , wherein the Subject of the Email should mention the Enquiry Number. E mail offers sent to any other E mail ID shall not be entertained. BHEL shall not take any responsibility if the offers are incomplete or if the Enquiry number is not mentioned in the subject of the E-mail.</p>
<b>C</b>	Wherever BHEL proposes to issue tender through e –procurement, the same philosophy as mentioned in 2B above is ensured through suitable system locks.
<b>D</b>	Offer received after 13.15 hrs of the due date will be termed as "Late" and shall not be considered

<b>E</b>	<p>BHEL reserves the right to go for Reverse Auction (RA) (as per Guidelines available on <a href="http://www.bhel.com">www.bhel.com</a>) instead of opening the sealed envelope price bid, submitted by the bidder. This will be decided after techno-commercial evaluation. Bidders to give their acceptance with the offer for participation in RA. Non-acceptance to participate in RA may result in non consideration of their bids, in case BHEL decides to go for RA. Those bidders who have given their acceptance to participate in Reverse Auction will have to necessarily submit 'Process compliance form' (to the designated service provider) as well as 'Online sealed bid' in the Reverse Auction. Non-submission of 'Process compliance form' or 'Online sealed bid' by the agreed bidder(s) will be considered as tampering of the tender process and will invite action by BHEL as per extant guidelines for suspension of business dealings with suppliers/ contractors (as available on <a href="http://www.bhel.com">www.bhel.com</a>).</p> <p>The bidders have to necessarily submit online sealed bid less than or equal to their envelope sealed price bid already submitted to BHEL along with the offer. The envelope sealed price bid of successful L1 bidder in RA, if conducted, shall also be opened after RA and the order will be processed on lower of the two bids (RA closing price &amp; envelope sealed price) thus obtained. The bidder having submitted this offer specifically agrees to this condition and undertakes to execute the contract on thus awarded rates.</p> <p>If it is found that L1 bidder has quoted higher in online sealed bid in comparison to envelope sealed bid for any item(s), the bidder will be issued a warning letter to this effect. However, if the same bidder again defaults on this count in any subsequent tender in the unit, it will be considered as fraud and will invite action by BHEL as per extant guidelines for suspension of business dealings with suppliers/ contractors (as available on <a href="http://www.bhel.com">www.bhel.com</a>)</p>
<b>F</b>	<p>The goods offered shall conform to BHEL specifications / drawings and / or Indian / International standards as mentioned in the Enquiry and the bidder is required to confirm his unconditional acceptance to the same. Vendors, seeking deviations from the specifications and any other conditions, may indicate the same clearly on a separate sheet, with reasons for such deviations. BHEL reserves the right to reject the offer with deviations or load the deviations suitably for evaluation.</p>
<b>G</b>	<p>Offers shall be submitted directly by vendor or his authorized agent/representative only. Offers from any other sources shall be considered as unsolicited and shall be summarily rejected.</p>
<b>H</b>	<p>Bid in single part or techno-commercial bid in <b>two</b> part system (as the case may be) will be opened on the due date. In case of two part bid, price bids of techno-commercially acceptable bidder(s) only shall be opened on the assigned date, for which separate intimation will be sent to the acceptable bidders.</p>
<b>I</b>	<p>The bidder whose bid is technically not accepted will be informed &amp; EMD wherever submitted shall be returned along with his price bid within <u>30 days</u> of contract finalization date. No interest will be payable on EMD amount. EMD shall however be forfeited in the event of bidder backing out after submission of the bid.</p>
<b>J</b>	<ol style="list-style-type: none"> <li>1. Any discount / revised offer submitted by a bidder on its own shall be considered, provided it is received on or before the due date and time of offer submission (Part-I). Conditional discounts shall not be considered for evaluation of tenders.</li> <li>2. Unsolicited discounts / revised offers given after Part-I bid opening shall not be accepted. No change in price will be permitted within the validity period asked for in the enquiry.</li> <li>3. In case of changes in scope and / or technical specification and / or commercial terms &amp; conditions, having price implication, techno-commercially acceptable bidders shall be asked by BHEL to submit the impact of such changes on their price bids. A suitable cut-off date and time shall be given to all the techno-commercially acceptable bidders to submit the impact on their price bids. In case a bidder opts to submit revised price bid instead of impact called for, then their original price ( i.e. previous bid) shall be necessarily opened to know the price impact. .</li> </ol>
<b>K</b>	<p>The bidders will submit Integrity Pact, duly signed by its authorized signatory, if called for in the enquiry.</p>
<b>L</b>	<p>Wherever the enquiry is issued to unregistered vendor referred by BHEL Customer, the bidder shall submit the Supplier Registration Form (SRF) online at <a href="http://www.bhel.com">www.bhel.com</a> and submit the signed copy of the duly filled-in SRF along with the bid. Price bids of such vendors, will be opened only on techno-commercial acceptance of bid and if allotted permanent code before the date of price bid opening.</p>
<b>M</b>	<p>BHEL expects that the bidder must respond to the enquiry. Regret letter, with valid reasons for not participating in the tender will be submitted where the bidder is unable to submit offer. Repeated lack of response on the part of vendor may lead to his deletion from BHEL's approved vendor list.</p>
<b>N</b>	<p>Goods shall be properly packed to avoid transit damage. Suitable markings shall be provided to identify the goods with that of the PO No, Item no. and the consignee details.</p>
<b>O</b>	<p>Goods shall be consigned to Manager , Stores (CRX), BHEL, Jhansi - 284120, India, unless otherwise specified in the PO.</p>
<b>P</b>	<p>Offers of the Bidders who are under HOLD or are under Interim Suspension or are on the banned list ( as on date of Price bid opening ) and / or those bidders who engage services of such suspended / banned firms, shall be rejected. The list of firms banned by BHEL is available on BHEL web site <a href="http://www.bhel.com">www.bhel.com</a>. The list of firms suspended by BHEL, Jhansi is available on <a href="http://www.bheljhs.co.in">www.bheljhs.co.in</a>. The " Guidelines for suspension of business dealings with Suppliers / Contractors" is uploaded on BHEL website <a href="http://www.bhel.com/vender_registration/vender.php">http://www.bhel.com/vender_registration/vender.php</a></p>



