



BHARAT HEAVY ELECTRICAL LIMITED
TRANSPORTATION SYSTEMS GROUP & CENTRE FOR ELECTRIC TRANSPORTATION
UNIT'S ADDRESS: PIPLANI, BHOPAL

SPECIFICATION CUM COMPLIANCE CERTIFICATION
FOR
LED BASED HEAD CODE, GPS BASED PASSENGER INFORMATION AND PUBLIC
ADDRESS SYSTEM (PIS) FOR 1600 HP AC-AC DEMU

SPECIFICATION NO: TSG/3.5/SP0002/T01

January 2020

REVISION	DATE	PREPARED BY	APPROVED BY
02	27/01/2020	Servesh Bharati 27/01/20. (Servesh Bharati)	<i>[Signature]</i> 27.1.20 (I Chattopadhyay)

ADDRESS OF THE SUPPLIER :					
TELEPHONE NOS.:					
FAX NOS.:					
E-MAIL ADDRESS :					
S NO	DESCRIPTION	SPECIFIED / TO BE CONFIRMED BY	OFFERED	DEVIATIONS	REMARKS
1.0	PURPOSE :				
1.1.	This specification covers the requirement of design construction, pre-wiring, performance, tests, supply, commissioning and after sales service of LED based Head Code and GPS based passenger Information and Public address System for DEMU Rolling Stock of Indian Railways. It shall be microprocessor controlled and shall have the facility of programming the destination stations and other important information as per time table based on train number. The complete timetable can be fed in the system and motorman has to only feed the train number to operate head code and Passenger Information System.				
2.0	SCOPE OF SUPPLY				
2.1.	GPS based PAS/PIS system for one basic unit (1 DPC + 4 TC) as per Clause 3.0 of RDSO specification no. <i>RDSO/PE/SPEC/EMU/0065(Rev03) with Amendment No 1 along with ICF Annexure 01 & 04 (for 3-phase DEMU).</i>	vendor to confirm			

3.0 TECHNICAL DETAILS																																			
3.1.	The passenger information system shall be as per clause 2.0 of RDSO specification no. <i>RDSO/PE/SPEC/EMU/0065(Rev03) with Amendment No 1 along with ICF Annexure 01 & 04</i> (for 3-phase DEMU)	vendor to confirm																																	
3.2.	The passenger information system shall meet environmental conditions as per clause 4.0 of RDSO specification no. <i>RDSO/PE/SPEC/EMU/0065(Rev03) with Amendment No 1 along with ICF Annexure 01 & 04</i> (for 3-phase DEMU)	vendor to confirm																																	
3.3.	The passenger information system shall meet technical requirements as per clause 5.0 and Annexure 04 of RDSO specification no. <i>RDSO/PE/SPEC/EMU/0065(Rev03) with Amendment No 1 along with ICF Annexure 01 & 04</i> (for 3-phase DEMU) in general with following conditions superseding the specification requirement.	vendor to confirm																																	
3.4.	The Passenger Information System shall include a high resolution multi-colour graphic display, suitable for the remote displaying of moving messages, in Hindi, Regional language and English, on board the train, in the passenger area. Hindi, Regional language and English messages shall be scrolled on the display simultaneously and in synchronism. The colour of Hindi, Regional language and English character shall be approved by ICF. Emergency announcements may be displayed in red. Two such display units per car shall be provided.	vendor to confirm																																	
3.5.	Requirement of CFT monitor for graphic display shall be as follows: <table><tr><th>S. No.</th><th>Item</th><th>Specification</th></tr><tr><td>1.</td><td>Display Area</td><td>380.2 (H) x 228.1 (V)</td></tr><tr><td>2.</td><td>Number of dots</td><td>1280 x 3 (H) x 768 (V)</td></tr><tr><td>3.</td><td>Pixel pitch (mm)</td><td>0.297 (H) x 0.297 (V)</td></tr><tr><td>4.</td><td>Colour Pixel Arrangement</td><td>RGB Vertical stripe</td></tr><tr><td>5.</td><td>Display Mode</td><td>Normally white</td></tr><tr><td>6.</td><td>Number of colour</td><td>262K (6 bit/colour), 16.7M (8 bit/colour)</td></tr><tr><td>7.</td><td>Luminance (cd/m²)</td><td>700</td></tr><tr><td>8.</td><td>Viewing Angle (CR>=10)</td><td>-80°-80° (H), -60°-80° (H),</td></tr><tr><td>9.</td><td>Surface Treatment</td><td>Anti-glare and hard coating 3H</td></tr></table>	S. No.	Item	Specification	1.	Display Area	380.2 (H) x 228.1 (V)	2.	Number of dots	1280 x 3 (H) x 768 (V)	3.	Pixel pitch (mm)	0.297 (H) x 0.297 (V)	4.	Colour Pixel Arrangement	RGB Vertical stripe	5.	Display Mode	Normally white	6.	Number of colour	262K (6 bit/colour), 16.7M (8 bit/colour)	7.	Luminance (cd/m ²)	700	8.	Viewing Angle (CR>=10)	-80°-80° (H), -60°-80° (H),	9.	Surface Treatment	Anti-glare and hard coating 3H	vendor to confirm			
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	10. Electrical Interface	LVDS (6 bit/8 bit)			
	11. Viewing Direction	Higher contrast ratio: 6 o'clock			
	12. Module Size (mm)	404.0 (W) x 258.0 (H) x 16.2 (D)			
	13. Module Mass (g)	1700			
	14. Backlight Unit	LED, edge-light, replaceable			
3.6.	There shall be a Train Number/ Destination Indicator in the space provided above wind screen. The Train Number Indicator shall be capable of displaying 4- digit alpha-numerical train number of at least 130 mm height with yellow LEDs. The Tenderer shall submit proposal for Engineer's review. The Tenderer shall submit proposal for ICF's review. Access for maintenance and adjustment shall be from within the cab.				
3.7.	The location of the display units shall be proposed by the Tenderer taking into consideration the need for all-round good visibility by passengers within the saloon. The Contractor shall submit proposal, including diagrammatic representation of the angle of visibility of the display units.				
3.8.	The pixel diameter shall be three (3) mm and the pixel per pitch shall not be greater than four (4) mm. Alternative display panel configurations may be considered for better resolution. The viewing angle to the display panel for a clear and sharp image at a distance of five (5) metres shall not be less than $\pm 60^\circ$.				
3.9.	The Train Number and Destination Indicator shall be able to be set via the route setting control. The route setting control shall be through the manual control on the DDC.				
3.10.	The Destination and Train Number Indicators shall have a view angle of not less than 120 degrees in the horizontal plane and shall be legible under direct sunlight, artificial light and darkness. Light sensors shall be equipped to vary the intensity of the LEDs based on the level of ambient light.				
3.11.	Location of all the displays shall be reviewed during mock-up review.				
3.12.	The passenger information system shall meet software requirement as per clause 6.0 & 13.0 of RDSO specification no. <i>RDSO/PE/SPEC/EMU/0065(Rev03) with Amendment No 1 along with ICF Annexure 01 & 04 (for 3-phase DEMU)</i>				

