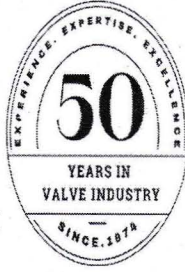




# इन्स्ट्रुमेंटेशन लिमिटेड INSTRUMENTATION LIMITED

(भारी उद्योग मंत्रालय के अधीन भारत सरकार उपक्रम)  
कंजिकोड पश्चिम - ६७८ ६२३, पालक्काड, केरल, भारत  
TEL: (0491)2566127-130, 2567127, 2567596, 2566132  
GST : 32AAACL4212G1Z6, CIN: U29299RJ1964GOI001174



(A Govt. of India Enterprise Under Ministry of Heavy Industries)  
Kanjikode West - 678 623, Palakkad, Kerala, India  
E-mail : commercial@ilpgt.com, contact@ilpgt.com  
GeM Seller ID : E5FF200001308318, Web : www.ilpgt.com

## PURCHASE DEPARTMENT TENDER ENQUIRY

Ref No: ILP/IP/2/263 062/49/T0881

Date: 06/03/2025

### NOTICE INVITING TENDER (NIT)- THROUGH GeM PORTAL

Online quotations are invited through Government e Marketplace (GeM) from eligible bidders as per the pre-qualification requirement (eligibility criteria) mentioned in the tender documents for Procurement of Electrical Actuator and Spares as per the item details mentioned in Annexure-1:-

01	Date of Publishing	As per GeM bid document
02	Date of start of sale / download of NIT	As per GeM bid document
03	Website	GeM.gov.in, www.ilpgt.com,
04	Last date of sale / download of NIT	As per GeM bid document
05	Due date and time of Tender Submission	As per GeM bid document
06	Date & time of Unpriced bid opening	As per GeM bid document
07	EMD	Not Applicable
08	Period of Supply	3 - 4 Months from the date of Purchase Order
09	Eligibility	As per tender documents.
10	Bid Validity	90 days
11	Type of Bid	Custom bid.
12	Tender cost	Not Applicable.

Contact details:

<p>Address for Communication Dy. Manager (Purchase) Instrumentation limited Palakkad 678 623 Phone : 0491 -2569577, 2567596 Email: pur@ilpgt.com/kmurthy@ilpgt.com</p>
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Dy. Manager (Purchase)



# Instrumentation Limited

Ref No: ILP/IP/2/263 062/49/T0881

Date: 06/03/2025

Annexure -1

## Price Bid BILL OF QUANTITY

Sl. No	Item No	Description	Qty (Nos)
1	MS491047609	ELECTRICAL ACTUATOR Make: ROTORK Model: IQ35F16B4 (AS PER SPECIFICATION SHEETS, WIRING DIAGRAM,GENERAL QP AND EA QP ATTACHED)	6
2	MS491047601	ELECTRICAL ACTUATOR Make: ROTORK Model: IQ35F16B4 (AS PER SPECIFICATION SHEETS, WIRING DIAGRAM,GENERAL QP AND EA QP ATTACHED)	1
3	MS491047602	POWER UNIT For EA model: IQ35F16B4	2
4	MS491047603	ELECTRONIC CARD For EA model: IQ35F16B4	2
5	MS491047604	CONTROL UNIT For EA model: IQ35F16B4	2
6	MS491047605	ELECTRONIC PCB For EA model: IQ35F16B4	1
7	MS491047606	ABSOLUTE ENCODER For EA model: IQ35F16B4	1
8	MS491047607	ELECTRONIC TORQUE SENSOR For EA model: IQ35F16B4	1
9	MS491047608	ORING AND SEAL KIT For EA model: IQ35F16B4	4 (Set)

  
Dy. Manager (Purchase)



# Instrumentation Limited

Ref No: ILP/IP/2/263 062/49/T0881

Date: 06/03/2025

## TERMS AND CONDITIONS OF THE TENDER

### DEFINITION OF TERMS:

- The expression “Goods” where used in these conditions shall unless there be something either in the subject or context represent to “Procurement of Rotork Electricals Actuator” for Instrumentation Limited, Palakkad (ILP).
- The “Corporation/Company” means Instrumentation Limited, Palakkad (ILP) a Govt. of India Enterprise, Kanjikode West, Palakkad, Kerala - 678 623.
- ILP – means Instrumentation Limited, Palakkad, to where the materials are to be delivered.
- The “Agency/Contractor/Bidder” means the Agency to whom this work is awarded on successful bidding.

### Eligibility Criterion:

- The bidder should be a manufacturer of the items (OEM) or their Authorised dealers. Dealers should submit valid Dealership certificate from manufacturer.
- The bidder should meet statutory requirement of Central/ State Govt. Like, PAN, GST Registration etc. as may be applicable. Self attested photocopy of the relevant documents to be submitted by the bidder in fulfillment of this criterion.
- Bidder should not be blacklisted by any procurement agency of Govt of India, State Governments & CPSEs. A Self Declaration certificate to be submitted.

### Technical information

- Necessary material test certificates are to be submitted along with the supplies
- The vendor code, item code etc should be inscribed or tagged to the items.



# Instrumentation Limited

Ref No: ILP/IP/2/263 062/49/T0881

Date: 06/03/2025

1. Quotation should be submitted through GeM portal in online mode only .
2. **TECHNICAL BID:**  
Technical bid uploaded should contain Cover letter in bidders letter head, Detailed technical specifications, Catalogues etc.
3. **PRICE BID**  
Offered price for items mentioned in Annexure 1, per unit should be inclusive of all charges i.e. Packing, Forwarding, Insurance, Freight, GST etc.
4. **DELIVERY OF ITEMS**  
The Items should be door delivered to M/s. Instrumentation Ltd. Palakkad.
5. **SPECIFIED GOODS**  
The goods supplied should be strictly according to the specifications as given in the schedule of material, failing which they are liable to be returned at your risk and cost.
6. **DESPATCH INSTRUCTIONS**  
The materials should be securely packed and despatched to Instrumentation Limited, Palakkad (Kerala). Delivery Challan /Packing slips in duplicate should be sent immediately after despatch. Each package should bear Purchase Order No. & date. One copy of Challan shall be sent to Sr. Engineer (Purchase)
7. **BILL**  
To enable clearance of the consignments locally and for prompt payment, please ensure that the original copy of bill, duly pre-receipted is sent to our Finance & Accounts Department and duplicate and triplicate copies are sent to Purchase Department.
8. **REJECTION OF DEFECTIVE MATERIAL:**  
If, on inspection, the Company finds that the stores or part of stores supplied are not of the contract quality or of defective condition or otherwise are not in satisfactory condition owing to any reason of which the Company shall be the sole judge, the Company will be entitled to reject the material. The purchaser shall give the supplier notice setting forth such defects or failure, and the supplier shall forthwith make good the defective material, or alter the same to make it comply with the requirement of the contract. Such replacement shall be carried out by the supplier within a reasonable time. If the supplier fails to do so the purchaser shall cancel the purchase order and purchase its requirement from other sources at the risk and cost of the supplier and recover the loss if any from the supplier. Also the name of such supplier will be circulated to all the power station.



# Instrumentation Limited

Ref No: ILP/IP/2/263 062/49/T0881

Date: 06/03/2025

## 9. REJECTED GOODS:

Rejected goods will be despatched periodically back to the supplier at freight to pay basis. The L.R. with packing note will be sent to the supplier immediately after despatch. It is the sole responsibility of the supplier to collect the material from the transporter. ILP will not entertain any claim either from the supplier or from the transporter for goods not collected in a reasonable period.

## 10. NON SUPPLY OF ITEMS:

If you fail to replace any stores rejected by us or fail to execute orders or any part thereof as stipulated, either by non-delivery, part delivery or defective supplies, within such time as stipulated, we shall be entitled to purchase without notice to you such stores from any source and if such price exceeds the rate sent out in the schedule of acceptance of tender you shall be responsible to pay the difference between the rest of which such stores have been purchased and also the incidental charges so incurred.

11. ILP extends all the benefits to MSME vendors as per MSME Act and for Start up organizations. The vendor to mention their MSME status and enclosed the registrations / Documentary evidences.

## 12. FULL SUPPLY

As far as possible, full supply against the purchase order schedules may be arranged one time as per our delivery schedules, if however, it becomes necessary to send supplies in lots purchase order number and dates should variably be quoted on all communications.

CONSIGNEE - INSTRUMENTATION LIMITED, KANJIKODE WEST  
PALAKKAD-678 623, KERALA.  
BANKERS - THE STATE BANK OF INDIA, PALAKKAD BRANCH,  
ENGLISH CHURCH ROAD , PALAKKAD.  
TRANSPORT - ARC TRANSPORT / TCI FREIGHT/ TCI EXPRESS/ ANY  
REPUTED SERVICES/ COURIER SERVICE

## 13. PAYMENT:

100% Payment will be released within 45 days of issue of consignee receipt cum acceptance certificate (CRAC) and on-line submission of bills.

## 14. PENALTY:

Please note that if the materials are not delivered /dispatched within time specified above, the PO may be cancelled and the materials will be purchased at your risk.



# Instrumentation Limited

Ref No: ILP/IP/2/263 062/49/T0881

Date: 06/03/2025

## 15. QUALITY:

Quality of the materials shall be clearly specified in the tender with relevant ISI& ISO/Standards and the supply shall be as per offer / detailed specification. The supplier should furnish the test certificate of the material free of cost. Supplies not in confirmation to accepted/approved quality shall be liable to be rejected. The supplier shall arrange to collect the rejected materials and replace the same with approved quality materials at his risk and cost within the period of being informed in writing.

## 16. LIQUIDATED DAMAGES:

Liquidity Damage at the rate of 0.5% of the value of order will be levied for delay in supply of the materials for every week subject to a maximum of 5% value of the order.

## 17. GRANT OF EXTENSION OF TIME:

In the event the contractor is hindered in the execution of supply for reasons beyond his control which could result in non-completion of supply within the completion period, the corporation may, at the request of the contractor in writing extend the completion period and the contract period by such period as it consider reasonable under the circumstances, provided that such request shall be made within 07 days of occurrence of the cause necessitating the extension and/or the expiry of the completion period .In this regard, the decision of AGM (Procurement) IL Palakkad, is final and binding on the contractor/agency.

## 18. INSTITUTION OF SUITS:

Any suit or any proceedings arising in any respect under this contract shall be subject to Jurisdiction in law courts at Kerala State only. It is agreed that no other court shall have jurisdiction to entertain any suit or proceedings even though part of the cause of action might arise within the jurisdiction of any such courts. Arbitration in this contract is not acceptable. Any of the terms and conditions mentioned here under general terms and conditions specifically not commented or not mentioned in your offer shall be construed as accepted and considered for incorporating while processing the offers for ordering.

## 19. DISPUTES:

Arbitration clauses will not be applicable for the Settlement of disputes arising out of this contract.