<b>Q</b>	In case of press tenders (i.e. those published in newspapers) all corrigenda, addenda, amendments, time extensions, clarifications etc. to the tender will be hosted on BHEL website. ( <a href="http://www.bhel.com">www.bhel.com</a> & <a href="http://www.bheljhs.co.in">www.bheljhs.co.in</a> ) only. Bidders responding to press tender should regularly visit website(s) to keep themselves updated.
<b>R</b>	In case the bidder decides to sub-contract part of his activity / work to some of his vendors, details of such intended subcontracting shall be mentioned in the bid. This will however not absolve the bidder from his contractual obligations and responsibilities.
<b>S</b>	In the course of evaluation, if more than one bidder happen to occupy L-1 status and the order is to be placed on a single vendor, effective L-1 will be decided by soliciting discounts from the respective L1 bidders.. In case more than one bidder happen to occupy the L1 status even after soliciting discounts, the L1 bidder shall be decided by, a toss / draw of lots, in the presence of the respective L1 bidder(s). BHEL's decision in such situations shall be final and binding.
<b>T</b>	Wherever the minimum reserved capacity is called for in the tender, the offers of such bidders, who do not quote for the minimum reserved capacity, are liable to be rejected.
<b>U</b>	<p>Due to large qty. requirement, we may finalize the tendered quantities among more than one bidder (after acceptance of L1 price by the other bidders), but limited to the capacity quoted by the bidder. Indicate your committed capacity for the item(s) tendered and confirm that capacity offered by you against our tender shall be available for us during the entire period of the Purchase Order / Contract.</p> <p>Where the number of qualified responses (N) are three or more, the distribution shall be limited to (N-1) responses. The manner and proportion of distribution shall be mentioned in the specific enquiry. Normally, the quantity distribution shall be generally as per quantities allocated to the bidder, but limited to the capacity quoted by the bidder.</p> <p>While the manner of distribution is mentioned in the enquiry, the absolute values of the unit of measurement shall be rounded off. For eg : If an allocation of 40% quantity results in 23.5 units, the quantity allocated shall be 24 units. If an allocation of 40% quantity results in 23.3 units, the quantity allocated shall be 23 units</p> <p>The distribution shall be based on the acceptance given by bidders to the L1 price counter offered to them. In case any or all of the bidders do not accept the counter offer, and a situation arises wherein bidder(s) who have agreed to the counter offer may have to be allotted more quantity than what has been proposed earlier, then the same shall be done, but limited to the capacity quoted by the bidder (s).</p> <p>Wherever, the number of techno commercially qualified responses (N) is two, BHEL reserves the right on whether or not to distribute the quantity on more than one bidder</p> <p>While the above pattern shall also be followed in long term framework agreements ( FA), performance of the suppliers shall be monitored periodically, and the loading in FA will also be subject to factors like (a) Customer approval of suppliers in specific projects, (b) quality surveillance at Supplier works, (c) Suppliers delivery and quality performance during execution of FA, (c) Pendency of orders on the supplier and (d) responsiveness in addressing post order completion issues at BHEL. In view of these factors, the loading during execution of FA may vary with respect to allocated quantity. During execution of FA, if the performance of supplier is not upto the mark in respect of delivery / quality performance / quoted capacity of the bidder, BHEL reserves the right to either reduce further loading or stop loading till the execution of overdue orders. In such cases, action shall be taken against the defaulting supplier(s) as per guidelines of the Company, and the balance allocated full or part quantity of the defaulting supplier(s) may be re-distributed amongst other performing and willing vendors of the FA..</p>
<b>V</b>	The bidder shall submit price bid strictly in the price format, wherever provided for, in the enquiry. Any attempt on the part of the bidder to alter the contents of the price bid format in any manner, which in the opinion of BHEL can vitiate the tendering process, will lead to rejection of the bid, <i>besides BHEL taking appropriate punitive action as deemed fit.</i>
<b>3</b>	<b>Vendor's particulars &amp; logistics information</b>
	Bidder to provide contact details and all logistical information as called for in the Mandatory Sheet enclosed to this enquiry
<b>4</b>	<b>Delivery Schedule &amp; Completion date</b>
<b>A</b>	<ul style="list-style-type: none"> <li>• Instead of writing specific date against delivery offered, Bidder shall commit delivery period in number of days / weeks/ months to suit the delivery period indicated in the enquiry.</li> <li>• Commencement of delivery period shall be reckoned from the date of PO / LOI or any other agreed milestone.</li> <li>• Seller shall deliver the goods in the manner and schedule agreed under the Purchase order.</li> <li>• Goods shall be delivered within contractual period or any extension thereof, if any, granted by the Purchaser.</li> </ul>

