



Bharat Heavy Electricals Limited, Bhopal
Control Equipment Engineering Division

Specification of Interface PCB along with DSP Hybrid Board enclosure and its accessories for Regenerative Converter of WAG7 locomotive

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	Name:	Designation	Signature:
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HISTORY OF REVISIONS

Rev No.	Description
0	Concept release, original version



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1. Introduction

This specification covers the requirement of Interface PCB along with DSP Hybrid Board enclosure and its accessories. Supplier should carefully see the following minimum requirement of the item. Consideration of any deviation from this specification shall be the prerogative of BHEL Bhopal.

2. Scope of Supply

2.1 One number Interface PCB along with DSP Hybrid Board enclosure and one set of following accessories.

S.No	Accessories	Qty
1	USB A to B 1 meter cable	1
2	EMI Protected D-Sub 50 Pin, Full metal top entry hood with screws, Harting Part No.61030010019	1
3	Metal shell 50 Pin Female Connector, Harting Part No.09670504701	1
4	Female Pin Harting Part No.61030000113	50
5	One PCB with dimension: L < 120mm and W < 40mm, PCB thickness: 1.6mm. PCB shall be given a conformal coating using CHEM-VERSE make PCB-500 aerosol spray or equivalent or superior, This PCB should be mounted on top cover/side of EMI Resistant Enclosure. Mounting shall be rugged suitable for traction duty. All the fasteners used shall be of Stainless Steel or galvanized MS. Following components shall be mounted on this PCB (a) D sub Standard 50 Pole male 2.54mm pitch with screw lock 4-40 UNC, Turned Solder Pin angled, Harting Part No. 09665626817 , Qty : 1 number . (b) Male Header with 50 Angled Solder Pin with long lever ,Harting Part No. 09185506903 , Qty : 1 number . (c) 10cm length Flat Ribbon Cable with 50 contact Female Connector Harting Part No. 09185506813 at both ends , Qty : 1 set	1 set
6	EMI Protected D-Sub 25 Pin, Full metal top entry hood with screws, Harting Part No.61030010017	1
7	Metal shell 25 Pin Female Connector, Harting Part No.09670254701	1
8	Female Pin Harting Part No.61030000113	25
9	One PCB with dimension: L < 80mm and W < 35mm, PCB thickness: 1.6mm. PCB shall be given a conformal coating	1



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	using CHEM-VERSE make PCB-500 aerosol spray or equivalent or superior, This PCB should be mounted on top cover/side of EMI Resistant Enclosure. Mounting shall be rugged suitable for traction duty. All the fasteners used shall be of Stainless Steel or galvanized MS. Following components shall be mounted on this PCB. (a) D sub Standard 25 Pole male 2.54mm pitch with screw lock 4-40 UNC, Turned Solder Pin angled, Harting Part No. 09663626817, Qty : 1 number. (b) Male Header with 24 Angled Solder Pin with long lever ,Harting Part No. 09185246903, Qty : 1 number (c) 10cm length Flat Ribbon Cable with 24 contact Female Connector Harting Part No. 09185246813 at both ends, Qty : 1 set	
10	Mega-Fit Receptacle Housing, Dual Row, 2 Circuit, Molex Part No. 1700010102	2
11	Mega-Fit Crimp Terminal, Female, 0.38μm Gold (Au) Plating, 14 and 16 AWG, Molex Part No. 1720630311	4
12	3.96mm Pitch SPOX Crimp Housing, Female, with Friction Ramp, 5 Circuits, Molex Part No. 09501051	4
13	SPOX Crimp Terminal Female, 18-24 AWG, Molex Part No. 39000021	5
14	Mini-Fit Jr. Receptacle Housing, Dual Row, 8 Circuits, Molex Part No. 39012080	2
15	Mini-Fit Female Crimp Terminal, Tin (Sn) over Copper (Cu) Plated Brass, 18-24 AWG, Molex Part No. 39000039	16
16	KK 3.96mm Crimp Terminal Housing, Friction Ramp, 5 Circuits, Natural, Molex Part No. 09508051	1
17	KK 3.96mm Crimp Terminal Housing, Friction Ramp, 2 Circuits, Natural, Molex Part No. 09508021	1
18	3.96mm (.156") Pitch MarKK Crimp Terminal, 18 to 20 AWG, Tin (Sn) over Nickel (Ni) Plating, Molex Part No. 455703002	10

Note: Make and Part Number of components mentioned in above table is tentative, Equivalent make and model may be considered after approval from BHEL.

2.2 Any other accessories/hardware required for fitment of PCB and Hybrid board into the enclosure will be in the scope of supplier.



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2.3 Enclosure Material: Aluminium Alloy / Mild Steel with black colour powder coating. Item to be powder coated to BHEL Spec No. AA 0674124 to shade no.RAL 9005 Jet Black to DFT (Dry Film thickness) 80 to 110 micron.

2.4 Enclosure Approx Dimensions :
Depth: 295mm, Width : 250mm, Height :70mm., Thickness : 1.6mm.

However final dimensions will be finalized at design stage mutually between supplier and BHEL.

3. After Sale Service

Supplier to confirm equipment support for at least 10 years.

4. Document Submission

4.1 Documents to be submitted along with the offer

Supplier shall submit the following documents along with the offer:

(i) Clause by clause acceptance of the Specification.

4.2 Documents to be submitted after PO placement

Following documents shall be submitted to BHEL for approval within 15 days of the PO placement and approval shall be given by BHEL to the vendor within 15 days of complete document submission and resolution of queries by the vendor.

(i) Complete drawing

(ii) Datasheet of Connectors

Only after written approval, manufacturing action shall be taken. Items are to be delivered at BHEL Bhopal within 2 months from the approval of manufacturing clearance. Approval of documents from BHEL does not absolve supplier from the responsibility of desired performance of the equipment supplied by them.

General Terms and Conditions

For other terms and Conditions, Refer BHEL Tender Enquiry.