# Instrumentation Limited

20. ILP reserves its right to go for reverse auction bidding with all bidders and for this separate notification will be sent to the bidders who participate in the tender and bid found valid. All the venders are advised to quote competitive rates because in the tender, if reverse auction (R.A) clause is mentioned, then if more than 4 techno commercial qualified bids are received, H1 bidder (whose quote is highest) should not be allowed to participate in reverse auction. Other details of reverse auction are given in website [www.ilpgt.com](http://www.ilpgt.com)

Dy. manager (Purchase)

Ppro4-49-H252 - 07-06-2024 - 4540-001-110-QVM-Q-216/02/CAT-I/ Page: 4 of 20


		<b>QUALITY PLAN</b>		SPEC. NO.: PE-TS-497-100-M016		DATE: 21.11.2023			
INSTRUMENTATION LIMITED KANJIKODE (W), PALAKKAD-678623		CUSTOMER: NTPC		QP NO.: PE-V0-497-100-M024		DATE: 10.10.2024			
PROJECT: 2X660MW TALCHER STAGE-III		ITEM: BUTTERFLY VALVE (STEAM SERVICE) (1800NB)		PO NO.: GEMC-511687726632671		DATE: 16.08.2024			
SYSTEM: STEAM SERVICE		SECTION: II		SHEET 1 OF 8		REMARKS			
SL NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY
1	2	3	4	5	6	7	8	9	10
					M	B/C		D	M
									B
									C

1.0 MATERIALS	1.1 BODY, DISC & SHAFT	1.2 CLAMP RING
1.1	<p>1. CHEMICAL COMPOSITION &amp; MECHANICAL PROPERTIES</p> <p>2. SUB-SURFACE DEFECTS OF CASTING</p> <p>3. SUB-SURFACE DEFECTS OF SHAFT</p> <p>4. CASTING DEFECTS</p>	<p>1. CHEMICAL TESTS</p> <p>2. MECH. TESTS</p> <p>1) MPI</p> <p>2) RT</p> <p>UT</p> <p>VISUAL</p>
	<p>MA</p> <p>MA</p> <p>CR</p> <p>MA</p>	<p>MA</p> <p>MA</p> <p>CR</p> <p>MA</p>
	<p>ONE PER HEAT</p> <p>ONE PER HEAT</p> <p>100%</p> <p>100%</p> <p>100%</p> <p>100%</p>	<p>ONE PER HEAT</p> <p>ONE PER HEAT</p> <p>100%</p> <p>100%</p> <p>100%</p> <p>100%</p>
	<p>1) CHEMICAL TESTS</p> <p>2) MECH. TESTS</p> <p>1) MPI</p> <p>2) RT</p> <p>UT</p> <p>VISUAL</p>	<p>1) CHEMICAL TESTS</p> <p>2) MECH. TESTS</p>
	<p>APPD. DRG. / MATL. STD.</p> <p>APPD. DRG. / MATL. STD.</p> <p>ASTME E709</p> <p>ASTM E 94</p> <p>ASTM A388</p> <p>MSS SP55</p>	<p>APPD. DRG. / MATL. STD.</p> <p>APPD. DRG. / MATL. STD.</p> <p>APPD. DRG. / MATL. STD.</p> <p>APPD. DRG. / MATL. STD.</p>
	<p>REFER REMARKS**</p> <p>MSS SP55</p>	<p>REFER REMARKS**</p> <p>MSS SP55</p>
	<p>MILL TEST CERT.</p> <p>MILL TEST CERT.</p> <p>NDT REPORT</p> <p>NDT REPORT</p> <p>NDT REPORT</p> <p>INSP. REPORT</p>	<p>MILL TEST CERT.</p> <p>MILL TEST CERT.</p> <p>NDT REPORT</p> <p>NDT REPORT</p> <p>NDT REPORT</p> <p>INSP. REPORT</p>
	<p>P/ W</p> <p>P/ W</p> <p>P/ W</p> <p>P/ W</p> <p>P/ W</p> <p>P/ W</p>	<p>P/ W</p> <p>P/ W</p> <p>P/ W</p> <p>P/ W</p>
	<p>APD. DRG. / MATL. STD.</p> <p>APD. DRG. / MATL. STD.</p> <p>ASME B16.34 APPENDIX II</p> <p>ASME B16.34 APPENDIX I</p> <p>REFER REMARKS**</p> <p>MSS SP55</p>	<p>APD. DRG. / MATL. STD.</p> <p>APD. DRG. / MATL. STD.</p> <p>APD. DRG. / MATL. STD.</p> <p>APD. DRG. / MATL. STD.</p>
	<p>TEST CERT.</p> <p>TEST CERT.</p> <p>TEST CERT.</p> <p>TEST CERT.</p> <p>TEST CERT.</p> <p>TEST CERT.</p>	<p>TEST CERT.</p> <p>TEST CERT.</p> <p>TEST CERT.</p> <p>TEST CERT.</p>
	<p>CORRELATION OF MILL TEST CERTIFICATE OF CASTING BODY WITH HEAT NO.</p> <p>MPI ON 100% AREA (ACCESSIBLE). RT ON CHANGE OF SECTION &amp; BW ENDS (RT FILM REVIEW BY BHEL)</p> <p>**NORMAL BEAM PROBE, OF 20 MM/10 MM DIA AND 2/2.5 MHz SHALL BE USED. USING THIS PROBE, THE BACK-WALL ECHO SHALL BE SET AT 100% FULL SCREEN. HEIGHT(FSH) IN SOUND AREA AT THIS SENSITIVITY LEVEL THE ITEM SHALL BE SCANNED AND ANY DEFECT ECHO MORE THAN 20% FSH IS NOT ACCEPTABLE. ALSO ANYWHERE COMPLETE LOSS OF BACK WALL ECHO IS NOT ACCEPTABLE</p>	<p>CORRELATION OF MILL TEST CERTIFICATE OF CASTING BODY WITH HEAT NO.</p> <p>MPI ON 100% AREA (ACCESSIBLE). RT ON CHANGE OF SECTION &amp; BW ENDS (RT FILM REVIEW BY BHEL)</p> <p>**NORMAL BEAM PROBE, OF 20 MM/10 MM DIA AND 2/2.5 MHz SHALL BE USED. USING THIS PROBE, THE BACK-WALL ECHO SHALL BE SET AT 100% FULL SCREEN. HEIGHT(FSH) IN SOUND AREA AT THIS SENSITIVITY LEVEL THE ITEM SHALL BE SCANNED AND ANY DEFECT ECHO MORE THAN 20% FSH IS NOT ACCEPTABLE. ALSO ANYWHERE COMPLETE LOSS OF BACK WALL ECHO IS NOT ACCEPTABLE</p>

**APPROVED**  
By: Deepak at 10:03 am, Dec 10, 2024

<b>BIDDER/SUPPLIER</b>		<b>ENGINEERING</b>		<b>QUALITY</b>		<b>FOR CUSTOMER REVIEW &amp; APPROVAL</b>	
Sign & Date		Sign & Date		Sign & Date		Doc No:	4540-001-110-QVM-Q-216
Seal		Sign & Date		Sign & Date		Reviewed by:	
		Sign & Date		Sign & Date		Approved by:	
		Sign & Date		Sign & Date			



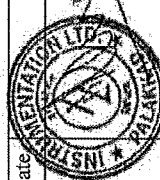
		<b>INSTRUMENTATION LIMITED KANJKODE (W), PALAKKAD-678623</b>		<b>QUALITY PLAN</b>				SPEC. NO: PE-TS-497-100-M016		DATE: 21.11.2023		
				CUSTOMER: NTPC				QP NO.: PE-V0-497-100-M024		DATE: 10.10.2024		
<b>PROJECT: 2X660MW TALCHER STAGE-III</b> <b>ITEM: BUTTERFLY VALVE (STEAM SERVICE)(1800NB)</b>		<b>SYSTEM: STEAM SERVICE</b>		SECTION: II		PO NO.: GEMC-51168726632671		DATE: 16.08.2024		SHEET 2 OF 8		
				CLASS		ACCEPTANCE		AGENCY		REMARKS		
SL NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY			
1	2	3	4	5	6	7	8	9	D	M	B	C
					M	B/C						

**APPROVED**  
 By Deepak at 10:03 am, Dec 10, 2024

1.3	DISC SEAL (FROM VENDOR'S REGULAR & APPROVED SOURCE)	1. VISUAL INSPECTION	MA	VISUAL	100%	APPD. DRG.	APPD. DRG.	INSP. REPORT	√	P/ W	V	
		2. DIMENSIONS	MA	MEASURE-MENT	100%	APPD. DRG.	APPD. DRG.	LOG BOOK	√	P/ W	V	
		3. TENSILE AND HARDNESS FOR VULCANISING	MA	MEASURE-MENT	1/BATCH	IS 3400 PART-I	IS 3400 PART-I	TEST CERT.	√	P/ W	V	
		4. OZONE CRACK RESISTANCE	MA	TESTING	1/BATCH	ASTM D1149 METHOD B PROCEDURE B4	ASTM D1149 METHOD B PROCEDURE B4	TEST CERT.	√	P/ W	V	SPECIMEN TYPE SHALL BE UNSTRESSED SAMPLE FOR 70 HRS AT 40 DEG CENTIGRADE.
		5. ELONGATION	MA	TESTING	1/BATCH	IS 3400 PART-I	IS 3400 PART-I	TEST CERT	√	P/ W	V	
		6. BLEED RESISTANCE	MA	TESTING	1/BATCH	SAMPLE TO BE KEPT IN 33% HCL, DM WATER, 48% NaOH FOR 72 HRS.	NO DISCOLOURATION. WEIGHT GAIN +/-0 TO 2%	TEST CERT	√	P/ W	V	
		7. AGEING TEST	MA	TESTING	1/BATCH	APPD. DRG/ IS 3400 PART IV	APPD. DRG/ IS 3400 PART IV*	TEST CERT	√	P/ W	V	*TEST TEMP. 125 DEG C, TEST DURATION 72 HRS, MAX CHANGE IN TENSILE STRENGTH: 20%, ELONGATION: 20%, HARDNESS: 3%
		8. HYDRAULIC STABILITY TEST (AFTER AGEING)	MA	TESTING	1/BATCH	AWWA C-504/ AWWA C516/	AWWA C-504/ AWWA C516/	TEST CERT.	√	P/ W	V	
		9. WEAR RESISTANCE	MA	TESTING	1/BATCH	AWWA C-504/ AWWA C-516	NO DAMAGE	TEST CERT.	√	P/ W	V	TYPE TEST REPORT WILL BE FURNISHED FOR

This approval status shall be interpreted as fall down in the contract and it shall not relieve contractor from contractual obligations

APPROVAL CATEGORY AWARDED	CAT I	* APPROVED
	CAT II	* APPROVED WITH COMMENTS AS NOTED
CAT III	RESERVED	
CAT IV	REFERENCE DRAWING	
BHEL-FEM	APPROVED BY	
DEPARTMENT	MPL	
NAME	SIGNATURE	DATE
Deepak	<i>Deepak</i>	10.12.2024

<b>BIDDER/SUPPLIER</b>		<b>BHEL</b>		<b>QUALITY</b>	
Sign & Date		Sign & Date		Sign & Date	
Seal		Checked by:	DEEPAK	Checked by:	ASHISH
		Reviewed by:	KULDEEP Kumar	Reviewed by:	HARISH KUMAR
		<b>ENGINEERING</b>		<b>FOR CUSTOMER REVIEW &amp; APPROVAL</b>	
		Doc No: 4540-001-110-QVM-Q-216		Name	
		Name		Seal	

QUALITY PLAN											
INSTRUMENTATION LIMITED KANJIKODE (W), PALAKKAD-678623			CUSTOMER: NTPC			SPEC. NO: PE-TS-497-100-M016			DATE: 21.11.2023		
PROJECT: 2X660MW TALCHER STAGE-III			PROJECT: 2X660MW TALCHER STAGE-III			QP NO.: PE-Y0-497-100-M024			DATE: 10.10.2024		
ITEM: BUTTERFLY VALVE (STEAM SERVICE)(1800NB)			ITEM: BUTTERFLY VALVE (STEAM SERVICE)(1800NB)			PO NO.: GEMC-511687726632671			DATE: 16.08.2024		
SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY	REMARKS
					M	B/C					
1	2	3	4	5	6	7	8	9	10		SHEET 3 OF 8
											II

SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY	REMARKS
1.4	FASTNERS	1. VERIFICATION OF MAKE, GRADE, REVIEW OF TEST CERTIFICATES 2. DIMENSIONS	MI	VISUAL	100%	APPD. DRG. / MATL. STD.	APPD. DRG. / MATL. STD.	TEST CERT.	P/W	V
1.5	OPERATORS GEAR-OPEARTORS A) GEAR, WORM & SHAFT	1. CHEMICAL COMPOSITION & MECHANICAL PROPERTIES 2. DIMENSIONS 3. HARDNESS	MA	MEASURE-MENT	100%	APPD. DRG. / MATL. STD.	APPD. DRG.	INSPECTION REPORT	P/W	V
		1. CHEMICAL COMPOSITION & MECHANICAL PROPERTIES 2. DIMENSIONS 3. HARDNESS	MA	CHEMICAL & MECHANICAL TESTING	1/BATCH	DATA SHEET/ MATL. STD./	DATA SHEET/ MATL. STD./	TEST CERT.	P/W	V
			MA	MEASURE-MENT	100%	MFG. DRG.	MFG. DRG.	INSPECTION REPORT	P/W	V
			MA	MEASURE-MENT	100%	DATA SHEET/ MATL. STD./	DATA SHEET/ MATL. STD./	TEST CERT.	P/W	V
			MA	TORQUE TEST AT TWICE THE RATED TORQUE	ONE/ TYPE/ MODEL	AWWA C-504/ AWWA C516/ DATA SHEET	AWWA C-504/ AWWA C516/ DATA SHEET	INSPECTION REPORT*	P/W	V
			MA	CYCLE TEST AT FULL RATED TORQUE OF GEAR BOX	ONE/ TYPE/ MODEL	AWWA-C504/ C516 (at full rated torque of gear box) / APPD PROCEDURE FOR GEAR BOX MODEL	AWWA-C504/ C516 / APPD PROCEDURE FOR GEAR BOX	INSPECTION REPORT*	P/W	V

