

|                        |                                                                                  |                                                                                                  |                                       |           |
|------------------------|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|---------------------------------------|-----------|
| ESP-001-<br>2A Rev. 00 |  | <b>PRODUCT STANDARD</b><br><b>PROJECT ENGINEERING &amp; SYSTEMS DIVISION</b><br><b>HYDERABAD</b> | Std. / Doc. Number<br><b>PY 56358</b> |           |
|                        |                                                                                  |                                                                                                  | Rev. No.                              | <b>00</b> |
|                        |                                                                                  |                                                                                                  | Sheet 1 of 7                          |           |

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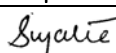
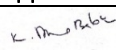
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### Specification for Local Instrument Enclosure [LIE]

1. **SCOPE**  
This technical specification covers the Design, Engineering, Manufacturing, Assembly, testing at vendor works, inspection by purchaser, packing and transportation of "Local Instrument Enclosure" to site with necessary documentation like GA drawings.
2. **SCOPE of SUPPLY** – As per enquiry & this specification.
3. **DESIGN**
  - 3.1 Panel shall be designed and manufactured as per drawing given in this specification.
  - 3.2 This panel shall house the following elements:
    - 3.2.1 Pressure Transmitters, Differential pressure transmitters, flow transmitters, Temperature transmitters & manifolds (not in vendor scope)
    - 3.2.2 Electrical Junction box (vendor's scope) for transmitters
    - 3.2.3 Panel accessories (vendor's scope) like
      - 1) Illumination tube lights (2 No's/panel) with door limit switches (push to off type).
      - 2) 1 No's Receptacle with switch control
      - 3) Foundation bolts.
      - 4) Double compression Nickel plated Brass cable glands and dummy plugs for JB's
      - 5) Blow down / drain header with Funnels for drains
      - 6) Bulk head union (shall be supplied loose) to receive impulse lines
  - 3.3 The material of accessories shall be SS.
  - 3.4 Panel shall be with IP 65/IS 2147 and vibration dampener (keldur).
4. **INSTRUCTIONS TO BIDDERS**
  - 4.1 Bidders are advised to contact BHEL for essential technical queries in writing within one week of issue of Enquiry. In the event of any conflict between these specifications, data sheets, related standards, codes etc. the vendor shall refer the matter to the purchaser for clarifications before bid submission and the decision of Purchaser shall be final & binding on Bidder, without any cost & delivery implications. However in the event of conflict, most stringent requirements shall be followed.
  - 4.2 Offers with incomplete information will not be considered for evaluation, and are likely to be rejected outright without any further interaction with the Bidder.
  - 4.3 Any technical features [over & above BHEL enquiry specification requirements] proposed by Bidder will not be given preference for the purpose of evaluation.
  - 4.4 Bidder shall submit the "Duly filled & Signed copy of Check list" compulsorily along with technical offer without which offer is liable for rejection without any further interaction with the Bidder
5. **List of Annexures (To followed along with this specification)**

| Document No.   | Document Name                   |
|----------------|---------------------------------|
| Annexure – [1] | Typical GA of LIE               |
| Annexure – [2] | Grouping of Transmitters in LIE |

|                                                   |                                                                                                                               |                                                                                                                           |                                                                                                                         |                           |
|---------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|---------------------------|
| <b>Revisions:</b><br>Refer to record of revisions | <b>Prepared By:</b><br><br>Sujatha Sapavat | <b>Checked By :</b><br><br>Kamal Kumar | <b>Approved :</b><br><br>Anand Babu | <b>Date :</b><br>16.06.19 |
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**6. CHECK LIST** (To be filled by BIDDER and submitted along with Technical offer is compulsorily)

Vendor shall submit the following documents mandatorily as part of COMPLTE technical offer.

Enquiry No. / Date :

Name of the Bidder :

Project Name :

Item Description :