<b>B.</b>	In case of foreign supplies, bidders are to quote for CIF/CFR delivery terms .For CIF / CFR delivery terms, the date of bill of lading (BL) shall be taken as actual date of delivery.
<b>C.</b>	In case of Indigenous bidders, the date of delivery at named destination in India shall be taken as contractual delivery completion date where delivery terms are FOR destination. In case of 'Ex-works' delivery terms, the date of LR / RR shall be the contractual delivery completion date.
<b>D</b>	In case of unreasonable delivery quoted by the bidders, BHEL reserves the right to reject such offers.
<b>5</b>	<b>Transit Insurance</b>
	Except where delivery terms are agreed on CIF basis for Imports & FOR destination basis for indigenous purchases, transit insurance will be covered by BHEL under its open Marine Insurance Policy. Seller shall inform dispatch particulars with value of consignment to the Purchaser within 07 days of dispatch for BHEL to arrange insurance coverage in its policy. Failure on the part of seller to inform dispatch particulars will make him liable to pay for any transit damages / losses suffered by the Purchaser.
<b>6</b>	<b>Delivery Terms</b>
<b>A</b>	<b>Indigenous Purchase</b>
	Goods shall be delivered on 'FOR Destination' basis ( with freight and insurance in bidder scope) to the named destination unless otherwise called for in the enquiry. In case the bidder quotes on Ex-Works, the offer of such bidder(s) is/are liable to be rejected.  Wherever the PO terms mentions delivery terms as FOR Destination basis, and In the event of supplier having supplied the material by BHEL Truck / Vehicles as per BHEL transportation rate contract, thus causing BHEL to bear the freight charges, the corresponding amount ,incurred / estimated, shall be deducted from the bills of the Supplier.
<b>B</b>	<b>Foreign Purchase – Imports</b>
	<ol style="list-style-type: none"> <li>1. Goods shall be dispatched by sea on CIF/CFR basis, unless stated otherwise in the enquiry or purchase order. The destination shall at Navsheva, Mumbai for LCL/Breakbulk Cargo and ICD, Mandideep, Madhya Pradesh for FCL Cargo</li> <li>2. If air freight is called for in the enquiry, the goods shall be delivered on FCA basis to the named Airport</li> <li>3. Please visit BHEL Jhansi web site <a href="http://www.bheljhs.co.in">www.bheljhs.co.in</a>for details of named Airports. . Name of the airport so chosen by the Seller shall be indicated by the Bidder in his offer.</li> <li>4. Goods shall be handled for air freight by BHEL's freight forwarder only, under FCA contracts and HAWB issued by BHEL appointed forwarder or his authorized agent(s) shall only be accepted for negotiation.</li> </ol>
<b>C</b>	<ul style="list-style-type: none"> <li>• In the event of bidder offering CFR or CIF delivery terms for delivery in FCL(Full Container Load), the Bidder shall provide <b>14 days' time free of detention</b> from the date of delivery at delivery port. Wherever the detention free period offered is less than 14 days, the bids shall be <b>loaded</b> for the period short of 14 days period.</li> <li>• <u>Port congestion charges or any additional charges claimed by shipping line till delivery at destination port shall be to the Seller's account.</u></li> <li>•</li> </ul>
<b>7</b>	<b>Force Majeure</b>
	<p>Notwithstanding anything contained in the contract, neither the Seller nor the Purchaser shall be held responsible for total or partial non-execution of any of the contractual obligations, should the obligation become unreasonably onerous or impossible due to occurrence of a 'Force Majeure' which directly affects the obligations to be performed by the Purchaser or the Seller; Such events include war, military operations of any nature, blockages, revolutions, insurrections, riots, civil commotions, insurgency, sabotage, acts of public enemy, fires, explosion, epidemics, quarantine restrictions, floods, earthquake, or acts of God, restrictions by Govt. authorities; over which the Seller or the Purchaser has no control.</p> <p>The party claiming to be affected by force majeure shall notify the other party in writing without delay, within two weeks on the intervention and on the cessation of such circumstance. Extension of time sought by the Seller along with supporting evidence and so granted by the Purchaser for the supply/ work affected, if any, shall not be construed as waiver in respect of remaining deliveries. Rescheduling of deliveries on account of force majeure conditions, if so agreed by the Purchaser, will not entail the Seller to claim any increase in the price on whatsoever account.</p>

	Notwithstanding above provisions, Purchaser shall reserve the right to cancel the order/ Contract, wholly or partly, in order to meet the overall project schedule and make alternative arrangements. If deemed necessary, Purchaser may takeover partly processed material at a mutually agreed price.
<b>8</b>	<b>LD / Penalty for delayed performance.</b>
<b>A</b>	<p>I. Subject to force majeure conditions, LD shall be 0.5% of the total order value per week of delay or part thereof, subject a maximum of 10% of the total order value.</p> <p>II. In case of staggered delivery schedule, LD shall be 0.5% of the undelivered portion per week or part thereof subject to a maximum of 10% of the undelivered portion .</p> <p>III. However in case of Capital Machine / BOP where staggered deliveries may be applicable, the LD cap will be levied on total order value inclusive of E&amp;C charges. (15% )</p> <p>IV. Wherever Erection &amp; Commissioning ( E&amp; C) is called for, the vendor is provided a stipulated period from date of site readiness. LD shall be applicable for any delay beyond the stipulated period mentioned in the PO.</p> <p>V. In case of any amendment / revision, the LD shall be linked to the amended / revised PO value.</p> <p>VI. Any loading on LD clause shall be to the extent to which it is not agreed to by the bidder ( at offered value)</p> <p>For the sake of clarity – Total order value means purchase order value ( exclusive of taxes ), Undelivered portion means , the delayed portion for the given lot.</p> <p>In case a supply is rejected and the same is replaced at a later date, the date of replacement of accepted supply shall be reckoned for calculation of LD</p>
<b>B</b>	In case the contractually agreed delivery date falls on a holiday in BHEL Jhansi, the next working day shall be taken as contractual delivery date for compliance and applicability of LD / penalty.
<b>C</b>	<p>In case of Ex works Delivery terms for Indigenous supplies, the date LR shall be reckoned for LD deduction.</p> <p>In case of FOR Delivery terms, the date of entry in BHEL Jhansi ( CISF date ) shall be reckoned for LD deduction.</p> <p>In case of FCA Delivery terms / Ex Works Delivery terms of Foreign supplies , the date Invoice / Packing List / Test Certificate, whichever date is later, shall be reckoned for LD deduction.</p> <p>In case of FOB / CIF / CFR / CIP Delivery terms, the date of Bill of Lading , shall be reckoned for LD deduction.</p>
	<b>Risk Purchase.</b>
<b>C</b>	If the material is not supplied within the agreed delivery period, BHEL reserves the right to cancel the order and purchase the material( of the undelivered portion ) from alternate source(s) at the Risk and Cost of the Seller. In such an event, it shall be obligatory on the part of seller to make good any loss suffered by the purchaser. In such cases, BHEL shall withhold bills, bank guarantees, etc of the Supplier, which are pending either at BHEL, Jhansi or any other Unit of BHEL . Wherever Risk purchase is invoked attracting action as per guidelines of the Company, action shall be initiated to suspend business dealings with the Supplier. To know the implications of suspension, the bidder may see the “ Guidelines for suspension of business dealings with Suppliers / Contractors” which is uploaded on BHEL website <a href="http://www.bhel.com/vender registration/vender.php">http://www.bhel.com/vender registration/vender.php</a>
<b>9</b>	<b>Indian Agents and Agency commission</b>
<b>A</b>	BHEL prefers to deal directly with Foreign vendor, wherever required, for procurement of Goods. However if the Foreign Principal desires to avail services of an Indian Agent, then the Principal should ensure compliance to “regulatory guidelines” which will require submission of an agency agreement. The agency agreement should specify the precise relationship between the foreign OEM / foreign Principal and their Indian Agent. Any payment which the Indian agent receives in India or abroad from the OEM, whether as commission or as a general retainer fee, should be brought on record in the agency agreement.
<b>B</b>	The CIF price quoted will be deemed to be inclusive of Indian Agency commission. Agency commission as disclosed by the bidder in his quoted CIF price will be paid in Indian Rupees on receipt & acceptance of Materials or it's installation at destination, as the case may be. The lower of the TT selling rate prevailing on the date of (a_ technical bid opening, or (b) price bid opening, or (c) date of invoice, shall be considered for computation of Agency commission.
<b>C</b>	Be it a case of a Foreign / Indigenous Principal or OEM, in a tender either the Indian Agent on behalf of Principal / OEM or the Principal / OEM itself can bid, but both cannot bid simultaneously for same item / product in the same Tender. In case both submit a bid in the tender, then the bid of OEM only shall be opened



