



BHARAT HEAVY ELECTRICALS LIMITED, HARIDWAR

Control & Instrumentation Engineering (CIE)

PRE-QUALIFICATION REQUIREMENT

Level switch and Level probe

Sr. No.	PRE-QUALIFICATION REQUIREMENTS	VENDOR RESPONSE
1.	Bidder shall be manufacturer or authorized supplier of level switch and level probe. Letter of authorization or suitable documents shall be submitted in support for the same.	
2.	<p>Bidder must have supplied 20 or more Level Switches along with level probe in last 5 years from date of enquiry. Out of these at least 2 orders must be of 5 or more level switches in each order. PO copies to be provided in support of the same.</p> <p>OR</p> <p>Successful execution of at least one order for BHEL Haridwar for level switch and level probe within last 5 years from date of enquiry.</p>	
3.	<p>Technical requirement for Level Switch and level probe</p> <ul style="list-style-type: none"> The Level probe & switches shall be complete with sensor, amplifier/ controller, output terminals etc. The sensor should be based on variable capacitance principle consisting of rod probe of SS-316. The probe shall be suitable for operation in -0.5 Kg/cm² to +7.5 Kg/cm² pressure. Level Switch shall be suitable for Aux. supply 24V DC±15%. Permissible load burden shall be 600 ohms or better <p>Bidder to submit data sheet/ document in support of above features.</p>	
4.	Level switch and level probe shall be Intrinsically safety/ Explosion Proof. Vendor to provide Type test certificate for the same.	
5.	Level switch and level probe shall have Ingress Protection IP65 or better. Vendor to provide Type test certificate for the same.	

Note: 1) Vendor to furnish their complete reference / experience list for BHEL review.
 2) The Level probe shall be suitable for H₂ environment.
 3) Cable entry arrangement can be vendor recommended & subject to BHEL approval.
 4) Bidder to confirm specific compliance wherever asked. BHEL reserves the right to verify information submitted by Bidder. In case the information is found false/ incorrect/ incomplete, the offer shall be rejected.



STANDARD QUALITY PLAN

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LEGENDS:

P-PERFORMED BY 1-BHEL REP.
W-WITNESS BY 2-VENDOR
V-VERIFIED BY 3-SUB-VENDOR

QPNO : QA/BE/QP/904 REV.NO. : 05 DESCRIPTION: (MATERIAL, CLASS, GRADE, RATING, SIZE ETC): BAR PROBE, AMPLIFIERS FOR BAR PROBE, CAPACITANCE TYPE LEVEL SWITCHES / TRANSMITTERS.
SPECNO: As Per PO REV.NO. : --
DRG : As Per PO REV.NO. : --

SL. NO.	COMPONENT/ OPERATION	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY P W V	REMARKS
1	2	3	4	5	6	7	8	9	10 11 12	13
1.00	Raw Materials									
1.01	Components	Material Properties, Size, Rating, Make, Type / Model No.	Major	Physical / Visual	100%	Ordering Specn./ Mfr's Cat.	Ordering Specn./ Mfr's Cat.	Internal Records	2 - 1	
1.02	Probe	Hydraulic / Gas Tightness	Major	Hydraulic	100%	Ordering Specn./ Mfr's Cat.	No leakage	Test Report*	2 - 1	
1.03		Insulation Resistance Between Probe & Tube.	Major	Electrical	100%	Mfr's Cat.	Mfr's Cat.	Internal Records	2 - 1	Note: 2
1.04	Amplifiers	Wiring Connections, Connection Diagram, Current Leakage, Insulation Resistance	Major	Visual / Electrical	100%	Mfr's Cat.	Mfr's Cat.	Internal Records	2 - 1	
1.05		Adjustable Switching Delay.	Major	Review	100%	Ordering Specn./ BHEL Appd Drawing	Ordering Specn./ BHEL Appd Drawing	Internal Records	2 - 1	Note: 2
1.06		Adjustable Switching Limit Over the Whole Range.	Major	Review	100%	Ordering Specn./ BHEL Appd Drawing	Ordering Specn./ BHEL Appd Drawing	Internal Records	2 - 1	Note: 2
1.07		Change Over Contacts, Ratings & Connections	Major	Review	100%	Ordering Specn./ BHEL Appd Drawing	Ordering Specn./ BHEL Appd Drawing	Internal Records	2 - 1	Note: 2
2.00	Inprocess Inspection									
2.01	Assembly & Fittings	Soundness of Fitting Connections & Terminal Marking	Major	Physical	100%	Ordering Specn./ BHEL Appd Drawing	Ordering Specn./ BHEL Appd Drawing	Internal Records	2 - -	
3.00	Type Tests									Note:3
4.00	Routine tests									Note:5
4.01		Dimensional Details & Visual (Size, Rating, Type / Model No.)	Major	Measurement / Visual	100%	Ordering Specn./ BHEL Appd Drawing	Ordering Specn./ BHEL Appd Drawing	Inspection Report*	2 1 -	
4.02		Functional Checking of the Equipment, Operation of Relay Contacts.	Major	Electrical	100%	Ordering Specn./ BHEL Appd Drawing	Ordering Specn./ BHEL Appd Drawing	Test Report*	2 1 -	