| S. No | Document                                                                                                                                                                                                                                                                                                       | Bidder confirmation<br>(Yes/No) | Remarks |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|---------|
| 1     | Technical offer complies with the specifications and its associated annexures, pre-bid clarifications in Toto and there are no technical deviations.<br>Signed and stamped copy of this specification along with annexures enclosed along with technical offer.                                                |                                 |         |
| 2     | In case of deviation, vendor to confirm that these are technically not feasible deviations and same are submitted in <b>BHEL format</b> .<br><br>In case technically feasible deviations are proposed by the bidder and subsequently withdrawn, <u>no commercial implications can be claimed by the bidder</u> |                                 |         |
| 3     | All items are manufactured conforming to latest version of material grade standard and manufacturing standard mentioned in this specifications                                                                                                                                                                 |                                 |         |
| 4     | <b>Bidder to quote as per BHEL price format only. No other format is acceptable.</b> Bidder to attach un-priced price bid format by indicating "QUOTED" against each item and submit with technical offer duly signed & stamped.                                                                               |                                 |         |
| 5     | For addition/reduction of quantity, unit rate quoted in the present offer shall be considered during ordering and shall be valid up to execution of the contract to the extent of + 10% and -30% of order Value.                                                                                               |                                 |         |
| 6     | Bidder to agree that Bill of materials / list of equipment furnished in the offer is only for information; Vendor shall supply all the material to meet the performance, sizing & technical requirement as per specification & its Annexures, scope matrix etc.                                                |                                 |         |
| 7     | Confirm that the quote includes training, commissioning spares, special tool & tackles, mounting hardware/ accessories, terminations, etc. as required for commissioning activities.                                                                                                                           |                                 |         |
| 8     | All the equipments / items / etc., supplied by bidder are having valid statutory approval certificates and same will be produced at any stage of contract execution to BHEL. The same were eligible to take local statutory regulatory body approval during commissioning of the system (if applicable)        |                                 |         |

\_\_\_\_\_  
 (Bidder's Signature and stamp with date)



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**DEVIATION FORMAT**

Enquiry No.:Item:Name of Bidder:Offer Ref. No.:

| Sl. No. | Clause no.<br>& Spec. no. | Description as per<br>Specification | Deviation taken | Nature of<br>Deviation | Remarks |
|---------|---------------------------|-------------------------------------|-----------------|------------------------|---------|
|         |                           |                                     |                 |                        |         |
|         |                           |                                     |                 |                        |         |
|         |                           |                                     |                 |                        |         |
|         |                           |                                     |                 |                        |         |

**NOTES:**

1. Technical offer of the bidder will be evaluated only on the basis of Deviation Schedule. Deviation Schedule constitutes this sheet (with these Notes) duly signed and stamped.
2. Deviations, if any, shall be clearly brought out only in this format. Deviations mentioned / taken elsewhere or in any other format will be ignored.
3. Additional sheets in the same format can be attached by the vendor, if necessary.
4. Nature of Deviations shall only be of Design / Manufacturing constraints and non-availability of items / components / makes in market.
5. No price implications shall be entertained for deviations withdrawn during the technical scrutiny. If any deviations are accepted by BHEL during technical scrutiny then also there will be no price implication. Hence, in no case there will be consideration of Price implications.
6. Reasons for the deviations shall be specified in the Remarks column.
7. If there are no deviations from the specifications, bidder still has to submit the signed copy of this format by writing "NO Deviations" on this format.
8. If the "Deviation Schedule" is not submitted along with the offer, the bidder's offer is likely to be rejected without any further interaction with the bidder. Only the accepted deviations in conjunction with the original tender shall constitute the contract document for the award of job to the bidder

SIGNATURE OF THE BIDDER\_\_\_\_\_

NAME\_\_\_\_\_

DESIGNATION\_\_\_\_\_

DATE\_\_\_\_\_

COMPANY SEAL

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**7. Technical Data Sheet for JUNCTION BOX**