**APPROVED**  
 By Deepak at 10:03 am, Dec 10, 2024

This approval status shall be interpreted as laid down in the FRANS MITTING  
 It shall not relieve contractor from contractual obligations

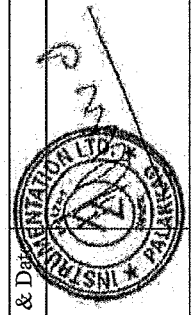
APPROVAL CATEGORY AWARDED  
 CAT I - APPROVED  
 CAT II - APPROVED WITH COMMENTS AS NOTED  
 CAT III - NOT APPROVED  
 CAT IV - REFERENCE DRAWING

BHEL-PEM APPROVED BY  
 DEPARTMENT: MPL  
 NAME: *Deepak*  
 SIGNATURE: *Deepak*  
 DATE: 10.12.2024

FOR CUSTOMER REVIEW & APPROVAL			
Doc No:	4540-001-110-QVM-Q-216		
Reviewed by:	Sign & Date	Name	Seal
Approved by:			

BHEL			
ENGINEERING		QUALITY	
Checked by:	Sign & Date	Checked by:	Sign & Date
Reviewed by:	Name	Reviewed by:	Name
<i>Deepak</i>	DEEPAK	Ashish Panigrahi	ASHISH
Kuldeep Kumar	KULDEEP	HARISH KUMAR	HARISH



*Handwritten signature*

QUALITY PLAN													
INSTRUMENTATION LIMITED KANIKODE (W), PALAKKAD-678623			CUSTOMER: NTPC			SPEC. NO: PE-TS-497-100-M016		DATE: 21.11.2023					
PROJECT: 2X660MW TALCHER STAGE-III			PROJECT: 2X660MW TALCHER STAGE-III			QP NO.: PE-V0-497-100-M024		DATE: 10.10.2024					
ITEM: BUTTERFLY VALVE (STEAM SERVICE)(1800NB)			ITEM: BUTTERFLY VALVE (STEAM SERVICE)(1800NB)			PO NO.: GEMC-511687726632671		DATE: 16.08.2024					
SL. NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	SECTION: II					
								FORMAT OF RECORD	AGENCY	REMARKS			
1	2	3	4	5	6	7	8	9	D	M	B	C	11
SYSTEM: STEAM SERVICE													

INSPECTION AND TESTING SHALL BE CARRIED OUT AS PER NTPC APPROVED REFERENCE QP - ELECTRIC ACTUATOR FOR BUTTERFLY VALVES (STEAM SERVICE) - QP NO. 110, REV. NO. 2, DT:03.12.2024 OF ROTORK CONTROLS (INDIA) PRIVATE LTD.															
2.0 INPROCESS CONTROL															
2.1 BODY AND DISC															
2.2															
ACTUATOR	2.DESIGN VERIFICATION	MA	MEASURE- MENT	100%	MA	MA	AWWA C542	AWWA C542	INSPECTION REPORT/COC	INSPECTION REPORT	INSPECTION REPORT	P/ W	V	V	VERIFICATION OF TYPE TEST REPORT EARLIER CARRIED OUT SAME, MODEL & RATING
	1.DIMENSION	MA	MEASURE- MENT	100%	MA	MA	AWWA C542	AWWA C542	INSPECTION REPORT/COC	INSPECTION REPORT	INSPECTION REPORT	P/ W	V	V	ON MACHINED AREA ONLY.
	2.SURFACE DEFECTS	CR	P.T.	100%	CR	CR	ASTM E165	ASME B16.34 APPENDIX III	INSPECTION REPORT	INSPECTION REPORT	INSPECTION REPORT	P/ W	V	V	# APPROVED WPS & PQR ALONG WITH QUALIFIED WELDERS BY REPUTED CUSTOMER/ BHEL/ REPUTED THIRD PARTY INSPECTION AGENCY TO BE USED AND THE SAME TO BE VERIFIED DURING INSPECTION IN CASE THE SAME NOT AVAILABLE, SUPPLIER TO ARRANGE FOR WITNESS OF WELDING FOR WPS APPROVAL AND WELDER QUALIFICATION.
	1. WELDING OVERLAY DEPOSIT	CR	VISUAL MECH. TESTS	100%	CR	CR	ASME IX	ASME IX	INSPECTION REPORT	INSPECTION REPORT	INSPECTION REPORT	P/ W	V	V	# APPROVED WPS & PQR ALONG WITH QUALIFIED WELDERS BY REPUTED CUSTOMER/ BHEL/ REPUTED THIRD PARTY INSPECTION AGENCY TO BE USED AND THE SAME TO BE VERIFIED DURING INSPECTION IN CASE THE SAME NOT AVAILABLE, SUPPLIER TO ARRANGE FOR WITNESS OF WELDING FOR WPS APPROVAL AND WELDER QUALIFICATION.
	2. CLADDING DEPTH & SURFACE DEFECTS	MA	DEPTH MEASUREME NT	100%	MA	MA	MFG. DWG	MFG. DWG	INSPECTION REPORT/COC	INSPECTION REPORT	INSPECTION REPORT	P/ W	V	V	LPI ON WELD OVERLAY AND ADJACENT AREA
		MA	LPI	100%	MA	MA	ASTM E 165	FREE FROM POROSITY/ CRACK	NDT REPORT	NDT REPORT	NDT REPORT	P/ W	V	V	LPI ON WELD OVERLAY AND ADJACENT AREA

**APPROVED**  
By Deepak at 10:03 am, Dec-10, 2024

This approval status shall be interpreted as held down in the contract and it shall not relieve contractor from contractual obligations	
APPROVAL CATEGORY AWARDED	
CAT I APPROVED	
CAT II APPROVED WITH COMMENTS AS NOTED	
CAT III NOT APPROVED	
CAT IV REFERENCE DRAWING	
BHEL/PEM APPROVED BY	
DEPARTMENT	MPL
NAME	Signature
Deepak	10.12.2024

FOR CUSTOMER REVIEW & APPROVAL			
Doc No:	4540-001-110-QVM-Q-216		
Reviewed by:	Sign & Date	Name	Seal
Approved by:			

BHEL			
ENGINEERING		QUALITY	
Checked by:	Checked by:	Sign & Date	Name
Reviewed by:	Reviewed by:		

**BIDDER/SUPPLIER**

Sign & Date

Seal

*Deepak*

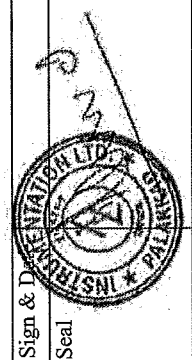
QUALITY PLAN													
INSTRUMENTATION LIMITED KANIKODE (W), PALAKKAD-678623			CUSTOMER: NTPC			SPEC. NO.: PE-TS-497-100-M016			DATE: 21.11.2023				
PROJECT: 2X660MW TALCHER STAGE-III			ITEM: BUTTERFLY VALVE (STEAM SERVICE)(1800NB)			SYSTEM: STEAM SERVICE			SECTION: II				
SL NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD			AGENCY	REMARKS
					M	B/C			D	M	B		
1	2	3	4	5	6	7	8	9	10	11	12	13	14


B) SEAT RING	1.SUB-SURFACE DEFECT	MA	RT/UT	100%	--	ASME B 16.34	ASME B 16.34	INSPECTION REPORT	√	P/ W	V	V	
	2. SURFACE DEFECTS	MA	LPI	100%	--	ASTM E 165	FREE FROM POROSITY/ CRACK	INSPECTION REPORT	√	P/ W	V	V	
2.3 BODY (BUTT WELD ENDS)	1.SUB-SURFACE DEFECT	CR	MPI	100% ON BW ON AREA	--	ASTM E 709	ASME B 16.34	INSPECTION REPORT	√	P/ W	V	V	
	2. SURFACE DEFECTS	CR	RT	100% ON BW ON AREA	--	ASME B 16.34	ASME B 16.34	RT REPORT	√	P/ W	V	V	RT OF BODY INCLUDING BW ENDS AS PER SL. NO. 1.1 CLAUSE NO.2. FILM REVIEW BY BHEL/CUSTOMER
2.4 SHAFT	1. DIMENSION	MA	MEASURE- MENT	100%	--	MFG DRG	MFG DRG	LOG BOOK	√	P/ W	-	-	
	2. SURFACE DEFECTS	MA	LPI	100%	--	ASTM E 165	ASME B 16.34	INSPECTION REPORT	√	P/ W	V	V	
2.5 VERIFICATION OF ALL PREVIOUS TESTS AND DOCUMENTS	VERIFICATION OF RECORDS	MA	--	100%	--	APPD. DRG./ DATA SHEET	APPD. DRG./ DATA SHEET	INSPECTION REPORT	√	P/ W	V	V	
	This approval status shall be interpreted as laid down in the contract and it shall not relieve contractor from contractual obligations												

**APPROVED**  
By: Deepak at 10:03 am, Dec 10, 2024

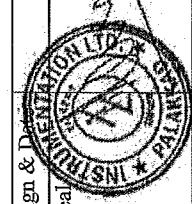
3.0 TESTING		APPROVAL CATEGORY AWARD	
3.1 COMPLETE VALVE	1. BODY TEST	CR	HYDRO TEST
	2. DISC STRENGTH	CR	HYDRO TEST
APPROVED WITH COMMENTS AS NOTED		NO LEAKAGE	
APPROVED BY		NO DEFORMATION, NO STRUCTURAL DAMAGE TO DISC	
DEPARTMENT		AWWA C-504 / AWWA C-516/ APPD DRG.	
NAME		AWWA C-504 / AWWA C-516/ APPD DRG.	
SIGNATURE		NO LEAKAGE	
DATE		NO DEFORMATION, NO STRUCTURAL DAMAGE TO DISC	
Deepak		AWWA C-504 / AWWA C-516/ APPD DRG.	


