



**BHARAT HEAVY ELECTRICALS LIMITED
SOLAR BUSINESS DIVISION
BANGALORE -560012
QUALITY (CPBG)**

STANDARD QUALITY ASSURANCE PLAN FOR NON-FLAME PROOF LPBS

SQAP NO: SBD-QP-CP-2021-22-0001. REV. NO.: 00, DATE: 17.02.2022

Item Category: 03

Supplier shall raise the inspection call along with Internal Test Report, Manufacture Test Certificates/Type Test Reports (wherever applicable) for BHEL/BHEL TPIA /Customer Inspection.

Note:

1. The SQAP (SBD-QP-CP-2021-22-0001. REV. NO.: 00) shall be read in conjunction with BHEL Specification mentioned in Purchase Order and shall deem to include any additional tests as per the specification/Standard.
2. This SQAP is for tendering purpose only and to bring a detailed info about the inspection activity and documents required during inspection. However, Manufacturer to submit a detailed MQP indicating all the stages of a product like raw materials, Bought out Items, In process, Final Inspection and Packing for BHEL approval by referring to the tender spec and BHEL drawings.
3. Material supplied shall be in line with BHEL Purchase Order, Technical Specification, Data Sheet, BOM, Approved Drawings, applicable Standard References, or any other document/references.
4. In case of any contradiction between this SQAP, BHEL Specifications the following precedence shall be followed:
1st: BHEL Purchase Order Specification;
2nd: This STANDARD QUALITY ASSURANCE PLAN & Applicable standard;
5. **Packing** shall be as per BHEL purchase order packing specification/ or as per Manufacturer standard or approved Drgs from BHEL Engineering.
6. All **packing** cases should be **marked** with BHEL Purchase Order no, Item description and **CQIR NO** (by which material has been cleared for dispatch).

Documentation Part:

1. Supplier shall raise the inspection call in the CQIR with inspection agency as BHEL SBD URL: www.cqir.bhel.in and shall upload documents mention under Note 2 in CQIR Portal.
2. Supplier to furnish the Test Certificates, Internal Tests Report and Type Test Reports (wherever applicable) as per this SQAP along with inspection call.
3. The items will be inspected at BHEL approved manufacturer work.





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SL NO	ITEM/ COMPONENT	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	INSPECTION AGENCY			REMARKS
									M	B	C	
1.	2.	3.	4.	5.	6.	7.	8.	9.				10

A	RAW MATERIALS & BOUGHT OUT ITEMS INSPECTION											
1.	Raw Material: a. Die-cast aluminium or cold-rolled sheet steel b. Gland Plate	Dimensional, Mechanical and Chemical Properties as per STD	Major	Visual, Verification,	5% per Lot	BHEL Spec, Drg, Data sheet/ GA Drawing	BHEL Spec, Drg, Data sheet/ GA Drawing	MTC	V	V	-	Verification of Supplier/ Lab Test Certificate
2.	Hardware's / Fasteners	Material, Dimensions & Type	Major	Dimensional/ Visual	5% per Lot	-do-	-do-	MTC	P	V	-	Verification of MTC
3.	Gasket	Visual, Fitment, Dimensions	Major	Fitment/Visual	5% per Lot	-do-	-do-	MTC	V	V	-	Verification of MTC
4.	Control Wiring	Size, Make, Type, Colour	Major	Dimensional/ Visual	5% per Lot	-do-	-do-	Supplier's TC / MTC	P	V	-	Verification of MTC
5.	Canopy (as applicable)	Dimensions, Material, colour	Major	Dimensional/ Visual	5% per Lot	-do-	-do-	Supplier's TC / MTC	P	V	-	Verification of MTC
6.	Electrical Component – As applicable (Push Button and NO + NC Elements)	A - Stop PB – Manual Operation with Contacts & Lock Mechanism B - Start PB – Manual Operation & Continuity Check	Major	Physical & Electrical Testing	5% per Lot	-do-	-do-	Supplier's Test Certificate/ QC Record	P	V	-	For push button, any make's model with mark of CE/UL/VDE/CSA/B IS mark with valid CML no. is acceptable.
		C - Terminal Blocks rated for minimum 10A at 240V A.C. and 2A at 220V DC.	-do-	-do-	-do-	-do-	-do-	-do-	P	V	-	
7.	Cable Glands & lugs	Make, Model No.	Major	Dimensional/ Visual	5% per Lot	As per BHEL Spec./GA Drg.	As per BHEL Spec./GA Drg.	MTC	P	V	-	Verification of MTC
8.	Painting (power coating)	Shade and Thick	Major	Dimensional/ Visual	5% per Lot	As per BHEL Spec./GA Drg.	As per BHEL Spec./GA Drg.	QC Record	P	V	-	Process record shall be reviewed