|                         |    |                             |                                                                 |                    |          |                                   |                                                     |
|-------------------------|----|-----------------------------|-----------------------------------------------------------------|--------------------|----------|-----------------------------------|-----------------------------------------------------|
| <b>GENERAL</b>          | 1  | Qty.                        | Annexure-[2] of PY56358                                         |                    | 19       | Cable Glands                      | Double Compression type<br>Nickel plated Brass      |
|                         | 2  | Type                        | Weather Proof to IP-65                                          |                    |          |                                   | <b>Qty: for all inlet &amp; Outlet entries</b>      |
|                         | 3  | Ambient Temp Limit          | - 40 to 80°C                                                    |                    | 20       | Cable entry Plugs                 | All cable entry with SS 304                         |
| <b>JB SPECIFICATION</b> |    |                             |                                                                 | <b>ACCESSORIES</b> |          |                                   | <b>Qty: for 50% of entries</b>                      |
|                         | 4  | Ingress Protection          | IP65                                                            |                    | 21       | Tag Plate                         | Reqd, SS 304 (1 No per JB)                          |
|                         | 5  | Fixing type                 | External Wall / Panel mount                                     |                    | 22       | Gasket                            | SS 316, Spiral wound type.                          |
|                         | 6  | Door type                   | Hinged door at the bottom with retainer chain.                  |                    | 23       | Screws/Hinges                     | SS                                                  |
|                         | 7  | Telephone Socket            | Required.                                                       |                    | 24       | Earthing Screws                   | Internal and external 1 no each with washers        |
|                         | 8  | Protection                  | IP-65                                                           |                    | 25       | Gland plate                       | Gland plate shall be 3 mm thick of galvanized steel |
|                         | 9  | Inlet Cable entries         | Annexure-[2] of PY56358<br>Annexure-[2] of PY56358              | <b>TESTS</b>       | 26<br>27 | Slipper type PVC hoods            | Shall be provided for each cable gland              |
|                         | 10 | Outlet Cable entries        | Annexure-[2] of PY56358                                         |                    | 28       | separate insulated terminal strip | Required for each JB                                |
|                         | 11 | Internal & Outer Dimensions | Vendor to decide                                                |                    | 29       | Dimensional Check                 | 10% or min. 2 of each type                          |
|                         | 12 | Terminal make               | Elmex/Connectwell/Phonix/Wago                                   |                    | 30       | Inlet & outlet entries size       | 10% or min. 2 of each type                          |
|                         | 13 | Terminal size               | 2.5 Sq.mm, Clip on screw less, 2 Rows                           |                    | 31       | Tag Plate Marking                 | 10% or min. 2 of each type                          |
|                         | 14 | Terminal type               | DIN Rail Mount as well G-rail, Stack Type,                      |                    | 32       | BOM review                        | 100% witness                                        |
|                         | 15 |                             | Non Double decker.                                              |                    | 33       | Material compliance               | 100% Review                                         |
|                         | 16 | Body Material               | made of min 2mm thick CRCA, SS sheet                            |                    |          |                                   |                                                     |
|                         | 17 | Hazardous area class        | Safe area; Weather proof to IP-65                               |                    |          |                                   |                                                     |
|                         | 18 | Painting                    | Inside: glossy white                                            |                    |          |                                   |                                                     |
|                         |    |                             | Outside: IS-5 shade 631 (Subject to change during drg approval) |                    |          |                                   |                                                     |

**8. INSPECTION & TESTING**

Stage /Final Inspection including document verification as per approved QAP shall be carried out by BHEL/BHEL's Third Party Inspection Agency at vendor works. Test procedure shall include but not be limited to the following. All the tests being conducted shall clearly bring out in the Quality Assurance Plan (QAP) by Vendor.

|    |                                             |   |                    |
|----|---------------------------------------------|---|--------------------|
| a) | Dimensional and Physical verification       | : | 100 % Witness      |
| b) | BOM verification                            | : | 100 % Witness      |
| c) | IP-65 certificate for Junction Box          | : | Certificate Review |
| d) | Electrical checking for LIE                 | : | 100 % Witness      |
| e) | Manufacturing process in house test reports | : | Certificate Review |
| f) | Colour Shade Check                          | : | Certificate Review |

**9. DOCUMENTATION****9.1 Information** to be included with offer

Vendor shall make the offer in detail, with respect to every item of the Purchaser's specifications. Any offer not conforming to this shall be summarily rejected.

- a) Duly filled & Signed copy of Check list

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b) Deviation list, if any (as per “No deviation format” given in this specification). If there are no deviations, bidders shall submit “Deviation format” by mentioning deviations “Nil”.

c) Unpriced price schedule (To be submitted compulsorily without fail)

d) Bill of materials (only for information)

9.2 Documentation after P.O. Placement (for approval by BHEL and / or BHEL’s customer in 4 sets)

a) OGA with dimensions and foundation details

b) Bill of material

Notes::

1) Submission of documents shall be within 2 weeks of placement of LOI / P.O. (for approval by BHEL and / or BHEL’s customer in 4 sets)

2) All vendor documents main system and its sub-items shall be submitted to Customer / Consultant for approval during order execution. Any comment furnished by Customer / Consultant / BHEL shall be taken care by vendor during ordering execution.

3) Further BHEL will provide comments on vendor submitted document within 25 working days for revision & resubmission. Vendor shall follow up with BHEL for non-receipt of comments/approvals.

4) Revised drawings / Documents shall be submitted by Bidder in 07 days of receipt of comments / observations from BHEL. BHEL shall revert within 25 days on receipt of these revised documents / drawings from vendor for approvals.

5) All the approvals required for manufacturing shall be completed with 2 months from P.O to meet the P.O delivery schedule. Accordingly vendor shall ensure the submission of approval category documents (which are required for manufacturing) and obtain their approvals.

6) Vendor shall obtain final approvals on all technical + quality aspect documents before inspection dates.

7) It is vendor’s responsibility to obtain approvals from BHEL as earliest as possible to meet PO delivery schedules. Accordingly vendor to plan and execute the supplies in time.