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STANDARD QUALITY PLAN

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4.03		Repeatability, Reproducibility of Switching Points	Major	Electrical	100%	Ordering Specn./ BHEL Appd Drawing	Ordering Specn./ BHEL Appd Drawing	Test Reports*	2 1 -	
4.04		Insulation Resistance	Major	Electrical	100%	Ordering Specn./ BHEL Appd Drawing	Ordering Specn./ BHEL Appd Drawing	Test Reports*	2 1 -	
4.05		Hydraulic / Gas Tightness	Major	Hydraulic	100%	Ordering Specn./ BHEL Appd Drawing	Ordering Specn./ BHEL Appd Drawing	Test Reports*	2 1 -	If Applicable as per ordering standard
4.06		Burn in Test For Electronics (For 48 Hrs at 55 Degree C)	Major	Thermal	100%	Ordering Specn./ BHEL Appd Drawing	Ordering Specn./ BHEL Appd Drawing	Test Reports*	2 - 1	
4.07		Compliance of Technical Requirements	Major	--	100%	Ordering Specn./ BHEL Appd Drawing	Ordering Specn./ BHEL Appd Drawing	COC*	2 - -	
4.08		Completeness of TCs, COCs, & Inspection Reports	Major	Physical	100%	Ordering Specn./ BHEL Appd Drawing/ QP/ PO	Ordering Specn./ BHEL Appd Drawing/ QP/ PO	Documents*	2 - 1	
5.00	Identification / Marking & Packing									
5.01		Identification Marking / Tagging of Each Instrument	Major	Visual	100%	Ordering Specn.	Ordering Specn.	Internal Records	2 - 1	
5.02		Soundness of Packing Against Transit Damage	Major	Physical	100%	Ordering Specn./ Vendor's STD	Ordering Specn./ Vendor's STD	Internal Records	2 - -	

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NOTE:-

1. Records as marked * shall essentially be submitted by vendor as QA documentation package.
2. If applicable as per ordering specification, BHEL approved Drawing / BHEL Appd Data Sheet.
3. Type tests clearance from BHEL Engineering to be verified by inspection engineer during inspection at vendor's works.
4. Manufacturer to maintain calibrated instruments having better accuracy than the item under the test. Inspection engineer shall check the same.
5. Witness by inspection agency to be 10% of each type from each lot or minimum 10 pieces whichever is higher. For quantity up to 10 nos, 100% test to be witnessed by inspection engineer. However vendor to carry out 100% tests internally and tests report shall be reviewed by inspection engineer during inspection at Vendor's works.

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MANUFACTURER'S NAME AND ADDRESS			QUALITY PLAN					TO BE FILLED BY BHEL		TO BE FILLED BY BHEL			
BHEL	VENDOR'S NAME	ITEM			QP NO.								
				REV									
		DRG. NO.	AS PER PO										
		SPEC.	AS PER PO										
		REV				Page 1 of 1							
SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS		AGENCY			REMARKS
										M	B	N	
1	2	3	4	5	6	7	8	9	D	10			11

		LEGEND: ! RECORDS IDENTIFIED WITH ‘TICK’ SHALL BE ESSENTIALLY INCLUDED BY CONTRACTOR IN QA DOCUMENTATION. M: MANUFACTURER / SUBCONTRACTOR B: BHEL / NOM. INSPECTION AGENCY N: CUSTOMER INDICATE ‘P’ PERFORM ‘W’ WITNESS AND ‘V’ VERIFICATION ALL ‘W’ INDICATED IN COLUMN ‘N’ SHALL BE ‘CHP’ OF CUSTOMER	FOR CUSTOMER USE	
MANUFACTURER/SUBCONTRACTOR				APPROVED BY