

Bharat Heavy Electricals Limited

HIGH PRESSURE BOILER PLANT, TIRUCHIRAPPALLI 620 014.

CONTROLS AND INSTRUMENTATION / FB



TECHNICAL SPECIFICATION

FOR

BHELSONIC PANEL AND ACCESSORIES

SPEC. REF:CI:BS10:EMC:PANEL:01

REV	DATE	DESCRIPTION	PREPARED SR	CHECKED MVR	APPROVED AKP
00	28/03/2014	Initial Release	-sd/-	-sd/-	-sd/-
01	29/03/2017	Revised to indicate additional EMC tests.	<i>S. Rajasekhar</i>	<i>Ramany</i>	<i>Aparna</i>

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Annexure:

System Panel for 30 Channel: 3-97-585-22933 Rev 01

System Panel for 24 Channel: 3-97-585-22764 Rev 01

(The above drawing is only for indicative purpose, however BHEL approved vendor drawing to be followed)

1.0 General Instructions to Vendor:

- 1.1** Vendor shall check receipt of complete documents referred to in the 'Contents'. In the event of order, the entire specification will form part of purchase order for compliance during execution.
- 1.2** Deviation if any shall be clearly brought out in the "Deviation schedule". else it will be construed that the vendor is fully complying with the specification.

2.0 Technical Specification (BHELSONIC Panel)

2.1 General Requirement

- a) The panel should be suitable for indoor & floor mounting and of freestanding type.
- b) Degree of protection of panel enclosure: IP 32.
- c) Front and Back door shall be designed for minimum 120 degree opening.
- d) The panel shall be free from flaws, dents and undulations.

2.2 Panel Size and Material:

- a) Panel size shall be 800 mm (W) x 800 mm (D) x2315 mm (H). (Over all height- 2200 mm(H) +100mm base frame + 15mm anti vibration pad = 2315mm)
- b) The panel shall be made of sheet steel material of 2 mm thickness and door with 2 mm thickness.

2.3 Color & Painting:

- a) Exterior: as per RFQ/NIT
Interior: as per RFQ/NIT
- b) Pre-treatment and painting (powder coating): The sheet steel used shall be pretreated to remove scales, rust etc., and the detailed procedure of painting process shall be furnished.
- c) Thickness of Powder coating paint: 60-80 microns

2.4 Accessories:

- a) Removable cable gland plate of 3 mm thick shall be provided at the bottom (approx. size: 500x500mm) & as indicated in the drawing.
- b) 15 mm thick anti vibration pad of Hard Rubber shall be provided.
- c) Doors shall be provided with 4-point locking arrangement. The lock shall be of good design and reputed make.
- d) Suitable no. of lifting eye bolts with nuts, lock nuts and washers shall be provided.
- e) Other accessories as per the BOM mentioned in the referred drawing.
- f) Mechanical support shall be provide for the fixed tray.

2.5 Special Requirements:

One no. BHELSONIC panel and one no. FAM after integrating with BHEL's free issue components at BHEL (T) works shall be type tested as per test requirements indicated in this specification Clause no. 2.5.1 To carry out the same, the vendor to consider the following points before giving their optional quote.

Vendor to indicate separate charges for conducting type tests listed in clause no.2.5.1 of this specification i.e. at CPRI / Bangalore (for conducting type tests indicated sl.nos. 1 to 4 of clause no.2.5.1) & SAMEER/Chennai (for conducting type tests indicated sl.nos. 5 to 12 of clause no. 2.5.1).

Transportation & handling of packed assembled panels from BHEL(T)'s works to SAMEER/Chennai (for conducting type tests indicated sl.nos. 5 to 12 of clause no. 2.5.1) & then to CPRI / Bangalore (for conducting type tests indicated sl.nos. 1 to 4 of clause no. 2.5.1)

Co-ordination with test centers for carrying out the above tests and obtaining test reports on behalf of BHEL (T). These type tests will be witnessed by BHEL (T) at the respective Test Houses.

To consider contingency charges for carrying out re-testing of panels in case of any problem / failure encountered during testing.

After successful testing of panels, re-packing of panels, transportation and delivery to BHEL (T) works.

NOTE:

The responsibility of conducting type tests (as per clause No.2.5.1 of this specification) successfully rest with the vendor and in this respect, the vendor may contact BHEL (T) for getting clarifications if any.

Vendor to Submit the type test reports for tests as per clause 2.5.1 if it had conducted the same within 5 years else vendor to carry out these tests for which 2.5 Special Requirements price must be submitted along with the offer.