10. MARKING, PACKING AND DESPATCH

10.1 All items shall be marked (stamped/etched) in accordance with the applicable code/standard/specification. In addition, the item code, if available, shall also be marked.

10.2 For ease of identification, the color of painted strip (wherever required) shall be as per the applicable standard.

10.3 Part number/Dispatch link-up of all the equipment’s/items supplied and also their co-relation with system/drawing/approved BOQ.

10.4 Paint or ink for marking shall not contain any harmful metal or metal salts which can cause corrosive attack either ordinarily or in service. Special items/smaller items shall have attached corrosion resistant tag providing salient features.

10.5 The equipment shall be transported to site by the vendor in fully assembled condition. However, in case some components are liable to be damaged during transit, the same shall be dismantled and supplied separately, to be reassembled at site the vendor. Assembly of the item supplied loose at site and repairing of any item damaged during transport shall be in the vendor’s scope. The vendor shall send each consignment to site with a detailed packing list.

10.6 All the equipment shall be divided into several sections for protection and ease of handling during transportation. The equipment shall be properly packed for transportation by ship/rail or trailer. The equipment shall be wrapped in polythene sheets before being placed in crates/cases to prevent damage to the finish. Crates/cases shall have skid bottom for handling.

10.7 Special notations such as 'Fragile', 'This side up', 'Center of gravity', 'Weight', 'Owner's particulars', 'PO Nos.' etc. shall be clearly marked on the package together with other details as per purchaser order.

10.8 The equipment/items may be stored outdoors for long periods before installation. The packing shall be completely suitable for outdoor storage in areas with heavy rains/high ambient temperature, unless otherwise agreed.



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10.9 The following minimum packing procedures shall be followed:-

- a) All items shall be dry, clean and free from moisture, dirt and loose foreign material of all kinds.
- b) All items shall be protected from rust, corrosion, and mechanical damage during transportation and handling.
- c) Each variety and size of item shall be supplied in separate packaging marked with the purchase order no., item code (if available), and the salient specifications.
- d) All electrical, instrumentation etc., shall be properly packed to prevent damage during transport, storage, handling at site.
- e) All the items which the Bidders considered liable to be damaged during shipment or storage, shall be packaged for separate shipment. If instruments are removed from the panel, they and their connection shall be suitably tagged to ensure simple re installation at the job site. Each instrument shall be sealed in plastic bags containing moisture absorbing dessicants.
- f) It shall be bidder's sole responsibility to protect all the material during period of dispatch, storage and erection against corrosion, incidental damage due to vermin, sunlight, rain, high temperature, humid atmosphere, rough handling in transit and including delays in transit.
- g) Mandatory Spare parts shall be packaged separately and clearly marked as 'Mandatory Spares '.
- h) Commissioning spares, Tools & tackles to be packed separately & suitably tagged.

10.10 In case of imported/exported items, seaworthy packing shall be done as per specification no: HY0490573 (latest revision). This specification shall be obtained by vendor on request.

*10.11 If mandatory spare items are ordered, same shall be sent in pre-decided lots in containers /secure boxes distinctly marked in GREEN color with boldly written "S "mark on each face of the containers /secure boxes*

*10.12 Loose vendor items sent by vendor to sites shall be quantified/numbered/tagged and not merely mentioned as ONE lot of loose items.*

*10.13 A packing list covering items having shelf life are to be intimated to site. Also, shelf life items shall be packed separately in black color painted box for easy identification at site.*

## 11. WARRANTY

The warranty shall be valid for 36 calendar months commencing from date of supply (or) 24 calendar months commencing from the date of commissioning" whichever is earlier.

## 12. SUB VENDOR LIST

Bidder to supply the all items from following manufacturers.

| S NO. | Item Description | Make                                                                                                                                                                                                                                                                                                                                                                   | Remarks |
|-------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| 1     | Junction Box     | 1) SUDHIR SWITCHGEAR<br>2) FCG FLAMPROOF CONTROL GEARS PVT LTD.<br>3) FCG POWER INDUSTRIES PVT LTD<br>4) INDUSTRIAL SWITCHGEARS AND CONTROLS.<br>5) BALIGA<br>6) HENSEL ( FOR THERMOPLASTIC )<br>7) STAHL<br>8) PANAM CONTROLS,<br>9) EX-PROTECTA<br>10) FLAMEPROOF EQUIPMENTS PVT.LTD.<br>11) PYROTECH ELECTRONICS PVT. LTD.<br>12) SAFEX FLAMEPROOF CONTROLS (P) LTD |         |

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## RECORD OF REVISIONS

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Date

## Revision Details

Revised By

Approved By

00

16.06.2019

Original issue

Sujatha

Synthetic

K. Anand

K. M. Rube

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