


		BHARAT HEAVY ELECTRICALS LIMITED TRANSPORTATION BUSINESS & SYSTEMS GROUP, INDUSTRY SECTOR, LODHI ROAD, NEW DELHI						
	DOCUMENT No.	TSG-AC EMU- SPEC/062	Rev. No.	00	Prepared	Checked	Approved	
	TYPE OF DOC.	TECHNICAL SPECIFICATION			NAME	DK	SKM	Dr. A S
	TITLE	SPEED SENSOR FOR TRACTION MOTOR IM3601 AZ			SIGN			
					DATE	07.05.2018		
					GROUP	TSG	W.O. No	
	CUSTOMER/ CONSULTANT	BHEL/INDIAN RAILWAYS						
PROJECT	DESIGN, DEVELOPMENT, MANUFACTURE, SUPPLY, TESTING & COMMISSIONING OF 25KV AC THREE PHASE INDIGENOUS PROPULSION & OTHER EQUIPMENTS FOR AC EMUs							
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Rev No.	Date	Altered	Checked	Approved	REVISION DETAILS			
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	DOC. No. : TSG-AC EMU- SPEC/062 REV No. 00	PI No.
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SECTION – 1

TECHNICAL SPECIFICATION

The vendor is required to submit clause by clause compliance of the technical specification detailed below. In case details are already furnished during design approval stage from RDSO, same may please be indicated and complied.


1.1. SYSTEM SPECIFICATION - SPEED SENSOR TRACTION MOTOR IM3601AZ

Speed sensor is being used in EMU Traction motor IM3601AZ mounted on traction motor before the gear box to sense the number of rotations of traction motor into the corresponding frequency pulses. Below is the technical requirement of speed sensor for compatibility with traction control system of IGBT Air-conditioned ACEMU rake:

Technical Details:

Sl.no.	Parameter	Value
1.	Input Voltage	+15V DC (12 V to 15 V DC)
2.	No. of Pulses per Revolution	215 pulses or more
3.	Output Signal	Pulse Output, One square wave signal
4.	Output level	Low < 1.5 V, High > 10 V
5.	Duty Cycle	50% +/- 10%
6.	Sink current (output)	≤ 30 mA
7.	Source current (input)	< 40 mA
8.	Maximum signal frequency	21.75 KHz (Corresponding to 215 toothed wheels on TM and Traction motor max speed of 3000 rpm)
9.	IP Protection	IP68
10.	Assembly type	Flying lead type (without connectors)
11.	Cable (Signal & Power)	Both Power and signal for sensor has to be provided in single multicore screened cable of 3 core x 0.5 mm ² . EB Irradiated, 3 core x 0.5 mm ² , traction grade screened cable tested as per following standards: RDSO specification No. : EDTS132,REV C or other equivalent standard like IEC 60332-1 (1993); 60332-3(1992); 60754-2 (1991) Amendment 1 (1997) ; 61034-2 UIC 895, UIC 541-2, UITP Part 2; VDE 0298-T3.
12.	Gap between tooth wheel and sensor	Between 1 to 2 mm
13.	Cable length	3.0 Mtrs
14.	Connectors	Not Required
15.	Mounting Dimension	As per ANNEXURE-I. Supplier to provide one sample of sensor to check them mounting of sensor on traction motor.

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ANNEXURE-I

Mounting Dimensions of Speed Sensor Used in IM3601AZ for AC-EMU