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<b>D</b>	Be it a case of a Foreign / Indigenous Principal or OEM, If an agent submits Bid on behalf of the Principal / OEM, the same agent shall not submit bid on behalf of another Principal / OEM in the Tender, for the same Item / Product.									
<b>10</b>	<b>Documentation:</b>									
<b>A</b>	<b>Indigenous Purchase</b>									
	<p>Immediately on despatch of Goods, the following documents shall be necessarily sent by the Seller to the respective address(es) mentioned below</p> <table border="1" data-bbox="245 479 1527 1032"> <tr> <td data-bbox="245 479 309 674"><b>(a).</b></td> <td data-bbox="309 479 719 674"> <b>Addressed to:</b>  Addl General Manager (Stores)  Main Store Building  BHEL Jhansi PIN-284120  Telephone . 0510-2412230 </td> <td data-bbox="719 479 1527 674"> <b>Documents to be sent:</b>  (i) GST compliance Invoice – Duplicate for Transporter  (ii) Challan/Despatch Advice note / Packing List etc. + 1 Photo copy  (iii) Test Certificate, Guarantee / Warrantee Certificate  (iv) LR/RR Duplicate for Transporter copy  (v) O&amp;M Manuals, wherever applicable </td> </tr> <tr> <td data-bbox="245 674 309 898"><b>(b)</b></td> <td data-bbox="309 674 719 898"> <b>Addressed to:</b>  Dy. General Manager (Finance)  Administrative Building  BHEL Jhansi PIN-284120 </td> <td data-bbox="719 674 1527 898"> <b>Documents to be sent:</b>  (i) GST compliance Invoice – Original for Buyer  (ii) Copy of LR/RR  (iii) Copy of Test Certificate  (iv) PVC Calculation sheet, if any, with supporting documents.  (v) MOM with BHEL Customer ( if called for in the PO ) in case of installation &amp; commissioning at Customer Site  (vi) Capitalization Certificate, if called for in the PO </td> </tr> <tr> <td data-bbox="245 898 309 1032"><b>(c)</b></td> <td data-bbox="309 898 719 1032"> <b>Addressed to:</b>  Dy. General Manager (MM)  Administrative Building  BHEL Jhansi PIN-284120 </td> <td data-bbox="719 898 1527 1032"> <b>Documents to be sent:</b>  (i) GST compliance Invoice – Extra copy / Photo copy  (ii) Challan/Despatch Advice note  (iii) Test Certificate, Guarantee / Warrantee Certificate  (iv) Copy of LR/RR </td> </tr> </table> <p>In case any other documents are required, the distribution of such documents will be specified in the Purchase order.</p> <p>Further, if specified in the Purchase order, all the details and copies of documents have to be uploaded by Supplier on BHEL portal before despatch of Goods</p>	<b>(a).</b>	<b>Addressed to:</b> Addl General Manager (Stores) Main Store Building BHEL Jhansi PIN-284120 Telephone . 0510-2412230	<b>Documents to be sent:</b> (i) GST compliance Invoice – Duplicate for Transporter (ii) Challan/Despatch Advice note / Packing List etc. + 1 Photo copy (iii) Test Certificate, Guarantee / Warrantee Certificate (iv) LR/RR Duplicate for Transporter copy (v) O&M Manuals, wherever applicable	<b>(b)</b>	<b>Addressed to:</b> Dy. General Manager (Finance) Administrative Building BHEL Jhansi PIN-284120	<b>Documents to be sent:</b> (i) GST compliance Invoice – Original for Buyer (ii) Copy of LR/RR (iii) Copy of Test Certificate (iv) PVC Calculation sheet, if any, with supporting documents. (v) MOM with BHEL Customer ( if called for in the PO ) in case of installation & commissioning at Customer Site (vi) Capitalization Certificate, if called for in the PO	<b>(c)</b>	<b>Addressed to:</b> Dy. General Manager (MM) Administrative Building BHEL Jhansi PIN-284120	<b>Documents to be sent:</b> (i) GST compliance Invoice – Extra copy / Photo copy (ii) Challan/Despatch Advice note (iii) Test Certificate, Guarantee / Warrantee Certificate (iv) Copy of LR/RR
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<b>(c)</b>	<b>Addressed to:</b> Dy. General Manager (MM) Administrative Building BHEL Jhansi PIN-284120	<b>Documents to be sent:</b> (i) GST compliance Invoice – Extra copy / Photo copy (ii) Challan/Despatch Advice note (iii) Test Certificate, Guarantee / Warrantee Certificate (iv) Copy of LR/RR								
<b>B</b>	<b>Foreign Purchase – Imports</b>									
	<p>Seller shall send 1 set of following documents, in English, within 7 days of BL date by courier to the Purchaser</p> <ol style="list-style-type: none"> <li>1. Original Clean on board Bill of lading.</li> <li>2. One set of Commercial Invoice, Packing list indicating container-wise Gross weight, net weight, CBM ( cubic metre) volume, No. of packages with Dimensions of each package.</li> <li>3. Original certificate of Country of Origin issued by Chamber of Commerce</li> <li>4. One set of Original test certificates and O&amp;M manual where called for.</li> <li>5. Fumigation certificate wherever cargo is packed in wooden packing or packing of Plant origin material is used.</li> </ol> <p>In case the Seller decides to negotiate all 3 originals of BL through negotiating Bank, non-negotiable documents (NND) consisting of copy of BL / HAWB &amp; all originals at sl.no. 10-B2 to B5 will be couriered to Purchaser. Soft Copy of documents at sl. 10-B1 to B5 will also be sent by e-mail to the Purchaser at the e-mail address given in the PO. Other documents, as required, will be separately indicated in the Purchase Order. Additional expenditure, if any, incurred by the Purchaser by way of detention / demurrage, resulting out of delay attributable to the Seller in providing negotiable documents, will be recovered from the Seller.</p>									
<b>C</b>	In case of incomplete documentation, the communication shall be provided to supplier. The delays in submission of documentation by the supplier shall be reckoned while releasing payments to the Supplier									
<b>11</b>	<b>Pricing Terms</b>									
	Prices once quoted shall remain firm within the validity or any extension thereof for placement of order, till complete execution of the order, without any escalation/increase for any reason, whatsoever, unless specifically provided for in the Enquiry & PO. In case of foreign vendors, the quoted price shall be taken as inclusive of Third Party Inspection and testing charges as called for in the NIT.									

