REVISION HISTORY SHEET

REV. NO	DATE	NATURE OF CHANGE	REASONS	PREPARED BY	APPROVED BY
00	02.02.2021	FIRST ISSUE	--	L Sunitha	R S Agosh Chandran
01	24.02.2021	Minor changes	--	L Sunitha	R S Agosh Chandran
02	23.05.2022	Minor changes	--	L Sunitha	R S Agosh Chandran

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REVISIONS 02 DT: 23.05.2022

APPROVED BY:
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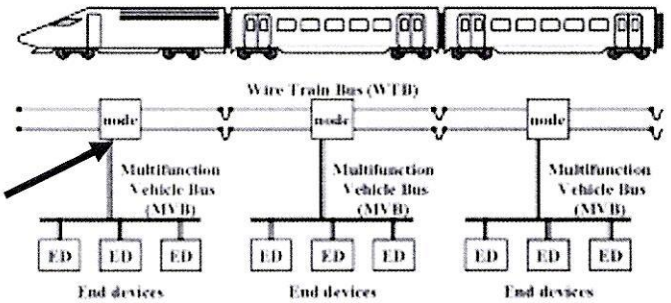
PREPARED BY:	ISSUED BY	DATE
L Sunitha Dy Manager/TE	TE	23.05.2022

SPECIFICATION FOR WTB TO MVB GATEWAY

1.0 INTRODUCTION:

Purpose of this technical specification document is to give requirement information about WTB to MVB Gateway used in AC locomotives for Train Communication Network.

2.0 FUNCTION:



A Gateway is a hardware device that acts as a "gate" between two networks.

The WTB to Vehicle Bus Gateway family is a group of devices developed to connect the Wire Train Bus (WTB) to the common on board vehicle buses used in railway application. WTB to MVB Gateway is used to connect the Wire Train Bus (WTB) to the Multifunctional Vehicle Bus (MVB). Its main application is to act as a vehicle node for IEC 61375 and UIC556 application.

WTB to MVB Gateway should be equipped of Voting Unit (VU) module for complete redundancy application and "sleep" function, "fritting" unit module on WTB and digital I/O module (Max 16 in and 4 out).

In compliance with UIC556 (information transmission in the train) the gateways should implement: the inauguration procedure, the mapping server, the Process Data Marshalling (PDM) and the management of static and dynamic properties.

The core of every gateway implements the Real Time Protocol (RTP) for message routing as required in IEC 61375-1 (Train communication network).

Supplier should support BHEL in understanding, commissioning and troubleshooting the tool required for WTB and MVB configuration database required for the gateway.

3.0 CHARACTERISTICS

S. No.	Parameter	Value
1	Power Supply	a) 72V DC to 137.5V DC b) Reverse polarity protection c) Thermal shutdown protection d) Over-voltage protection e) Under-voltage protection
2	Operating Environment	a) Operating temperature -40°C to +70°C. b) Storage temperature -40°C to +85°C c) Relative humidity: <= 75% average and <= 95% for 30 consecutive days in a year d) Any moisture condensation not leads to any malfunction or failure.
3	Operating system	Latest Windows, or Linux based OS
4	CPU	Low power type, because of the high ambient temperature
5	Memory	RAM: Min 1 MB
6	Dimensions	145 (W) x 130 (H) x 175 (D) mm
7	Construction	a) Casing and connector panel: High-grade steel, matt pickled
8	IP Rating	IP-20
9	Reliability, Maintainability, Lifetime	a) MTBF > 50,000 hours b) Lifetime > 15 years
10	Interfaces	a) RS232 interface b) I/O interface (with various type of connector) c) 2 WTB line (4 D-connector) d) Vehicle Bus interface: ➢ MVB with ESD, EMD, OGF functionality ➢ Ethernet connection ➢ CAN connection
11	PCBs	Printed Circuit Boards must have conformal coating as relative humidity > 95%, and during 3-4 months of rainy season per year frequent condensation can occur.
12	Applicable standards	EN 50155, EN 50121-3-2, IEC-60571, EN61373, IEC 61375
13	Power consumption	20W max
14	Weight	Approx. 2kg
15	WTB transmission distance	Upto 850m
16	WTB maximum configuration	Upto 32 nodes
17	Maximum trainset length	Upto 6 vehicles for one node
18	WTB data transmission rate	1 Mbps
19	MVB data transmission rate	1.5 Mbps
20	Installation	Rack mounted

4.0 INSPECTION

The type test reports from a NABL accredited laboratory to be provided along with the technical offer. For series supplies, Routine test reports are to be provided.

5.0 APPLICABLE NORMATIVE STANDARD

The offered system shall generally conform to the following normative standards

IEC 60529	for IP68 protection
EN 50121-2	EMC: Emissions to external environments
IEC 60077	Rules for equipment for onboard rail vehicles
IEC 61287	Power Converters on board rolling stock
IEC 61373	Electric Railway Equipment-Rolling Stock-Shock & Vibrations Requirements