BIDDER/SUPPLIER				BHEL				FOR CUSTOMER REVIEW & APPROVAL					
Sign & Date		ENGINEERING		SIGNATURE		QUALITY		Doc No:		4540-001-110-QVM-Q-216		Seal	
Seal		Checked by: <i>Deepak</i>		Name: DEEPAK		Checked by: Ashish Panigrahi		Reviewed by:		Sign & Date		Name	
		Reviewed by: <i>Kuldeep Kumar</i>		Name: KULDEEP		Reviewed by: HARISH KUMAR		Approved by:		Sign & Date		Name	
				Name: HARISH KUMAR						Sign & Date		Name	



		<b>QUALITY PLAN</b>				SPEC. NO: PE-TS-497-100-M016	DATE: 21.11.2023
		CUSTOMER: NTPC				QP NO.: PE-V0-497-100-M024	DATE: 10.10.2024
PROJECT: 2X660MW TALCHER STAGE-III ITEM: BUTTERFLY VALVE (STEAM SERVICE) (1800NB)		PO NO.: GEMC-511687726632671		SYSTEM: STEAM SERVICE		SECTION: II	
		ACCEPTANCE NORMS 8		REFERENCE DOCUMENT 7		FORMAT OF RECORD 9	
SL NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	AGENCY	
1	2	3	4	5	6	D	10 M B C
SHEET 6 OF 8						REMARKS	
						II	

	3. SEAT LEAKAGE WITH ACTUATOR (BOTH DIRECTION)	CR	HYDRO/AIR TEST	100%	AWWA C-504 / AWWA C-516 / APPD DRG.	NO LEAKAGE	INSP. REPORT	P/ W	W	NORMAL FLOW DIRECTION. NO PART OF DISC/ VALVE SHALL BE PERMANENTLY DEFORMED/DAMAGED. DISC DEFORMATION IS MEASURED USING DIAL GAUGE AND BODY DEFORMATION BY MEASURING TAPE.
	4. PERFORMANCE TEST	CR	PERFORMANCE	100%	AWWA C-504* / AWWA C-516 *	SMOOTH OPERATION	INSP. REPORT	P/ W	W	
REFER NOTE 3										
<b>APPROVED</b> By Deepak at 10:03 am, Dec. 10, 2024										

<b>BHEL</b>				<b>FOR CUSTOMER REVIEW &amp; APPROVAL</b>					
Doc No:		4540-001-110-QVM-Q-216		Sign & Date		Name		Seal	
Checked by:		DEEPAK		Checked by:		ASHISH			
Reviewed by:		KULDEEP KUMAR		Reviewed by:		HARISH KUMAR			
<b>BIDDER/SUPPLIER</b> 		<b>ENGINEERING</b>		<b>QUALITY</b>					
Sign & Date		Sign & Date		Sign & Date		Name		Seal	

		<b>QUALITY PLAN</b>				SPEC. NO: PE-TS-497-100-M016		DATE: 21.11.2023			
		CUSTOMER: NTPC				QP NO.: PE-Y0-497-100-M024		DATE: 10.10.2024			
INSTRUMENTATION LIMITED KANIKODE (W), PALAKKAD-678623		PROJECT: 2X660MW TALCHER STAGE-III				PO NO.: GEMC-511687726632671		DATE: 16.08.2024			
		ITEM: BUTTERFLY VALVE (STEAM SERVICE)(1800NB)				SYSTEM: STEAM SERVICE		SECTION: II		SHEET 7 OF 8	
SL NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY	REMARKS	
1	2	3	4	5	6	7	8	9	10	11	
			M	B/C				D	M	B	C

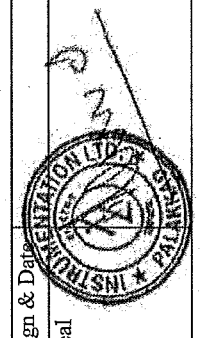
SL NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY	REMARKS
5.	GLAND LEAK TEST (TOP GLAND AND BOTTOM FLANGES)	HELIUM LEAK TESTS	CR	100%	MFG APPD PROCEDURE	MFG APPD PROCEDURE	100%	INSP. REPORT	P/ W	PROCEDURE SHALL BE SUBMITTED TO BHEL FOR REVIEW.
6.	VACUUM TEST	VACUUM TEST	CR	100%	MFG APPD PROCEDURE	MFG APPD PROCEDURE	100%	INSP. REPORT	P/ W	PROCEDURE SHALL BE SUBMITTED TO BHEL FOR REVIEW.
7.	PROOF OF DESIGN TEST (LIFE CYCLE TEST)	CYCLE TEST	CR	AS PER AWWA C 504/516 ON ONE VALVE/ TYPE/ RATING	APPROVED TEST PROCEDURE / AWWA C504/ AWWA C-516	APPROVED TEST PROCEDURE / AWWA C504/ AWWA C-516	AS PER AWWA C 504/516 ON ONE VALVE/ TYPE/ RATING	INSP. REPORT	P/ W	* VERIFICATION OF TEST REPORTS OF POD TEST ON SAME MODEL/ TYPE/ SIZE/ RATING CARRIED OUT EARLIER.

4.0 FINAL INSPECTION										
4.1	COMPLETE VALVE	1. OVERALL DIMENSION REVIEW	MA	MEASURE-MENT	100%	APPD DRG.	APPD DRG.	INSP. REPORT	P/ W	W
		2. DOCUMENTATION REVIEW	MA	REVIEW	100%	APPD DRG.	APPD DRG.	INSP. REPORT	P/ W	W
		3. CLEANLINESS	MA	VISUAL	100%	APPD DRG.	APPD DRG.	INSP. REPORT	P/ W	W
		4. NAMEPLATE	MA	VISUAL	100%	APPD DRG.	APPD DRG.	INSP. REPORT	P/ W	W

5.0 PAINTING										
5.1	PAINING	1. SURFACE PREPARATION	MI	VISUAL & MEASURE-MENT	100%	APPD DRG.	APPD DRG.	INSP. REPORT	P/ W	W
		2. UNIFORMITY & THICKNESS	MI	VISUAL & MEASURE-MENT	100%	APPD DRG.	APPD DRG.	INSP. REPORT	P/ W	W

6.0 PACKING										
BIDDER/SUPPLIER										
FOR CUSTOMER REVIEW & APPROVAL										
Doc No: 4540-001-110-QVM-Q-216										
Reviewed by: _____ Name: _____ Seal: _____										
Approved by: _____ Name: _____ Seal: _____										

**APPROVED**  
 By Deepak at 10:03 am, Dec 10, 2024




INSP. REPORT: This report shall be prepared and signed by the contractor in the contract and shall be submitted to the customer for approval. If not approved, the contractor shall rectify the defect and resubmit the report for approval.

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		<b>QUALITY PLAN</b>				SPEC. NO: PE-TS-497-100-M016	DATE: 21.11.2023			
		CUSTOMER: NTPC				QP NO.: PE-Y0-497-100-M024	DATE: 10.10.2024			
INSTRUMENTATION LIMITED KANJKODE (W), PALAKKAD-678623		PROJECT: 2X660MW TALCHER STAGE-III				PO NO.: GEMC-511687726632671	DATE: 16.08.2024			
ITEM: BUTTERFLY VALVE (STEAM SERVICE)(1800NB)		SYSTEM: STEAM SERVICE				SECTION: II	SHEET 8 OF 8			
SL NO.	COMPONENT & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORD	AGENCY	REMARKS
1	2	3	4	5	6	7	8	9	10	11
					M B/C			D	M B C	

6.1	PACKING	APPD. DRG.	MA	VISUAL	100%	100%	APPD. DRG. / PACKING PROCEDURE (IF APPLICABLE)	APPD. DRG. / PACKING PROCEDURE (IF APPLICABLE)	INSP. REPORT	✓	P/ W	W	V
-----	---------	------------	----	--------	------	------	--	--	--------------	---	------	---	---

**NOTE:**

- BW ends to be machined after final tests (3.0). Documents related to BW ends shall be reviewed by BHEL & Customer after final inspection and subsequent machining.
- After the BW end preparation, the test carried out are MPI (as per QAP clause no. 2.3) and dimension check (as per QAP clause no. 4.1).
- 10% or min. 2 nos. at random by BHEL/Customer & 100% by supplier for each type, size & rating.
- The latest revisions/year of issue of all the standard indicated in the QP shall be referred.
- All MOC as per approved Drawing and Datasheet

**Legends:**

- D: Documentation; Records identified with "Tick"(✓), shall be essentially included by supplier in QA Documentation
- Mr: Supplier/ Manufacturer/ Sub-Supplier
- B: Main Supplier/BHEL/ Third Party Inspection agency
- C: Customer
- TPIA: Third Party Inspection Agency
- DFT: Dry Film Thickness
- HT: Heat Treatment
- LPT: Liquid Penetrant Test
- UT: Ultrasonic Test
- RT: Radiography Test
- MPI: Magnetic Particle Inspection

This approval status shall be indicated as tick down in the contract and it shall not relieve contractor from contractual obligations


APPROVAL CATEGORY AWARDED	
<input checked="" type="checkbox"/>	CAT I - APPROVED
<input type="checkbox"/>	CAT II - APPROVED WITH COMMENTS AS NOTED
<input type="checkbox"/>	CAT III - NOT APPROVED
<input type="checkbox"/>	CAT IV - REFERENCE DRAWING
BHEL-PEM APPROVED BY	
DEPARTMENT	MPL
NAME	SIGNATURE
Deepak	<i>Deepak</i>
	DATE
	10.12.2024

**APPROVED**  
 By Deepak at 10:03 am, Dec 10, 2024

**BIDDER/SUPPLIER**

Sign & Date

Seal



ENGINEERING		QUALITY	
Checked by: <i>Deepak</i>	Sign & Date	Checked by: Ashish Panigrahi	Sign & Date
Reviewed by: Kuldeep Kumar	Name: DEEPAK	Reviewed by: HARISH	Name: ASHISH

FOR CUSTOMER REVIEW & APPROVAL			
Doc No:	4540-001-110-QVM-Q-216		
Reviewed by:	Sign & Date	Name	Seal
Approved by:			

*Chandekar*

pproq-49-4252

**QUALITY PLAN  
FOR EA**



pprwh-49-4252

Chandrasekar

MANUFACTURER'S NAME & ADDRESS		MANUFACTURING QUALITY PLAN				PROJECT: 2X660MW TALCHER POWER PLANT							
<b>rotork</b> Keeping the World Flowing for Future Generations ROTORK CONTROLS (INDIA) PRIVATE LTD 28B, AMBATTUR INDUSTRIAL ESTATE (NORTH) CHENNAI - 600 098		ITEM : ELECTRIC ACTUATOR IQ MODEL - IQ3 OP NO : 110 ELECTRICAL ACTUATOR REV.NO : 2 DATE : 03.12.2024 PAGE: 1 OF 6				CLIENT:- Customer Name: Instruments limited PO Number:-							
SR. NO.	OPERATION STAGE	CHARACTERISTICS TO CHECK	CLASS	TYPE OF CHECK	QUANTUM		REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS			REMARKS	
					M / S	C/N			M	C	N		
1.1	Drive Sleeve	Chemical Composition	Major	Physical	6	7	Component Drawing	8	9	10	11		
		Dimensions	Major	Physical	Every Batch by supplier	Component Drawing	Component Drawing	Component Drawing	Goods acceptance note	V	-		
		Visual	Major	Visual	As per sampling plan Doc No. WI/QA/01	Internal procedure	Internal procedure	Component Drawing	Goods acceptance note	P	-		
1.2	Worm Wheel	Chemical Composition	Major	Physical	6	7	Component Drawing	8	9	10	11		
		Dimensions	Major	Physical	Every Batch by supplier	Component Drawing	Component Drawing	Component Drawing	Goods acceptance note	V	-		
		EP Dimensions	Major	Physical	As per sampling plan Doc No. WI/QA/01	Internal procedure	Internal procedure	Component Drawing	Goods acceptance note	P	-		
1.3	Gear case	Dimensions	Major	Dimensional	6	7	Component Drawing	8	9	10	11		
		EP Dimensions	Major	Dimensional	1/Batch by supplier	Component Drawing	Component Drawing	Component Drawing	Inspection report and Material test certificate from supplier / Declaration of conformity	V	-		
		Digitally signed by Deepak Date: 2024.12.03 10:03:40+0530											
ELECTRIC ACTUATOR MANUFACTURER		SIGNATURE		MAIN SUPPLIER		APPROVAL CATEGORY AWARDED		FOR NTPC		REV..... CAT....		APPROVAL SEAL	



Digitally signed by Deepak Date: 2024.12.03 10:03:40+0530

LEGEND: \* RECORDS IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION.  
 \*\* M: OEM MANUFACTURER/ELECTRICAL ACTUATOR SUB-SUPPLIER  
 C: MAIN SUPPLIER, N: NTPC  
 P: PERFORM W: WITNESS AND V: VERIFICATION. AS APPROPRIATE. AS IDENTIFIED IN COLUMN "N" AS "R"  
 CHP: NTPC SHALL IDENTIFIED IN COLUMN "N" AS "R"

APPROVAL CATEGORY AWARDED		APPROVED BY		APPROVAL SEAL	
CAT I	- APPROVED	ENGG. DIV / QA & I			
CAT II	- APPROVED WITH COMMENTS AS NOTED				
CAT III	- NOT APPROVED				
CAT IV	- REFERENCE DRAWING				
BHEL-PEM	APPROVED BY				
DEPARTMENT	IMPL				
NAME	SIGNATURE				
Deepak	Deepak				
	DATE				
	10.12.2024				