<b>12</b>	<b>Price Validity :</b>
	<p>Unless stated otherwise in the enquiry, offer shall be valid for a period of 120 days from the date of Techno- commercial (Part-I) bid opening date.</p> <p>The prices quoted for spare parts of the main equipment shall be kept valid for a period of 180 days from the date of placement of PO for the main equipment.</p>
<b>13</b>	<b>Taxes &amp; Duties - Indigenous Purchase</b>
<b>A</b>	<p>The Taxes and duties as applicable shall be payable extra which may include GST against Gate pass- The Seller shall clearly indicate extent of taxes as applicable in his techno commercial bid. In the event of vendor failing to furnish valid GST invoices with appropriate HSN Code , amount corresponding to GST will be disallowed by BHEL while making payments.</p> <p>Bidders to ensure applicability of IGST / CGST/SGST based on the Inter / Intrastate movement of goods.</p> <p>GST Registration Number (GSTIN) should be clearly mentioned on the vendor's quotation.</p> <p>Please quote our IGST registration number 09AAACB4146P2ZC in all invoices raised for supply of goods and services under GST regime and also ensure filing of timely return and payment of tax and compliance of other applicable provisions on supplier under GST regime.</p> <p>In the event of any disallowance of input credit or applicability of interest or any other financial liability arises on BHEL- Jhansi due to any default of supplier under GST such implication shall be to supplier's account.</p> <p>GST shall be levied on LD and the relevant tax invoice shall be provided to vendors for availing credit.</p> <p>In case of directly despatchable items to Customer's Site, Supplier to bill to BHEL Jhansi at its GST Account number 09AAACB4146P2ZC and ship to the respective Customer</p> <p>Since, input credit of GST will be available to BHEL-Jhansi only after correct filing of return and payment of applicable GST by supplier, reimbursement of GST shall be made by BHEL-Jhansi on matching of vendor inputs at GST portal and after ensuring availability of input credit to BHEL-Jhansi. Payment of tax shall be done only after availing matching ITC, in all cases where bills are submitted directly to BHEL-Jhansi or through bank or under LC or through any other mode.</p> <p>Other statutory declaration forms are also to be submitted in time, as mentioned in the relevant Laws. BHEL reserves the right to withhold the payment due to the vendor equivalent to BHEL's tax and related liability thereon.</p> <p>In case of any changes in statutory laws w.r.t. taxes and duties, the same shall be applicable at the given point of time.</p>
<b>B</b>	<i>Wherever GST is not applicable, the tax and duty structure , as applicable, is to be complied by the seller.</i>
<b>14</b>	<b>Taxes &amp; Duties - Foreign Purchase – Imports</b>
<b>A</b>	The offered prices shall be inclusive of all the Taxes and duties as applicable in the country of bidder / country of dispatch for the quoted FCA / CFR/CIF price.
<b>15</b>	<b>Payment Terms-</b>
<b>A</b>	<p><b>Indigenous:</b> 100 % payment within 90 days ( 45 days for MSE / NSIC registered suppliers as per relevant act in force ) from the date of receipt of material and submission of clear and admissible bill, subject to acceptance of material at BHEL , on direct presentation of the documents..</p> <p>Payments to vendors who are seeking benefits under MSME act shall not be entertained if the Udyog Aadhar Memorandum (UAM ) submitted by them is not valid on the date of Purchase Order and date of supply ( SRV Date of BHEL ) . It is hence in the interest of the vendor that they validate the status of UAM regularly with BHEL.</p> <p>In case of despatch of material to site directly, site certification for receipt of materials is required unless otherwise provided for in the PO. Any deviation from the above payment terms, if accepted (by BHEL), shall be loaded @ SBI base rate( as on date of Part I bid opening) + 6%, for the purpose of bid evaluation.</p>