3.13.	The passenger information system shall meet hardware requirement as per clause 7.0 of RDSO specification no. <i>RDSO/PE/SPEC/EMU/0065(Rev03)</i> with <i>Amendment No 1 along with ICF Annexure 01 & 04 (for 3-phase DEMU)</i>	vendor to confirm			
3.14.	The passenger information system shall follow batch testing of LEDs as per clause 8.0 of RDSO specification no. <i>RDSO/PE/SPEC/EMU/0065(Rev03)</i> with <i>Amendment No 1 along with ICF Annexure 01 & 04 (for 3-phase DEMU)</i>	vendor to confirm			
3.15.	The passenger information system shall meet general design requirements as per clause 9.0 of RDSO specification no. <i>RDSO/PE/SPEC/EMU/0065(Rev03)</i> with <i>Amendment No 1 along with ICF Annexure 01 & 04 (for 3-phase DEMU)</i>	vendor to confirm			
4.0	COMPLIANCE WITH NATIONAL / INTERNATIONAL STANDARD:				
4.1.	As per Clause 3.5 of RDSO specification no. <i>RDSO/PE/SPEC/EMU/0065(Rev03)</i> with <i>Amendment No 1 along with ICF Annexure 01 & 04 (for 3-phase DEMU)</i> .	vendor to confirm			
5.0	TOOLS				
5.1.	NA				
6.0	QUALIFYING CRITERIA				
6.1.	Vendor must be approved source of M/s ICF Chennai for GPS based PA/PIS system.	vendor to confirm			
6.2.	The offered product must have approval from M/s ICF Chennai for 1600 HP AC AC DEMU of Indian Railways.	vendor to confirm			
7.0	ERECTION AND COMMISSIONING				
7.1.	Manufacturer shall provide Installation & Commissioning for 2 sets at ICF as well as user railway sites.	vendor to confirm			
8.0	INSPECTION AND TESTING				

8.1.	Type test report to be submitted along with the offer	vendor to confirm			
8.2.	Routine and Acceptance tests shall be carried out as per clause 10.0 of RDSO specification <i>RDSO/PE/SPEC/EMU/0065(Rev03) with Amendment No 1 along with ICF Annexure 01 & 04 (for 3-phase DEMU)</i> witnessed by BHEL/Railway representative.	vendor to confirm			
9.0	APPROVALS				
9.1.	Material shall be despatched only after written despatch clearance from BHEL.	vendor to confirm			
10.0	MARKING				
10.1.	As per Clause 12.0 of RDSO specification no. <i>RDSO/PE/SPEC/EMU/0065(Rev03) with Amendment No 1 along with ICF Annexure 01 & 04 (for 3-phase DEMU)</i> .	vendor to confirm			
11.0	DOCUMENTATION				
11.1.	Clause by clause confirmation (complied /Not complied) on the requirements specified in this specification to be submitted by the bidder. Offers where clause wise comments are not furnished will be summarily rejected.	vendor to confirm			
11.2.	Deviation, if any shall be brought out clearly duly indicating the techno-economical merits	vendor to confirm			
11.3.	The manufacturer shall submit design document and QAP after receipt of order	vendor to confirm			
12.0	TRAINING				
12.1.	As per Clause 11.0 of RDSO specification no. <i>RDSO/PE/SPEC/EMU/0065(Rev03) with Amendment No 1 along with ICF Annexure 01 & 04 (for 3-phase DEMU)</i> .	vendor to confirm			

13.0	SPARES																							
13.1.	NA																							
14.0	WARRANTY/GUARANTEE																							
14.1.	The guarantee period shall be 36 months from the date of delivery or 24 months from the date of commissioning whichever is earlier				vendor to confirm																			
15.0	INFRINGEMENT OF PATENT RIGHTS																							
15.1.	As per Clause 3.2 of RDSO specification no. <i>RDSO/PE/SPEC/EMU/0065(Rev03) with Amendment No 1 along with ICF Annexure 01 & 04 (for 3-phase DEMU).</i>				vendor to confirm																			
16.0	REVISION HISTORY																							
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