**APPROVED**  
 By Deepak at 10:03 am, Dec. 10, 2024

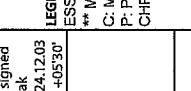
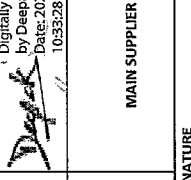
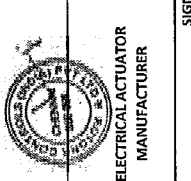
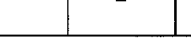


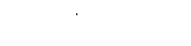



*Deepak*

MANUFACTURER'S NAME & ADDRESS		MANUFACTURING QUALITY PLAN				PROJECT: 2X660MW TALCHER POWER PLANT			
ROTORC CONTROLS (INDIA) PRIVATE LTD 28B, AMBATTUR INDUSTRIAL ESTATE (NORTH) CHENNAI - 600 098		ITEM : ELECTRIC ACTUATOR IQ MODEL - IQ3		QP NO.: 110 ELECTRICAL ACTUATOR REV.NO.: 2 DATE: 03.12.2024 PAGE: 1 OF 6		Customer Name: Instruments limited PO Number: -		AGENCY	
SR. NO.	OPERATION STAGE	CHARACTERISTICS TO CHECK	CLASS	TYPE OF CHECK	QUANTUM	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	REMARKS
1	2	3	4	5	M	C/N	8	9	11
1.4	Base	Chemical Composition Tensile Visual Dimensions a) ID b) OD c) Tapped holes Chemical Composition Tensile Dimensions a) Pin over size b) Hardness c) Visual d) Other Dimensions	Major Major Major Major Major Major Major Major	Physical Physical Visual Dimensional Dimensional Visual Physical Physical Dimensional Dimensional Dimensional Physical Electrical Thermal Mechanical Dimensional Visual Dimensional Visual	6 Every Batch by supplier As per sampling plan Doc No. WI/QA/01 Every Batch by supplier As per sampling plan Doc No. WI/QA/01	7 Component Drawing Component drawing Component Drawing	8 Component Drawing	D* 9 Goods acceptance note Goods acceptance note Goods acceptance note Declaration of conformity Inspection report and Material test certificate from supplier / Declaration of conformity	11 11
1.5	Worm shaft	Chemical Composition Tensile Dimensions a) Pin over size b) Hardness c) Visual d) Other Dimensions	Major Major Major Major Major Major Major Major	Physical Physical Dimensional Dimensional Dimensional Physical Electrical Thermal Mechanical Dimensional Visual Dimensional Visual	6 Every Batch by supplier As per sampling plan Doc No. WI/QA/01	7 Component Drawing Component drawing Component Drawing	8 Component Drawing	D* 9 Goods acceptance note Goods acceptance note Declaration of conformity Inspection report and Material test certificate from supplier / Declaration of conformity	11 11
1.6	Terminal Bung	Material Test Dimensions OD Visual	Major Major Major Major	Physical Electrical Thermal Mechanical Dimensional Visual Dimensional Visual	6 Every Batch by supplier As per sampling plan Doc No. WI/QA/01	7 Component Drawing Component drawing Component Drawing	8 Component Drawing	D* 9 Goods acceptance note Goods acceptance note Declaration of conformity Inspection report and Material test certificate from supplier / Declaration of conformity	11 11
1.7	Centre Column	Dimensions OD Visual	Minor Major	Dimensional Visual	6 As per sampling plan Doc No. WI/QA/01	7 Component Drawing Component drawing Component Drawing	8 Component Drawing	D* 9 Goods acceptance note Goods acceptance note Declaration of conformity Inspection report and Material test certificate from supplier / Declaration of conformity	11 11
ELECTRICAL ACTUATOR MANUFACTURER		SIGNATURE		LEGEND: * RECORDS IDENTIFIED WITH 'TICK' (T) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: OEM MANUFACTURER/ELECTRICAL ACTUATOR SUB-SUPPLIER C: MAIN SUPPLIER, N: NTPC P: PERFORM W/ WITNESS AND V: VERIFICATION, AS APPROPRIATE. CHP: NTPC SHALL IDENTIFIED IN COLUMN 'N' AS 'R'		FOR NTPC USE		REV..... CAT.....	
APPROVAL SEAL		APPROVED BY		APPROVED BY		APPROVED BY		APPROVAL SEAL	
ENGG. DIV / QA & I		ENGG. DIV / QA & I		ENGG. DIV / QA & I		ENGG. DIV / QA & I		ENGG. DIV / QA & I	

APPROVAL CATEGORY AWARDED	
CAT I	- APPROVED
CAT II	- APPROVED WITH COMMENTS AS NOTED
CAT III	- NOT APPROVED
CAT IV	- REFERENCE DRAWING
BHEL-FEM	APPROVED BY
DEPARTMENT	IMPL
NAME	SIGNATURE
Deepak	<i>Deepak</i>
DATE	10.12.2024



MANUFACTURER'S NAME & ADDRESS		MANUFACTURING QUALITY PLAN				PROJECT: 2X660MW TALCHER POWER PLANT CLIENT:- Customer Name: Instruments Limited PO Number: -													
ROTORK CONTROLS (INDIA) PRIVATE LTD 28B, AMBATTUR INDUSTRIAL ESTATE (NORTH) CHENNAI - 600 088		ITEM : ELECTRIC ACTUATOR IQ MODEL - IQ3		QP NO.: 110 ELECTRICAL ACTUATOR REV.NO.: 2 DATE: 03.12.2024 PAGE: 1 OF 6		REFERENCE DOCUMENT		ACCEPTANCE NORMS		FORMAT OF RECORDS		AGENCY		REMARKS					
CHARACTERISTICS TO CHECK		CLASS		TYPE OF CHECK		QUANTUM		REFERENCE DOCUMENT		ACCEPTANCE NORMS		FORMAT OF RECORDS		AGENCY		REMARKS			
SR. NO.		OPERATION STAGE		CLASS		TYPE OF CHECK		QUANTUM		REFERENCE DOCUMENT		ACCEPTANCE NORMS		FORMAT OF RECORDS		AGENCY		REMARKS	
1		2		4		5		6		7		8		9		10		11	
2.1	Electrical & Electronics Items: Main PCB Assembly	Major	Functional check	Major	Functional	100%	Component Drawing	Functional test after assembly in Actuator	Actuator test certificates	D*	V	V	V						The main PCB is an integral part of an actuator. Hence all the tests will be conducted as an actuator.
2.2	Piezo & Encoder (Limit Operation) Assembly	Major	Functional check	Major	Electrical	100%	Component Drawing	Functional test after assembly in Actuator	Actuator test certificates		V								
2.3	CPT, Profibus, FF, Folomatic, Pakscan, Modbus, SIL (if applicable)	Major	Functional check	Major	Functional	100%	Component Drawing	Functional test after assembly in Actuator	Actuator test certificates		V								CPT : Contact less type
2.4	Motors (Type test)	Major	Physical & Electrical	Major	Physical & Electrical	1 No. for each rating	Internal procedure	Internal procedure	Test Certificate		V								
																			

**APPROVED**  
 By: Deepak at 10:03 am, Dec 10, 2024

FOR NTPC USE

This approval status shall be interpreted as laid down in the contract and shall not relieve contractor from contractual obligations

APPROVAL CATEGORY AWARDED	CAT I - APPROVED
CAT II - APPROVED WITH COMMENTS AS NOTED	
CAT III - NOT APPROVED	
CAT IV - REFERENCE DRAWING	
BHEL-PEM	APPROVED BY
DEPARTMENT	MPL
NAME	SIGNATURE
DATE	10.12.2024

Deepak Page 3 of 6



*Handwritten signature*

SR. NO.		OPERATION STAGE		CHARACTERISTICS TO CHECK		CLASS		TYPE OF CHECK		QUANTUM		REFERENCE DOCUMENT		ACCEPTANCE NORMS		FORMAT OF RECORDS		AGENCY		REMARKS	
										M		C/N		8		9		M C N			
1		2		3		4		5		6		7						10		11	
3.1	ASSEMBLY INSPECTION / Motor Assembly	H.V Test		Major		Electrical		100% Inspection		Internal procedure		As per Internal procedure		HV Test report		P - -		P - -			
3.2	Mechanical Assembly of Actuator	a) Visual b) H.A. Function c) Handwheel Assembly d) Yoke Assembly Functional check		Critical		Visual physical Performance		100% Inspection		Internal procedure		As per Internal procedure		Job Schedule		P - -		P - -			
3.3	Electrical Assembly of Actuator	Function test		Critical		Visual Electrical		100% Inspection		Internal procedure		As per Internal procedure		Job Schedule		P - -		P - -			
ELECTRICAL MANUFACTURER		SIGNATURE		MAIN SUPPLIER		LEGEND: * RECORDS IDENTIFIED WITH 'TICK' (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M: OEM MANUFACTURER/ELECTRICAL ACTUATOR SUB-SUPPLIER C: MAIN SUPPLIER, N: NTPC P: PERFORM W: WITNESS AND V: VERIFICATION, AS APPROPRIATE. CHP: NTPC SHALL IDENTIFIED IN COLUMN 'N' AS 'R'		FOR NTPC USE		DOC. NO.:		REV..... CAT.....		APPROVED BY		ENGG. DIV / QA & I					

MANUFACTURER'S NAME & ADDRESS  
 ROTORK CONTROLS (INDIA) PRIVATE LTD  
 28B, AMBATTUR INDUSTRIAL ESTATE (NORTH)  
 CHENNAI - 600 088

ITEM : ELECTRIC ACTUATOR  
 IQ MODEL - IQ3

PROJECT: 2X660MW TALCHER POWER PLANT  
 CLIENT:-  
 Customer Name: Instruments limited  
 PO Number: -

DATE: 03.12.2024  
 PAGE: 1 OF 6

ACCEPTANCE NORMS

FORMAT OF RECORDS

AGENCY

REMARKS

Digitally signed  
 by Deepak  
 Date: 2024.12.03  
 10:33:36 +05'30'






MAIN SUPPLIER

APPROVAL CATEGORY AWARDED  
 CAT I - APPROVED  
 CAT II - APPROVED WITH COMMENTS AS NOTED  
 CAT III - NOT APPROVED  
 CAT IV - REFERENCE DRAWING  
 BHEL-PEM APPROVED BY  
 DEPARTMENT: MPL  
 NAME: *Deepak*  
 SIGNATURE: *Deepak*  
 DATE: 10.12.2024

**APPROVED**  
 By Deepak at 10:03 am, Dec 10, 2024



MANUFACTURER'S NAME & ADDRESS		MANUFACTURING QUALITY PLAN				PROJECT: 2X660MW TALCHER POWER PLANT CLIENT:- Customer Name: Instruments limited PO Number: -				
ROTORK CONTROLS (INDIA) PRIVATE LTD 28B, AMBATTUR INDUSTRIAL ESTATE (NORTH) CHENNAI - 600 086		ITEM : ELECTRIC ACTUATOR IQ MODEL - IQ3	QUANTUM M C/N	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY			REMARKS
S.R. NO.	OPERATION STAGE	CHARACTERISTICS TO CHECK	CLASS	TYPE OF CHECK	QUANTUM	INTERNAL PROCEDURE	M	C	N	
1	2	3	4	5	6	7	8	9	10	11
4	Final inspection of completed actuator	Visual & Dimensional checks (Mounting Dimensions & Oil leakage check) Correct phase rotation Functional & Calibration test for Torque & Limit (Will check No load current, Operation & setting of torque & limit, Stall torque & current) Direction of rotation (Will check Local & Remote operation of open-close & position indication Check) Phase Reversal (Will check for safety checks) Response Time test Variation of supply voltage Output speed measurement Hand wheel / Auto High Voltage test @2 KV Insulation resistance test/ SIL & Profibus	Critical	Physical	100% Inspection	Internal procedure Approved Datasheet	As per internal procedure Approved Datasheet	Test Certificate	P W V	20% sampling from the lot offered irrespective of size.
4.1	Final Routine Tests									
						<b>APPROVED</b> By Deepak at 10:03 am, Dec 10, 2024.		DOC. NO.: REV..... CAT.....		
ELECTRIC ACTUATOR MANUFACTURER		MAIN SUPPLIER		SIGNATURE		REVIEWED BY		APPROVED BY		APPROVAL SEAL

LEGEND: \* RECORDS, IDENTIFIED WITH 'TICK' ( ✓ ) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION.