	<p>All documents as called for in the PO have to be submitted by the Supplier at the time of receipt of material and this should include the Invoice of the Supplier - Original copy of the Buyer and Duplicate for Transporter. On receipt of Invoice, the same shall be acknowledged by BHEL. Any clarifications on the bill submitted by the supplier shall be sought generally within 30 days ( 15 days for MSE / NSIC registered suppliers as per relevant act in force ) of receipt of bill at BHEL. While it would be in the interest of the Supplier to provide the reply immediately to the clarifications sought , the Supplier is to respond at least within 7 days from the date of clarifications sought by BHEL. Wherever clarifications are sought by BHEL, the date of receipt of clarifications from the supplier shall be considered as date of submission of clear and admissible bill.</p>						
<b>B</b>	<p><b>Foreign:</b> 100% against irrevocable, unconfirmed LC, payable within 120 days of the bill of lading (BL) date. In case BHEL considers any deviation in payment terms i.e. early payment based on vendor's request, then bids shall be evaluated with loading of State bank of India Base rate ( as on date of Part I bid opening) plus 6%, for the credit period short of 120 days. The LC shall be established 2 month prior to shipment date, valid for period of 120 days, unless agreed otherwise. Payment terms of CAD payable on 120<sup>th</sup> day of BL / HAWB date shall be preferred.</p>						
<b>C</b>	<p>While there could be exceptional situations wherein the payment may be delayed beyond the stipulated time mentioned above, it is clarified that BHEL shall not pay any interest on such delays</p>						
<b>D</b>	<p>In case of any disagreement between BHEL and the Supplier on any part of the bill, such part shall be severed from the rest and payment against agreed and admissible part shall be processed as per laid down procedure, while the disputed part shall be dealt as per contract provisions viz. conciliation, dispute resolution, arbitration, etc</p>						
<b>16</b>	<p><b>Inspection of Goods</b></p>						
<b>A</b>	<p>The Seller shall give adequate notice, of 1 week or as mutually agreed period, in writing to the Purchaser about the date and place at which the goods will be ready for inspection/ testing, as provided for in the contract.</p>						
<b>B</b>	<p>Purchaser or his authorized representative shall be entitled to carry out inspection of material and workmanship at Seller's premises or at his sub-contractor's premises at all reasonable times during execution of contract; Such inspection, examination and testing, if made, shall not absolve the Seller from his obligations under the contract.</p>						
<b>C</b>	<p>All costs related to inspections and re-inspections shall be borne by the Seller. In case of foreign vendors, the cost of third party inspection, where called for, shall be deemed to be included in the quoted price. Seller shall be responsible to provide assistance such as labour, materials, electricity, fuels, stores, apparatus, instruments at his cost, as may be required and as may be reasonably demanded to carry out such tests effectively.</p>						
<b>D</b>	<p><b><u>Undertaking to be provided by Suppliers before despatch</u></b> : The suppliers , before despatching the jobs, shall provide an undertaking on their letterhead, that the jobs have been made as per BHEL Specification / Drawings, that the test results meet the specified parameters of the drawing / specification, that the supplies have been inspected as per Quality Plan ( if called for in the Purchase Order ), that on receipt of supplies at BHEL, Jhansi; BHEL reserves the right to reject any supplies which are non compliant, that in case the material is accepted with deviationst wherever rectifications / rework is observed, that the Supplier shall be given seven days notice to attend to the work and if the Supplier does not attend the rectifications in the said period, BHEL shall reserve the right for suitable deductions.  Despatch clearance shall be given when the Supplier provides the above undertaking ( as per Annexure I ) to BHEL</p>						
<b>E</b>	<p><b><u>Uploading despatch information on BHEL SIP</u></b></p> <p>The supplier has to upload despatch information details by logging in at '<b>Supplier Information Portal</b>' of BHEL Jhansi website using their User name ( Vendor Code ) and Password. Subsequently, the supplier has to click at the link'<b>Update Consignment details</b>' provided therein.Submitting '<b>Despatch Intimation</b>' is mandatory. All supplies arriving (reaching BHEL Jhansi) will be allowed inside CISF Material gate of BHEL Jhansi only if the supplier has submitted online Despatch Intimation .</p> <p>The following documents are necessary before entry of material at our Material Gate:</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%; text-align: center;">1</td> <td>GST Invoice <b>OR</b> Delivery Challan (as per rule 55) <b>OR</b> Bill of entry for imports <b>OR</b> Excise Duty Invoice for Petroleum supplies</td> </tr> <tr> <td style="text-align: center;">2</td> <td>Lorry Receipt (LR) <b>OR</b> Railway Receipt (RR) <b>OR</b> Door Delivery (Courier Docket..).</td> </tr> <tr> <td style="text-align: center;">3</td> <td>'Despatch Intimation' (Printout required).</td> </tr> </table>	1	GST Invoice <b>OR</b> Delivery Challan (as per rule 55) <b>OR</b> Bill of entry for imports <b>OR</b> Excise Duty Invoice for Petroleum supplies	2	Lorry Receipt (LR) <b>OR</b> Railway Receipt (RR) <b>OR</b> Door Delivery (Courier Docket..).	3	'Despatch Intimation' (Printout required).
1	GST Invoice <b>OR</b> Delivery Challan (as per rule 55) <b>OR</b> Bill of entry for imports <b>OR</b> Excise Duty Invoice for Petroleum supplies						
2	Lorry Receipt (LR) <b>OR</b> Railway Receipt (RR) <b>OR</b> Door Delivery (Courier Docket..).						
3	'Despatch Intimation' (Printout required).						

The following documents are additionally required for **SRV clearance** if they are called for in the Purchase Order (PO):

4	Complete Test certificates/Inspection reports
5	Guarantee certificates
6	Any other document as called for

Following may be required for **SRV preparation** depending on the nature of material being supplied:

7	Packing lists, wherever applicable.
8	Weighment slip.

A cost of one percent of the transaction value ( not more than Rs 5000 per transaction but not less than Rs 500 per transaction ) shall be deducted from supplier bills in case supplier has failed to upload the despatch information on Supplier Information Portal

- E** Material despatched one month prior to the date of despatch shall not be permitted inside BHEL, unless there are instructions otherwise from BHEL. In all such cases, material will be allowed inside only if approved by Head MM
- Material despatched 10 weeks after date of despatch shall not be permitted inside BHEL, unless there are instructions otherwise from BHEL. In all such cases, material will be allowed inside only if approved by Head MM

**17 Warranty , Corresponding Repairs / Replacement of Goods, and Deductions**

Goods shall comply with the specifications for material, workmanship and performance.

The warranty shall be for a period of 24 months from the date of receipt at BHEL, Jhansi

However, **wherever erection & commissioning also is in the scope of the bidder**, the warranty shall be for a period of 24 months from the date of supply or 18 months from the date of commissioning, whichever is later.

In case any other terms are to be specified for warranty, the same shall be specified in the specific enquiry

Normally deviation shall not be accepted for the criteria of warranty period. The offers of bidders, who offer deviation to the warranty terms mentioned in the NIT, are liable to be rejected.

If the item supplied is found non-compliant during the warranty period, leading to rejection, the Seller shall arrange free replacement / repair of goods, within one month from the date of intimation or any mutually agreed period. The rejected goods shall be taken away by the Seller at his cost and replaced on Delivered Duty Paid (DDP) (FOR - BHEL Stores/ designated destination basis) within such period. In the event of the Seller's failure to comply, Purchaser may take action as appropriate, including Repair / Replenish rejected goods & disposal of rejections, at the risk & cost of the Seller.

In case the defects attributable to Seller are detected during processing of the goods at purchaser's/ his subcontractor's works, the Seller shall be responsible for free replacement/ repair of the goods as required by the purchaser.

**18 Evaluation and Loading Criteria:**

Evaluation of the tender shall be on the basis of delivered cost, i.e. 'total cost to BHEL' w.r.t the finalized technical scope and commercial conditions (after considering, inter alia, Customs Duty and CENVAT/ VAT/ CST/Service Tax/Entry Tax or any other tax as applicable). Exchange rate (TT selling rate of State Bank of India) applicable on the date of Part-I bid opening shall be considered for evaluation of foreign bids. If the relevant day happens to be a bank holiday in India, then the FOREX rate as on the previous bank working day shall be taken for evaluation.