**M- MANUFACTURER; B- BHEL / BHEL TPIA; C-CUSTOMER; MTC- MANUFACTURER TEST CERTIFICATES
P-PERFORM; V-VERIFY; W-WITNESS**



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B	FINAL PRODUCT INSPECTION											
1.	Complete BOM Check	Visual	Major	Visual & Verification	As Per IS – 2500, Part 1	As per Approved Drawing	As per Approved Drawing, Data Sheet	Inspection Report	P	W	W	Sampling Quantity as per IS – 2500, Part 1
2.	Mounting & Dimensions (including canopy if any) shall be suitable for column /structure/wall mounting	Dimensional & Visual	Major	Measurement	As Per IS – 2500, Part 1	As per Approved Drawing	As per Approved Drawing, Data Sheet	Inspection Report	P	W	W	
3.	Hinged guard at the front, covering full length, to avoid inadvertent operation of push buttons.	Dimensional & Visual	Major	Measurement	As Per IS – 2500, Part 1	As per Approved Drawing	As per Approved Drawing, Data Sheet	Inspection Report	P	W	W	
4.	Cable Entry Dia, Glands, Lugs & Blanking Plugs (if any)	Fitment / Geometrical	Major	Visual, Dimensional & Fitment	As Per IS – 2500, Part 1	As per Approved Drawing	As per Approved Drawing, Data Sheet	Inspection Report	P	W	W	
5.	Painting & Thickness & Uniformity	Colour Shade & Painting Thickness	Major	Visual, Physical / Thickness Measurement	As Per IS – 2500, Part 1	As per Approved Drawing	As per Approved Drawing, Data Sheet	Inspection Report	P	W	W	
6.	Continuity Check (As applicable)	A - Stop PB – Manual Operation with Contacts & Locking Mechanism B - Start PB – Manual	Major	Continuity Check with Tester	As Per IS – 2500, Part 1	As per Approved Drawing	As per Approved Drawing, Data Sheet	Inspection Report	P	W	W	

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		Operation & Continuity Check										
7.	IR Test before & after HV Test	Insulation Resistance with min. 500V Megger	Major	Check with Megger	As Per IS – 2500, Part 1	As per IS/IEC 61439 Part 1	As per IS/IEC 61439 Part 1	QAC/ Final Inspection Report	P	W	W	
8.	High Voltage Test (HV)	High Voltage @ 1.5 kV for 1min.	Major	Check with High Voltage Test Kit	As Per IS – 2500, Part 1	As per IS/IEC 61439 Part 1	As per IS/IEC 61439 Part 1	QAC/ Final Inspection Report	P	W	W	
9.	Earthing Terminals and continuity Check	Continuity & Firmness The earthing terminals shall be suitable for connection to one (1) No. 8 SWG G.I. wire.	Major	Visual / Pull Test	As Per IS – 2500, Part 1	As per Approved Drawing	As per Approved Drawing, Data Sheet	Inspection Report	P	W	W	
10.	Tag Plate	Dimensions, Firm fixing	Major	Visual	As Per IS – 2500, Part 1	As per Approved Drawing	As per Approved Drawing, Data Sheet	Final Inspection Report	P	W	W	Tag Plate shall consist of LPBS No & Type as per DRG.
11.	Verification of cable size, type and colour	Dimensional & Visual	Major	Measurement	As Per IS – 2500, Part 1	As per Approved Drawing	As per Approved Drawing, Data Sheet	Inspection Report	P	W	W	Sampling Quantity as per IS – 2500, Part 1
12.	Verification of Push Button fouling with TB's & cables when door closed	Visual	Major	Visual	As Per IS – 2500, Part 1	As per Approved Drawing	As per Approved Drawing, Data Sheet	Inspection Report	P	W	W	Cable, lugs & Gasket should not get disturbed during door closing
13.	Verification of firm fixing and check for any physical damage of Gasket	Visual	Major	Visual	As Per IS – 2500, Part 1	As per Approved Drawing	As per Approved Drawing, Data Sheet	Inspection Report	P	W	W	Gasket should not get damage during door closing



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14.	Anodized aluminium inscription plate (Name Plates): Material & fixing	Visual	Major	Visual	As Per IS – 2500, Part 1	As per Approved Drawing	As per Approved Drawing, Data Sheet	Inspection Report	P	W	W	Name Plates shall be scratch proof
15.	Terminal Block with markers	Visual	Major	Visual	As Per IS – 2500, Part 1	As per Approved Drawing	As per Approved Drawing, Data Sheet	Inspection Report	P	W	W	
16.	Verification of firm Locking arrangement	Visual	Major	Visual	As Per IS – 2500, Part 1	As per Approved Drawing	As per Approved Drawing, Data Sheet	Inspection Report	P	W	W	Check for pad locking if applicable as per drawing
17.	Check for any paint peel off and scratches	Visual	Major	Visual	As Per IS – 2500, Part 1	As per Approved Drawing	As per Approved Drawing, Data Sheet	Inspection Report	P	W	W	
C	TYPE TEST REPORTS VERIFICATION											
1	Ingress Protection (IP)- IP XX as per BHEL Spec	Protection Against External Environment	Major	Verification	Review Type Test Certificate	Appd. Type Test Report	Appd. Type Test Report, BHEL SPEC	Type Test Certificate	P	V	-	Approved Type Test Copy to be Furnished to BHEL / End Customer During Inspection
D	PACKING											
1	Packing	LPBS Packing	Minor	Visual	100%	BHEL Spec	BHEL Spec	Packing Inspection Report	P	-	-	Packing Inspection Report to sent to BHEL along with invoice



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