\*\* M: OEM MANUFACTURER/ELECTRICAL ACTUATOR SUB-SUPPLIER

C: MAIN SUPPLIER, N: NTPC

P: PERFORM W/ WITNESS AND V: VERIFICATION AS APPROVED BY NTPC

CHP: NTPC SHALL IDENTIFIED IN COLUMN 'N' AS 'R'

APPROVAL status shall be interpreted as hold down in the contract and shall not relieve contractor from contractual obligations

APPROVAL CATEGORY AWARDED

CAT I - APPROVED

CAT II - APPROVED WITH COMMENTS AS NOTED

CAT III - NOT APPROVED

CAT IV - REFERENCE DRAWING

BHEL-FEM APPROVED BY

DEPARTMENT MPL

NAME SIGNATURE DATE

Deepak 10.12.2024

ENG. DIV / QA & I



*Chandrasekar*

MANUFACTURER'S NAME & ADDRESS		MANUFACTURING QUALITY PLAN				PROJECT-2X660MW TALCHER POWER PLANT							
ROTORK CONTROLS (INDIA) PRIVATE LTD 28B, AMBATTUR INDUSTRIAL ESTATE (NORTH) CHENNAI - 600 098		ITEM : ELECTRIC ACTUATOR IQ MODEL - IQ3		QP NO.: 110 ELECTRICAL ACTUATOR REV.NO.: 2 DATE: 03.12.2024 PAGE: 1 OF 6		CLIENT:- Customer Name: Instruments Limited PO Number: -							
SR. NO.	OPERATION STAGE	CHARACTERISTICS TO CHECK	CLASS	TYPE OF CHECK	QUANTUM	REFERENCE DOCUMENT	ACCEPTANCE NORMS	FORMAT OF RECORDS	AGENCY	REMARKS			
					M	C/N			M	C	N		
1	2		4	5	6	7	8	9	**	10	11		
5.1	Routine Test of Gear Box. Gear Box with Actuator	Routine testing of Gearbox smooth operation & grease leakage check / Linear (If applicable)	Critical	Physical	100% Inspection	Internal procedure	As per internal procedure	Test Certificate	✓	P	V	Applicable when gearbox is supplied as an attachment to the actuator(20% sampling from the lot offered irrespective of project & package)	
5.2	Gear Box with Hand Wheel	Rotation Check (applicable when it is supplied without actuator)	Major	Physical	100%	Approved data sheet.	Approved data sheet.			P			
6	Shipping & Inspection	Overall mounting Dimensions Visual check 1. Painting & Shade 2. Name Plate details 3. Check for accessories											
Digitally signed by Deepak Date: 2024.12.03 10:33:53 +05:30		LEGEND: * RECORDS IDENTIFIED WITH "TICK" (✓) SHALL BE ESSENTIALLY INCLUDED BY SUPPLIER IN QA DOCUMENTATION. ** M- OEM MANUFACTURER/ELECTRICAL ACTUATOR SUB-SUPPLIER C- MAIN SUPPLIER, IN NTPC P- PERFORM W/ WITNESS AND V- VERIFICATION, AS APPROPRIATE. CHP- NTPC SHALL IDENTIFIED IN COLUMN "N" AS "P"		FOR NTPC USE		DOC. NO.:		REV..... CAT.....		APPROVAL SEAL			
ELECTRIC ACTUATOR MANUFACTURER		MAIN SUPPLIER		APPROVAL CATEGORY AWARDED CAT I - APPROVED CAT II - APPROVED WITH COMMENTS AS NOTED CAT III - NOT APPROVED CAT IV - REFERENCE DRAWING BHEL-PEM APPROVED BY DEPARTMENT MPL NAME SIGNATURE DATE Deepak 10.12.2024		This approval status shall be interpreted as laid down in the contract and it shall not relieve contractor from contractual obligations.		REVIEWED BY		APPROVED BY		ENGG. DIV / QA & I	

**APPROVED**  
By Deepak at 10:03 am, Dec 10, 2024



*Chandekar*

we comply for enclosed QAP **QUALITY ASSURANCE**

ELECTRICAL ACTUATOR													
Test/Attributes Characteristics													
ITEM/COMPONENT/SUB-SYSTEM/ASSEMBLY/TESTING	RPM*	No Load Current*	IR & HV Test*	Mounting Dimension*	All routine Test as per Standard & Specification*	Correct Phase Sequence*	Operation & Setting of limit Switch/Torque Switch*	Shall Torque/Current (A)	Hand Wheel operation/ Auto de clutch function (A)	Function of Aux. like Potentiometer, space heater, position Indicator*	EPT output*	Local/ Remote (Open-Stop-Close) Operation*	Safety check (Single phasing, Phase correction, Tripping etc.) (A)
<b>ELECTRICAL ACTUATOR with Integral Starter, Non-Intrusive Electrical Actuator (EN15714-2)</b>													
Motor	Y	Y	Y	Y	Y								
Final Testing	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
* - Routine Test    A - Acceptance Test    Y - Test applicable													
<b>Note:</b>													
1) This is an indicative list of tests/checks. The manufacturer is to furnish a detailed quality plan indicating the practices and procedure adopted along with relevant supporting documents.													
2) SIL 2 certificate													

This approval status shall be interpreted as follows to be control and it shall not relieve contractor from contractual obligations

APPROVAL CATEGORY AWARDED	
CAT I	- APPROVED
CAT II	- APPROVED WITH COMMENTS AS NOTED
CAT III	- NOT APPROVED
CAT IV	- REFERENCE DRAWING
BHEL-PEM	APPROVED BY
DEPARTMENT	MPL
NAME	SIGNATURE
Deepak	<i>Deepak</i>
	DATE
	10.12.2024



**APPROVED**  
By Deepak at 10:03 am, Dec 10, 2024



## FUNCTIONAL SAFETY CERTIFICATE

This is to certify that the

### **IQ3 Valve Actuator** manufactured by

#### **Rotork Controls Ltd**

(A Division of Rotork PLC)  
Brassmill Lane  
Bath, BA1 3JQ  
UK

have been assessed by Sira Certification Service with reference to the CASS methodologies and found to meet the requirements of

### **IEC 61508-2:2010** **Routes 1<sub>H</sub> & 1<sub>S</sub>** **Systematic Capability (SC3)**

as an element/subsystem suitable for use in safety related systems performing safety functions up to and including

**SIL 2 capable with HFT = 0 (1001)\***  
**SIL 3 capable with HFT = 1 (1002)\***

when used in accordance with the scope and conditions of this certificate.

\* This certificate does not waive the need for further functional safety verification to establish the achieved Safety Integrity Level (SIL) of the safety related system

Certification Decision:

James Lynskey  
Product Group Manager - Functional Safety

Initial Certification : 26 August 2015  
This certificate issued : 16 October 2020  
Renewal date : 25 November 2025

This certificate may only be reproduced in its entirety, without any change.



Certificate No.: Sira FSP 15001/08  
Form 7016 issue 5  
Page 1 of 9



0011



**Sira Certification Service**  
**Part of CSA Group UK**  
Unit 6 Hawarden Industrial Park,  
Hawarden, CH5 3US, United Kingdom  
Tel: +44 (0) 1244 670900  
Email: [ukinfo@csagroup.org](mailto:ukinfo@csagroup.org)  
Web: [www.csagroupuk.org](http://www.csagroupuk.org)


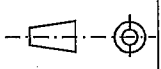


	DOCUMENT TITLE:	DOCUMENT NUMBER
	<b>ACTUATOR DATA SHEET OF BUTTERFLY VALVES (STEAM SERVICE)</b>	PE-V0-497-100-M132
		REV. NO. 00 DATE: 14.10.2024
		SHEET 1 OF 1

COPY RIGHT AND CONFIDENTIAL  
 The information in this document is the property of BHARAT HEAVY ELECTRICALS LIMITED  
 It must not be used directly or indirectly in any way detrimental to the interest of the company.

"We confirm that this document meets all the contract requirements including safety and statutory requirements and facilitate ease of operation and maintenance. In case any deviation is found, the Contractor shall carry out all required changes/ modifications without any cost implications to NTPC. In addition, Penalty on account of non-compliance of contract specification as deemed fit by the Employer shall be recovered"

	<b>BHARAT HEAVY ELECTRICALS LTD.</b> PROJEC ENGINEERING MANAGEMENT (MECHANICAL PIPING & LAYOUT)	
	This drawing/document has been reviewed by PEM Engineering and is complete in all respect as laid down in technical contract.  The drawing is for approval purpose.	
<b>Name</b>	<b>Signature</b>	<b>Designation</b>
Deepak		Sr. Manager


JOB NO.	497	CUSTOMER	N.T.P.C							
STATUS	CONTRACT	NTPC DRG. NO.	4540-001-110-PVE-Y-194							
DISTRIBUTION		PROJECT	2x660MW TALCHER THERMAL POWER PROJECT STAGE-III							
TO NO								NAME	SIGN	DATE
REV.	DATE	ALTD	CHKD	APPD		BHARAT HEAVY ELECTRICALS LTD POWER SECTOR. PROJECT ENGINEERING MANAGEMENT NOIDA	DEPT. CODE  M	PREP.	DK	14.10.2024
								CHD.	DK/KK	14.10.2024
								APPD.	KK	14.10.2024
TITLE:										
<b>ACTUATOR DATA SHEET OF BUTTERFLY VALVES (STEAM SERVICE)</b>										
			DEPT	SCALE	NTS	DOCUMENT NO.:				
			SIGN			PE-V0-497-100-M132				

PPM4-49-4252

04-06-NOS-

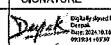
# ELECTRICAL ACTUATOR DATA SHEET

ppm 4-49-4252

FORM NO. PEM-6666-0		<b>SPECIFICATION</b>	<b>SPECIFICATION NO.: PE-SS-497-145-1007</b>	
		<b>FOR</b>		<b>VOLUME:</b> II B
		<b>MOTORIZED VALVE ACTUATOR</b>		<b>SECTION:</b> D
				<b>REV. NO.:</b> 00 <b>DATE:</b> 10.10.2024
		<b>Data Sheet A &amp; B</b>		<b>SHEET</b> 1 OF 3
<b>DATA SHEET-A</b> (TO BE FILLED BY PURCHASER)			<b>DATA SHEET-B</b> (TO BE FILLED-UP BY BIDDER)	