Foreign suppliers shall ensure that the benefits as applicable under Free Trade Agreement (FTA) with Government of India are disclosed in the bid & relevant documents such as Certificate of Country of Origin, issued by the appropriate authority in the country of Export, is provided by the vendor along with dispatch documents. Bids shall be evaluated with such applicable benefits. In the event of Seller failing to provide appropriate documents for Purchaser to avail disclosed

	<p>concessional duty benefits in India, the cost incurred owing to consequent delays, detention and demurrage thereof, will be to the Seller's account.</p> <p>To arrive at the Delivered Cost, the quoted price shall be suitably loaded, the details of which are mentioned in this annexure / special remarks of the enquiry. In case of any additional techno commercial deviations, for which the loading criterion is required to be framed after opening of techno commercial bid, such criteria shall be communicated to all qualified bidders before price bid opening.</p>
<b>19</b>	<b>Non-Disclosure Agreement</b>
	<p>All Drawing and technical documents relating to the product or its manufacture submitted by one party to the other, prior or subsequent to the formation of contract, shall remain property of the submitting party. Drawing, technical documents or other technical information received by one party, shall not without the consent of the other party, be used for any other purpose than that, for which they were provided. Such technical information shall not without the consent of the submitting party, otherwise be used or copied, reproduced, transmitted or communicated to a third party. Patterns supplied by BHEL will remain BHEL's property which shall be returned by the bidder on demand to BHEL. Bidder shall in no way share or use such intellectual property of BHEL to promote his own business with others. <u>BHEL reserves the right to claim damages from the bidder, or take appropriate penal action as deemed fit against the bidder, for any infringement of the provisions contained herein.</u></p>
<b>20</b>	<b>RIGHT OF REJECTION /NON- PLACEMENT OF PO/ SHORTCLOSURE OF PO:</b> BHEL reserves the right to accept the offers in part or in full, or cancel the Tender enquiry without assigning any reason whatsoever / non placement of PO or contract / short closure of PO or contract.
<b>21</b>	<b>Performance Bank Guarantee (PBG)/ Security Deposit (SD):</b>
<b>A</b>	Bank Guarantee wherever called for, shall be in the BHEL prescribed format. In case the order is to be placed in foreign currency, the BG must normally be in Indian Currency from the Consortium Banks of BHEL / as specified in the specific Enquiry
<b>B</b>	Wherever the contract is for supply of Goods processed on labour basis from BHEL supplied materials, the materials shall be issued against a suitable security, preferably Bank guarantee.
<b>22</b>	<b>Benefits earmarked for Purchase from Micro &amp; Small Enterprises (MSEs) – Indigenous Purchase</b>
<b>A</b>	MSE suppliers who are registered by bodies like MSMED, NSIC & DIC specified by Ministry of Micro, Small and Medium Enterprises ( MoMSME) can avail the intended benefits only if they submit along with the offer, relevant documents including valid certificate as mentioned in " Format for Supplier MSME Status' on Supplier Information Portal of BHEL, Jhansi. In case the valid MSE registration of the bidder is already updated in SDC records of BHEL, Jhansi, it may not submit the details again. It is hence in the interest of the supplier that they validate the status of UAM regularly with BHEL, if they would like to avail intended benefits under MSME Act.
<b>B</b>	Tenders to MSE suppliers shall be issued free of cost & no EMD wherever called for will be insisted upon. Such MSE bidders shall submit along with bid, relevant documents including valid certificate. Date to be reckoned for determining the deemed validity will be the date of bid opening ( Part I in case of two part bid ). Non- submission of such document will lead to consideration of their bid, at par with other bidders. No benefit shall be applicable for this enquiry if any deficiency in the above required documents are not submitted before price bid opening. If the tender is to be submitted through e-procurement portal, then the above required documents are to be uploaded on the portal. Documents should be notarized or attested by a Gazetted Officer.
<b>C</b>	In tender, participating MSEs quoting price within price band of L1 ( on total cost to BHEL) +15% shall also be allowed to supply a portion of requirement by bringing down their price to L1 price <b>in a situation where L1 price is from someone other than a MSE</b> and such MSE shall be allowed to supply up to 20% of total tendered quantity. In case of more than one such MSE within price band of L1 ( on total cost to BHEL) +15%, the supply shall be shared proportionately ( to tendered quantity, as per their tender ranking of the bidders and also their SC/ST status). However if there are more than one MSE vendor at the same price level, then the quantity shall be distributed equally. A quantum of 4% out of 20% quantity, so earmarked, will be reserved for MSE's owned by SC / ST entrepreneurs who submit their bid with relevant documents. However, such distribution shall be subject to the tender requirement in terms of Customer approval of vendors, divisibility of quantity, etc. While all efforts shall be made to ensure compliance to the stated distribution, the decision of BHEL in distribution stated in this clause shall be binding on all bidders.