- a) Shelves shall be fixed on a square slotted angle with fixing arrangements.
- b) Any other accessories / items other than the items indicated in this BOM, which are felt necessary to make the system complete, easy mounting and assembling of components, including spare touchup paint, etc., shall be indicated in the offer.

- c) The panel shall be completely assembled and supplied as single unit.
- d) The remote panel and the panel accessories as included in the BOM shall be designed in such a way that it shall pass the following type tests:
- e) Vendor shall quote with break-up price for test charges at
 - 1) SAMEER 2) CPRI 3) Logistics 4) Handling.

2.5.1 The complete BHELSONIC and FAB shall be designed suitable for the following type test requirements.

1. Dry heat test as per IEC 60068-2-2, Type Bd
2. Damp heat test as per IEC 60068-2-30, Type Db
3. Vibration test as per IEC 60068-2-6, Type Fc
4. Cold Test IEC 60068-2-1 Ad
5. Electrostatic discharge test as per IEC 61000-4-2
6. Radiated Susceptibility as per IEC 61000-4-3
7. Conducted RF immunity test as per IEC 61000-4-6
8. Damped Oscillatory Wave test as per IEC 61000-4-12
9. Electrical fast Transient test IEC 61000-4-4
10. High Energy Surge Immunity Test IEC 61000-4-5
11. Conducted Emission Test IEC 61000-6-4
12. Radiated Emission Test IEC 61000-6-4

Dry heat test as per IEC 60068-2-2, Type Bd

Temperature: 55°C

Duration: 2 Hrs.

Damp heat test as per IEC 60068-2-30, Type Db (Variant-1)

Temperature: 55°C

No. of cycles: 1

Vibration Test as per IEC 60068-2-6, Test Fc

Frequency Range: 10HZ to 55HZ

Displacement: 0.35 mm

No. of sweeps: 20

No. of axis: 3

Cold Test IEC 60068-2-1 Ad

Temperature -5°C

Duration: 2Hrs.

Electrostatic discharge test as per IEC 61000-4-2

ESD amplitude: ± 2 kV to ± 4 kV on Contact Discharge
 ± 2 kV to ± 8 kV on Air Discharge

Radiated Susceptibility as per IEC 61000-4-3

Frequency range: 80 MHz - 1000 MHz; 1400 MHz-2000MHz
Field strength: 10 V/m

Conducted RF immunity test as per IEC 61000-4-6, Level-3

Frequency range: 0.15 - 80 MHz
Field strength: 10 Vrms
Applicable to 1 No. 1 $\emptyset$ AC Power Line

Damped Oscillatory Wave test as per IEC 61000-4-12

Amplitude: ± 2.5 kV in common mode; ± 1.25 kV in differential mode
Applicable to 1No. 1 $\emptyset$ AC Power Line 1No. Channel of signal line.

Electrical fast Transient test IEC 61000-4-4, Level-2

Applicable to 1 No. of 1 $\emptyset$ AC Power Line

High Energy Surge Immunity Test IEC 61000-4-5, Level-4

Applicable to 1 No. 1 $\emptyset$ AC Power Line

Conducted & Radiated Emission Test IEC 61000-6-4

Applicable to 1 No. 1 $\emptyset$ AC Power Line & 1 No. Channel of signal line.

3.0 Documentation

3.1 Details required along with the offer:

- a) Supplier shall send detailed GA drawing along with offer.
- b) List of various accessories included along with unit price.
- c) List of deviations / comments on the specification.

3.2 Details required After PO:

- a) Complete catalogue and drawing for the cabinet offered with ordering information.
- b) The panel shall be manufactured after getting approval from C&I/PE, BHEL, Trichy.
- c) Detailed catalogues, dimensional drawings shall be furnished as O&M manuals in 2 sets of CDs.

4.0 Quality Plan & Inspection:

- a) Vendor shall submit vendor's quality plan in BHEL's QP format along with offer for C&I-QA's review and approval.
- b) Inspection will be carried out by BHEL engineer at vendor works. Advance information shall be given to BHEL before 15 days for inspection.

5.0 Packing:

- a) Materials shall be packed as per packing procedure ref. No. QA:CI:STD:PR:02 Rev 03 shall be followed.

6.0 Special Instructions to Vendor

- a) Warranty: 12 months from the date of supply for any manufacturing defects/ shortcomings.
- b) Nothing in this specification shall be construed to relieve the vendor from his responsibility. This specification covers briefly the requirements of the system. It is the responsibility of the vendor to take care of other basis and essential requirements to manufacture a quality product.

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