<b>GENERAL*</b>	* PROJECT	2X660MW TPP TALCHER, STAGE-III	NOTED	
	OFFER REFERENCE		GEMC-511687726632671	
	* TAG NO. SERVICE	EXV-25, EXV-26	STEAM	
	* DUTY	<input checked="" type="checkbox"/> ON / OFF <input type="checkbox"/> INCHING	NOTED      NOTED	
	* LINE SIZE (INLET/OUTLET): MATERIAL	1826x16	SA672 GR. B70	CONFIRMED      CONFIRMED
	* VALVE TYPE	<input type="checkbox"/> GLOBE <input type="checkbox"/> GATE <input type="checkbox"/> REG. GLOBE <input checked="" type="checkbox"/> BUTTERFLY		NOTED
	* OPENING / CLOSING TIME	50-90 SEC.		CONFIRMED      ~80 SEC.
	* WORKING PRESSURE			1.1 KG/CM <sup>2</sup>
	AMBIENT CONDITION	SHALL BE SUITABLE FOR CONTINUOUS OPERATION UNDER AN AMBIENT TEMP. OF 0-55 DEG C AND RELATIVE HUMIDITY OF 0-95%		(-30 TO 70 °C 0-95 % noted we comply
	VALVE SEAT TEST PRESS	BIDDER TO SPECIFY		5.25 KG/CM <sup>2</sup>
REQUIRED VALVE TORQUE	BIDDER TO SPECIFY		2455 KGM	
ACTUATOR RATED TORQUE	BIDDER TO SPECIFY		258 NM	
<b>CONSTRUCTION AND SIZING</b>	CONSTRUCTION	TOTALLY ENCLOSED WEATHER PROOF, MINIMUM IP:68	CONFIRMED	
	MECHANICAL POSITION INDICATOR	TO BE PROVIDED FOR 0-100% TRAVEL	LCD DISPLAY PROVIDED	
	BEARINGS	DOUBLE SHIELDED, GREASE LUBRICATED ANTI-FRICTION.	CONFIRMED	
	GEAR TRAIN FOR LIMIT SWITCH/TORQUE SWITCH OPERATION	METAL (NOT FIBRE GEARS). SELF-LOCKING TO PREVENT DRIFT UNDER TORQUE SWITCH SPRING PRESSURE WHEN MOTOR IS DE-ENERGIZED.	CONFIRMED	
	SIZING	OPEN/CLOSE AT RATED SPEED AGAINST DESIGNED DIFFERENTIAL PRESSURE AT 90% OF RATED VOLTAGE. FOR ISOLATING SERVICE THREE SUCCESSIVE OPEN-CLOSE OPERATIONS OR 15 MINS. WHICHEVER IS HIGHER. <b>FOR INCHING SERVICE - 150 START S/HR OR REQUIRED CYCLES WHICHEVER IS HIGHER.</b>	CONFIRMED	
<b>HANDWHEEL</b>	* REQUIRED	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	PROVIDED	
	* ORIENTATION	<input type="checkbox"/> TOP MOUNTED <input checked="" type="checkbox"/> SIDE MOUNTED	CONFIRMED	
	* TO DISENGAGE AUTOMATICALLY DURING MOTOR OPERATION.		CONFIRMED	
<b>ELECTRIC ACTUATOR</b>	ACTUATOR MAKE/MODEL	BIDDER TO SPECIFY	IQ35F16B4	
	MOTOR MAKE / MODEL / TYPE / RATING (KW)	BIDDER TO SPECIFY	ROTORK/ IQ35F16B4/144RPM/2.5KW RATING	
	@ MOTOR TYPE	SQUIRREL CAGE INDUCTION MOTOR SUITABLE FOR DIRECT ON-LINE (DOL) STARTING	CONFIRMED	
	ACTUATOR APPLICABLE WIRING DIAGRAM	<input type="checkbox"/> ENCLOSED (BIDDER TO CONFIRM) BIDDER/VENDOR TO FURNISH WIRING DIAGRAM	REFER ATTACHED NTPC APPROVED WIRING DIAGRAM	
	COLOUR SHADE	<input checked="" type="checkbox"/> RAL 5012 (Blue) <input type="checkbox"/> .....	CONFIRMED	
	PAINT TYPE (## REFER NOTES)	<input type="checkbox"/> ENAMEL <input checked="" type="checkbox"/> EPOXY <input type="checkbox"/> .....	CONFIRMED	
	SHAFT RPM	BIDDER TO SPECIFY	ACTUATOR RPM -144RPM	
	OLR SET VALUE	BIDDER TO SPECIFY	NOT APPLICABLE	
	@ STARTING / FULL LOAD CURRENT	BIDDER TO SPECIFY	STARTING CURRENT SHALL NOT EXCEED 7 TIMES RATED CURRENT AS PER IEC 60034 FOR IE-3 MOTORS.	
	NO. OF REV FOR FULL TRAVEL	BIDDER TO SPECIFY	191.75	
	@ PWR SUPP TO MTR / STARTER	415V +/- 10%, 3 PH, 3W & 50HZ +/- 5%	CONFIRMED	
	@ CONTROL VOLTAGE REQUIREMENT	TO BE DERIVED FROM THE POWER SUPPLY TO THE STARTER <input type="checkbox"/> 230 V <input checked="" type="checkbox"/> 110 V AC / 24 V DC	24VDC INTERNALLY FED	
	@ ENCLOSURE CLASS OF MOTOR	<input checked="" type="checkbox"/> IP 68 <input type="checkbox"/> FLAME PROOF <input checked="" type="checkbox"/> TOTALLY ENCLOSED, SELF-VENTILATED	CONFIRMED	
	@ INSULATION CLASS	<input checked="" type="checkbox"/> CLASS F. TEMPERATURE RISE 70 DEG C. OVER 50 DEG C AMBIENT <input type="checkbox"/> THERMOSTAT (3 NOS., 1 IN EACH PHASE)	CONFIRMED	
	@ WINDING TEMP PROTECTION		PROVIDED	

**APPROVED**  
By Deepak at 9:16 am, Oct 16, 2024

SHEL-PEM	APPROVED BY
DEPARTMENT	MPL
NAME	SIGNATURE      DATE
Deepak	 16.10.2024



FORM NO. PEM-6686-0		<b>SPECIFICATION FOR MOTORISED VALVE ACTUATOR</b>	<b>SPECIFICATION NO.: PE-SS-497-145-1007</b>
			VOLUME: II B
			SECTION: D
			REV. NO.: 00      DATE: 10.10.2024
			SHEET 2 OF 3
Data Sheet A & B			
DATA SHEET-A (TO BE FILLED BY PURCHASER)			DATA SHEET-B (TO BE FILLED-UP BY BIDDER)


	SINGLE PHASING PROTECTION & WRONG PHASE SEQUENCE PROTECTION	REQUIRED, SUITABLE MEANS SHALL BE PROVIDED TO DIAGNOSE THE TYPE OF FAULT LOCALLY.	PROVIDED	
<b>INTEGRAL STARTER</b>	INTEGRAL STARTER	<input checked="" type="checkbox"/> REQUIRED <input type="checkbox"/> NOT REQUIRED	PROVIDED	
	TYPE OF SWITCHING DEVICE	<input checked="" type="checkbox"/> CONTACTORS <input type="checkbox"/> THYRISTORS	CONFIRMED	
	TYPE	NON-INTRUSIVE HARDWIRED ACTUATOR	CONFIRMED	
	<b>IF SMART</b>			
	A) SERIAL LINK INTERFACE	<input type="checkbox"/> INTEGRAL <input type="checkbox"/> FIELD MOUNTED	NOT APPLICABLE	
	B) SERIAL LINK PROTOCOL	<input type="checkbox"/> FOUNDATION FIELD-BUS <input type="checkbox"/> PROFI-BUS <input type="checkbox"/> DEVICE NET <input type="checkbox"/> .....	NOT APPLICABLE	
	C) SERIAL LINK MEDIA	<input type="checkbox"/> TWISTED PAIR CU-CBL <input type="checkbox"/> CO-AXIAL <input type="checkbox"/> CU-CBL <input type="checkbox"/> OFC	NOT APPLICABLE	
	D) HAND HELD PROGRAMMER	<input checked="" type="checkbox"/> REQUIRED <input type="checkbox"/> NOT REQUIRED	PROVIDED	
	E) TYPE OF HAND-HELD PROGRAMMER	<input checked="" type="checkbox"/> BLUETOOTH <input type="checkbox"/> INFRARED <input type="checkbox"/> .....	CONFIRMED	
	F) MASTER STATION	<input type="checkbox"/> REQUIRED <input type="checkbox"/> NOT REQUIRED	NOT APPLICABLE	
	G) MASTER STN INTRFACE WITH DCS	<input type="checkbox"/> MODBUS <input type="checkbox"/> TCP/IP	NOT APPLICABLE	
	H) DETAILS OF SPECIAL CABLE	<input type="checkbox"/> ENCLOSED <input type="checkbox"/> NOT REQUIRED	NOT APPLICABLE	
	STEP DOWN CONT. TRANSFORMER	<input checked="" type="checkbox"/> REQUIRED	PROVIDED	
	OPEN / CLOSE PB	<input checked="" type="checkbox"/> REQUIRED <input type="checkbox"/> NOT REQUIRED	PROVIDED	
	STOP PB	<input checked="" type="checkbox"/> REQUIRED <input type="checkbox"/> NOT REQUIRED	PROVIDED	
INDICATING LAMPS	<input checked="" type="checkbox"/> REQUIRED <input type="checkbox"/> NOT REQUIRED	PROVIDED		
LOCAL REMOTE S/S	<input checked="" type="checkbox"/> REQUIRED (LOCKABLE) <input type="checkbox"/> NOT REQUIRED	PROVIDED		
STATUS CONTACTS FOR MONITORING	<input checked="" type="checkbox"/> REQUIRED <input type="checkbox"/> NOT REQUIRED	PROVIDED		
	INTEGRAL STARTER DISTURBED SIGNAL	REQUIRED (THERMAL O/L RELAY OPERATED, LOSS OF CONT./POWER SUPPLY (1 PHASE/ 3 PHASE), LOCAL/OFF/REMOTE SWITCH IN LOCAL/OFF POSITION, TORQUE SWITCH OPTD, MOTOR THERMOSTAT TRIP.)	CONFIRMED	
<b>INTERPOSING RELAY/OPTO COUPLER (APPLICABLE FOR INTEGRAL STARTER)</b>	TYPE OF ISOLATING DEVICE	<input checked="" type="checkbox"/> INTERPOSING RELAY <input type="checkbox"/> OPTO COUPLER <input type="checkbox"/> EITHER	CONFIRMED	
	QUANTITY	<input checked="" type="checkbox"/> 2 NOS. <input type="checkbox"/> 3 NOS.	PROVIDED	
	DRIVING VOLTAGE	<input checked="" type="checkbox"/> 20.5 – 24V DC <input type="checkbox"/> _____ V DC	CONFIRMED	
	DRIVING CURRENT	<input checked="" type="checkbox"/> 125MA MAX <input type="checkbox"/> _____ MA MAX	CONFIRMED	
	LOAD RESISTANCE	<input checked="" type="checkbox"/> > 192 OHMS - <25 K OHMS <input type="checkbox"/> > _____ OHMS - < _____ OHMS	CONFIRMED	
<b>TORQUE SWITCH</b>	MFR & MODEL NO.	BIDDER TO SPECIFY		
	OPEN / CLOSE	<input checked="" type="checkbox"/> 1 NO. <input type="checkbox"/> 2NOS. / <input checked="" type="checkbox"/> 1 NO. <input type="checkbox"/> 2NOS		
	CONTACT TYPE	2 NO + 2 NC		
	RATING	5A 240V AC AND 0.5A 220V DC		
	CALIBRATED KNOBS (OPEN&CLOSE TS)	REQUIRED FOR SETTING DESIRED TORQUE		
ACCURACY	+3% OF SET VALUE			
<b>LIMIT SWITCH</b>	MFR & MODEL NO.	BIDDER TO SPECIFY		
	OPEN : INT : CLOSE	<input type="checkbox"/> 1 NO <input checked="" type="checkbox"/> 2 NOS.      2 NOS. (ADJ.) <input type="checkbox"/> 1 NO. <input checked="" type="checkbox"/> 2NOS.	PROVIDED THROUGH CONFIGURABLE CONTACTS	
	CONTACT TYPE	2 NO + 2 NC		
	RATING (AC / DC)	5A 240V AC AND 0.5A 220V DC		
			5mA TO 5A, 120VAC, 30VDC	

<b>POSITION/TORQUE TRANSMITTER</b>	POSITION/TORQUE TRANSMITTER	REQUIRED (I. POSITION/LIMIT MEASUREMENT SHALL BE DONE USING ABSOLUTE ENCODERS WHICH WILL GIVE INFORMATION OF POSITION/LIMIT IN BOTH THE DIRECTIONS. II. ELECTRONIC MEASUREMENT OF TORQUE SHALL BE PROVIDED.)	OFFERED ACTUATORS ARE ON-OFF DUTY HENCE 4-20MA POSITION TRANSMITTER NOT PROVIDED	
	MFR & MODEL NO.	BIDDER TO SPECIFY		
	SUPPLY	<input checked="" type="checkbox"/> 24V DC <input type="checkbox"/> .....		
	OUTPUT	<input checked="" type="checkbox"/> 4-20MA		
	ACCURACY	+ 1% FS		
<b>SPACE HEATER</b>	@SPACE HEATER	REQUIRED	THE DESIGN OF IQ AND IQT ACTUATORS DOES NOT REQUIRE A SPACE HEATER FOR INTERNAL MOTOR/CONTROL COMPARTMENT PROTECTION. THE O-RING SEALED IP66/IP68, NON-BREA	
	@ POWER SUPPLY (NON-INTEGRAL)	230V AC, 1 PH, 50 HZ		