	<b>The above distribution is not applicable (a) where L1 vendor is MSE vendor and minimum 20% share is assured to the L1 bidder in the tender, or (b) where the MSE bidders qualified for distribution as per 'manner of splitting' clause in NIT already cater to 20% share in the tendered load.</b>
<b>D</b>	In case it comes to notice that the bidder is found responsible for misconducts like, having submitted fake/false/forged documents/ certificates, has misrepresented the facts, has wilfully suppressed the facts, has resorted to unethical/ illegal means, etc., action shall be initiated against such bidders as per the extant guidelines of the Company for suspension of business dealings.
<b>23</b>	<b>Benefits earmarked to suppliers for Purchase under 'MAKE IN INDIA'</b>
	As part of minimizing import content, Government of India, vide order no P-45021/2/2017-B.E.-II dated 15.06.2017, under the subject – Public Procurement ( Preference to Make in India ) -- has set the initiatives to encourage and promote indigenously manufactured goods within India and services provided by sources within India. .  In line with this, bidders who manufacture the goods and provide services within India ( otherwise referred as local suppliers ) are given purchase preference and are entitled to benefits in the tender
<b>A</b>	<b>Definitions</b>
<b>(i)</b>	<b>Local content</b> means the amount of value added in India which shall, unless otherwise prescribed by the Nodal Ministry, be the total value of item procured ( excluding net domestic indirect taxes ) minus the value of imported content in the item ( including all customs duties ) as a proportion of the total value , in percent . Presently, the minimum local content required is 50%. The nodal ministry may prescribe a higher or lower percentage in respect of any particular item and may also prescribe the manner of calculation of local content.
<b>(ii)</b>	<b>Local supplier</b> means a supplier or service provider whose product or service offered for procurement meets the minimum local content as prescribed
<b>(iii)</b>	Margin of Purchase Preference means the maximum extent to which the price quoted by a local supplier may be above the L1 for the purpose of purchase preference. Presently the margin of Purchase preference is 20%.
<b>B</b>	<b>Conditions under which preference is given</b>
<b>(i)</b>	In procurement of goods in respect of which the Nodal ministry has communicated that there is sufficient local capacity and local competition, and where the estimated value of procurement is Rs 50 lakhs or less, only local suppliers shall be eligible. If the estimated value of procurement of such goods is more than Rs 50 lakhs, provisions of 23(B) (ii) and 23(B)(iii) shall apply.
<b>(ii)</b>	If the procurement of goods are not covered by 23(B)(i) and are divisible in nature, the following procedure shall be followed :
<b>a</b>	If L1 is a local supplier, the order for full quantity shall be awarded to local supplier
<b>b</b>	If L1 bid is not from a local supplier, 50% of the order quantity shall be awarded to L1. Thereafter, the lowest bidder among the local suppliers, shall be invited to match the L1 price for the remaining 50% quantity , subject to the local supplier's quoted price falling within the margin of purchase preference, and the order for that quantity shall be awarded to such local supplier subject to matching the L1 price. In case such lowest eligible local supplier fails to match the L1 price or accepts less than offered quantity, the next higher local supplier within the margin of purchase preference shall be invited to match the L1 price for remaining quantity and so on, and the order shall be awarded accordingly. In case some quantity is still left uncovered on local suppliers, then such balance quantity may also be ordered on the L1 bidder.
<b>iii</b>	If the procurement of goods are not covered by 23(B)(ii) and are not divisible in nature, and in procurement of services where the bid is evaluated on the price alone, the following procedure shall be followed :
<b>a</b>	If L1 is a local supplier, the order shall be awarded to local supplier
<b>b</b>	If L1 bid is not from a local supplier, then the lowest bidder among the local suppliers, will be invited to match the L1 price, subject to the local supplier's quoted price falling within the margin of purchase preference, and the order shall be awarded to such local supplier subject to matching the L1 price.  In case such lowest eligible local supplier fails to match the L1 price, the local supplier with the next higher bid within the margin of purchase preference shall be invited to match the L1 price and so on, and the order shall be awarded accordingly. In case none of the local suppliers within the margin of preference match the L1 price, then the order may be awarded to the L1 bidder.
<b>C</b>	<b>Exemption of small purchases</b>
	Notwithstanding anything contained at clause 23B above, procurements where the estimated value of procurement is less than Rs 5 lakhs are exempt and purchase preference shall not be accorded in such cases.

<b>D</b>	<b>Verification of local content</b>
<b>(i)</b>	The local supplier, at the time of tender, bidding or solicitation, shall be required to provide self certification that the item offered meets the minimum local content and shall give details of the location(s) at which the local value addition is made.
<b>(ii)</b>	In cases of procurement for a value in excess of Rs 10 crores, the local supplier shall be required to provide a certificate from the statutory auditor or cost auditor of the company ( in case of companies ) or from a practicing cost accountant or practicing chartered accountant ( in respect of suppliers other than companies ) giving the percentage of local content.
<b>(iii)</b>	False declarations shall be in breach of code of integrity and shall invite action as per guidelines for Suspension of Business dealings with Suppliers
<b>E</b>	In case of any disputes / clarifications, the extant guidelines of Government of India shall prevail.
<b>24</b>	<b>Fraud Prevention</b>
	The Bidder along with its associate/ collaborators/ sub-contractors/ sub-vendors/ consultants/ service providers shall strictly adhere to BHEL Fraud Prevention Policy displayed on BHEL website <a href="http://www.bhel.com">http://www.bhel.com</a> and shall immediately bring to the notice of BHEL Management about any fraud or suspected fraud as soon as it comes to their notice
<b>25</b>	<b>Settlement of Disputes &amp; Arbitration</b>
<b>A</b>	All questions/interpretations regarding subject matter of the Contract shall be decided by the Purchaser on the request of the Seller and the decision of the Purchaser shall be final.
<b>B</b>	In case of dispute, steps shall be taken by the parties to the contract to settle the same through negotiations.
<b>C</b>	In case, dispute is not settled in negotiations, it shall be referred to Conciliator appointed by the competent authority of the Purchaser.
<b>D</b>	In case dispute is not settled in conciliation proceedings, the same shall be referred to Arbitration as per Corporate Guidelines of the Purchaser and the arbitration proceeding shall be conducted as per provisions of the Arbitration and Conciliation Act, 1996 read with Corporate guideline as amended from time to time.
<b>E</b>	The Seller shall continue to perform the contract, pending settlement of dispute(s).
<b>26</b>	<b>Applicable Laws and Jurisdiction of Courts</b>
	Indian laws both substantive and procedural, for the time being in force, including modifications thereto, shall govern the Contract including Arbitration proceedings. The competent Courts at Jhansi in the State of Uttar Pradesh, India shall have sole jurisdiction.
<b>27</b>	<b>Conciliation</b>
	BHEL and bidder agree that if at any time (whether before, during or after the arbitral or judicial proceedings), any Disputes (which term shall mean and include any dispute, difference, question or disagreement arising in connection with construction, meaning, operation, effect, interpretation or breach of the terms and conditions of order, which the Parties are unable to settle mutually), arise inter-se the Parties, the same may, be referred by either party to Conciliation to be conducted through Independent Experts Committee to be appointed by competent authority of BHEL from the BHEL Panel of Conciliators.  <b>Notes:</b> <b>1.</b> No serving or a retired employee of BHEL/Administrative Ministry of BHEL shall be included in the BHEL Panel of Conciliators. <b>2.</b> Any other person(s) can be appointed as Conciliator(s) who is/are mutually agreeable to both the parties from outside the BHEL Panel of Conciliators.  The proceedings of Conciliation shall broadly be governed by Part-III of the Arbitration and Conciliation Act 1996 or any statutory modification thereof. The details of Conciliations shall be governed by the BHEL Conciliation scheme 2018.
<b>28</b>	<b>General</b>
	The Bidder shall keep a track of any changes by visiting the Supplier Information Portal of BHEL, Jhansi at <a href="https://www.bheljhs.co.in/apps/sip/index.php">https://www.bheljhs.co.in/apps/sip/index.php</a>