**APPROVED**  
By Deepak at 9:16 am, Oct 16, 2024

APPROVAL CATEGORY AWARDED		
CAT I	- APPROVED	
CAT II	- APPROVED WITH COMMENTS AS NOTED	
CAT III	- NOT APPROVED	
REFERENCE DRAWING		
BHEL-PEM		
APPROVED BY		
DEPARTMENT	MPL	
NAME	SIGNATURE	DATE
Deepak		16.10.2024



FORM NO. PEM-6868-0		<b>SPECIFICATION FOR MOTORISED VALVE ACTUATOR</b>	<b>SPECIFICATION NO.: PE-SS-497-145-1007</b>	
				<b>VOLUME:</b> II B
				<b>SECTION:</b> D
				<b>REV. NO.:</b> 00 <b>DATE:</b> 10.10.2024
		<b>Data Sheet A &amp; B</b>		<b>SHEET</b> 3 OF 3
<b>DATA SHEET-A (TO BE FILLED BY PURCHASER)</b>			<b>DATA SHEET-B (TO BE FILLED-UP BY BIDDER)</b>	

	@ POWER SUPPLY (INTEGRAL)	POWER SUPPLY DERIVED FROM MAIN POWER SUPPLY AVAILABLE AT ACTUATOR END	INTRUSIVE ENCLOSURE ELIMINATES AIR EXCHANGES AND THEREFORE THE FORMATION OF CONDENSATION. HEAT GENERATION FROM INTERNAL ELECTRICAL COMPONENTS RAISES THE INTERNAL TEMPERATURE BY UP TO 10°C/18°F ABOVE AMBIENT
	@ RATING		
<b>TERMINAL BOX</b>	ACTUATOR/MOTOR TERMINAL BOX	REQUIRED. FOR POWER CABLES, THE GRADE OF TBS SHALL BE MINIMUM 650V.	CONFIRMED
	ENCL CLASS ACTUATOR/MOTOR T.B.	@ <input type="checkbox"/> IP 68                      @ <input type="checkbox"/> .....	
	@ EARTHING TERMINAL CONNECTION (FOR COMM, LS/TS FEED BACK, POSTX)	REQUIRED (2NOS.)	PROVIDED
<b>CABLE GLANDS</b>	@ POWER CABLE GLAND	CABLE OD: 12.16mm +/-2mm	1XM20
	@ SPACE HEATER CABLE GLAND	CABLE OD: 11.72mm +/-2mm	NOT APPLICABLE
	OTHER CONTROL CABLE GLANDS-1	■ 1NO.   CABLE OD :11.5mm +/-2mm	1XM20
	OTHER CONTROL CABLE GLANDS-2	QUANTITY & SIZE: -----	
<b>WEIGHT</b>	TOTAL WEIGHT (ACTUATOR + ACCESSORIES)	BIDDER TO SPECIFY	_____ 75 _____ KG.
<b>CERTIFICATION</b>	SIL CERTIFICATION	REQUIRED (SIL2 OR BETTER)	SIL CERTIFICATE ENCLOSED
NOTES* = TO BE FILLED BY MPL (LEAD AGENCY).      @= TO BE FILLED BY ES			

**NOTES:-**

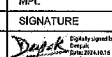
- SCOPE:** DESIGN, MANUFACTURE, INSPECTION, TESTING AND DELIVERY TO SITE OF ELECTRIC ACTUATOR FOR INCHING OR OPEN / CLOSE DUTY.
- CODES & STANDARDS:** DESIGN AND MATERIALS USED SHALL COMPLY WITH THE RELEVANT LATEST INTERNATIONAL STANDARD (INDIAN CODES ARE NOT ACCEPTABLE).
- ACTUATORS SHALL BE DESIGNED FOR VALVE OPERATION TO ENSURE PROPER FUNCTION IN ACCORDANCE WITH EN15714-2.
- TEMPERATURE RISE SHALL BE RESTRICTED TO 70 DEG. C FOR AMBIENT TEMPERATURE OF 50 DEG C.
- CABLE GLANDS OF DOUBLE COMPRESSION TYPE, BRASS MATERIAL SHALL BE PROVIDED.
- THE TORQUE SWITCHES SHALL BE PROVIDED WITH MECHANICAL LATCHING DEVICE TO PREVENT OPERATION WHEN UNSEATING FROM THE END POSITIONS. THE LATCHING DEVICE SHALL UNLATCH AS SOON AS THE VALVE LEAVES THE END POSITION. IF SUCH PROVISION IS NOT POSSIBLE, THE TORQUE SWITCHES SHALL BE BYPASSED BY END-POSITION LIMIT SWITCHES WHICH OPENS ON VALVE LEAVING END POSITION.THESE LIMIT SWITCHES ARE ADDITIONAL TO THE NUMBER OF LIMIT SWITCHES SPECIFIED ELSEWHERE.
- THE MOTOR SHALL OPERATE SATISFACTORILY UNDER THE +/- 5% SUPPLY VOLTAGE VARIATION AT RATED FREQUENCY, -6% TO +4% VARIATION IN FREQUENCY AT RATED SUPPLY VOLTAGE, SIMULTANEOUS VARIATION IN VOLTAGE & FREQUENCY THE SUM OF ABSOLUTE PERCENTAGE NOT EXCEEDING 10%.
- THE ACTUATORS SHALL BE NON-INTRUSIVE ELECTRIC ACTUATOR. ALL ACTUATOR SETTING INCLUDING TORQUE, LIMIT SHALL BE POSSIBLE WITHOUT OPENING THE ACTUATOR COVER.**
- LCD INDICATION SHALL BE AVAILABLE INTEGRAL TO ACTUATOR BODY. LCD DISPLAY SHALL GIVE INFORMATION REGARDING ACTUATOR ALARMS, STATUS AND VALVE POSITION INDICATIONS AS A MINIMUM IN LOCAL.
- OPEN/CLOSE COMMAND TERMINATION LOGIC SHALL BE SUITABLY BUILT INSIDE ACTUATOR.
- ALL REQUIRED ACCESSORIES FOR CALIBRATION / SETTINGS / CONFIGURATION OF VARIOUS PARAMETERS OF ACTUATOR SHALL BE PROVIDED.
- SUITABLE VOLTAGE GRADE COPPER WIRE SHALL BE USED.

**\$\$ TORQUE SWITCH & LIMIT SWITCH SHALL ACT INDEPENDENT OF EACH OTHER. TANDEM OPERATION IS NOT ACCEPTABLE.**

**## EPOXY PAINT IS RECOMMENDED FOR COASTAL AREAS.**

**APPROVED**  
By Deepak at 9:16 am, Oct 16, 2024

This approval status shall be interpreted as laid down in the contract and it shall not relieve contractor from contractual obligations

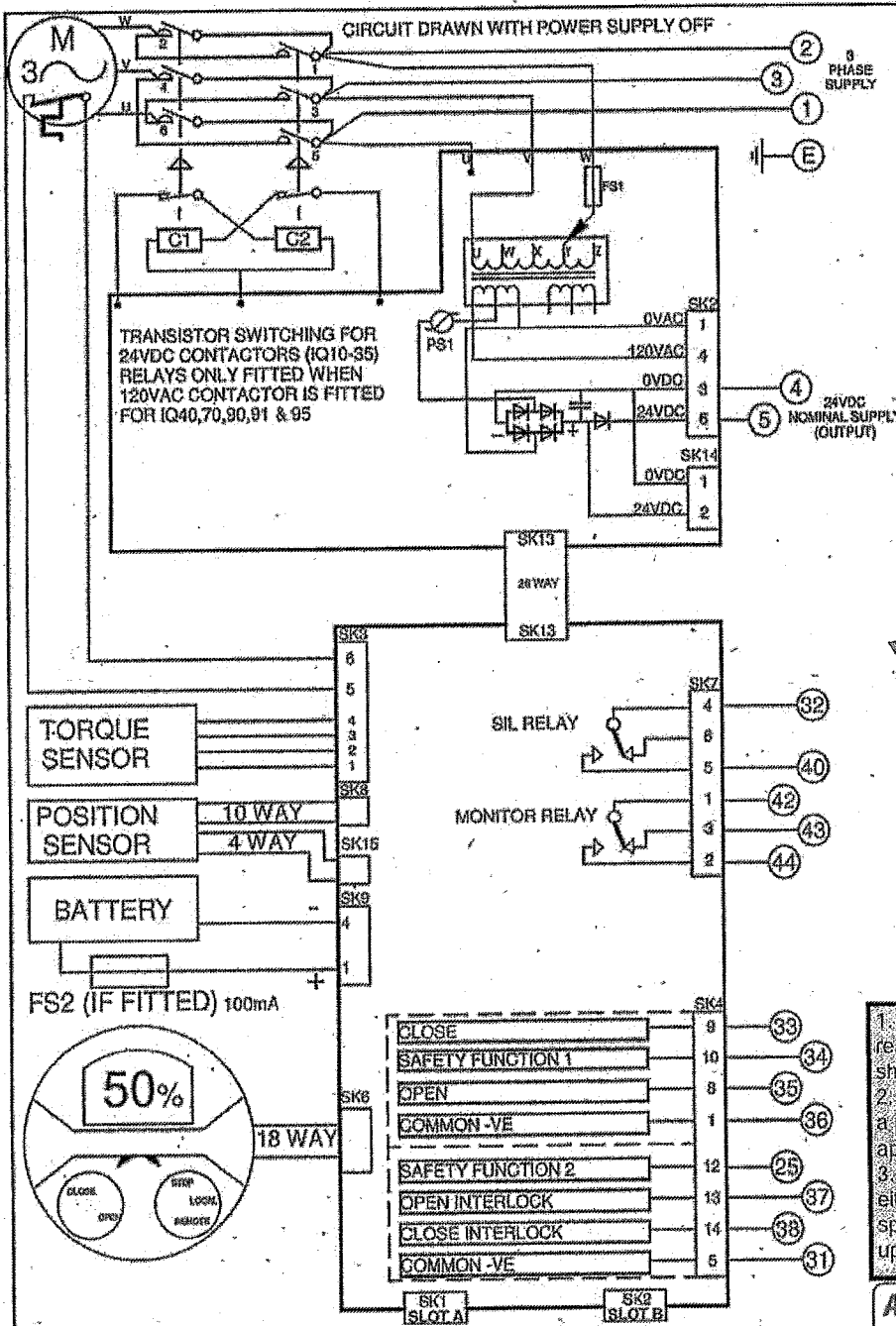
APPROVAL CATEGORIES		
CAT I	- APPROVED	
CAT II	- APPROVED WITH COMMENTS AS NOTED	
CAT III	- NOT APPROVED	
CAT IV	- REFERENCE DRAWING	
BHEL-PEM	APPROVED BY	
DEPARTMENT	MPL	
NAME	SIGNATURE	DATE
Deepak		16.10.2024



ppm4-49-4252

04-06-NOS.

# ELECTRICAL ACTUATOR WIRING DIAGRAM



FOR TYPICAL REMOTE CONTROL DETAILS, SEE DOCUMENT **RWS120**

TRANSFORMER TAPPING OPTIONS	
Tap	Nominal 50/60Hz
TYPE 1	
W	220/230
X	380/400
Y	400.415/420
Z	440/460
FUSE FS1=250mA ANTI-SURGE	
TYPE 2	
W	345/380
X	480/500
Y	240/240
Z	550/575
FUSE FS1=250mA ANTI-SURGE	
TYPE 3	
X	660/660-690
Y	690/
FUSE FS1=150mA ANTI-SURGE	

REFER TO SHEET 2 FOR NOTES

This approval is valid only for the project specified and shall not be used for other projects without the written approval of the NTPC.

APPROVAL CATEGORY AWARDED	
<input checked="" type="checkbox"/>	CAT I - APPROVED
<input type="checkbox"/>	CAT II - APPROVED WITH COMMENTS AS NOTED
<input type="checkbox"/>	CAT III - NOT APPROVED
<input type="checkbox"/>	CAT IV - REFERENCE DRAWING

BHEL-PEM	APPROVED BY
DEPARTMENT	MPL
NAME	SIGNATURE
DATE	DATE

Deepak *Deepak* 16.10.2024

1. This Wiring Drawing (WD) is to be read along with the Actuator Data sheet.
2. This WD is approved by NTPC for a period of 5 years from the date of approval.
3. Fresh approval shall be required either in case of change in NTPC specifications or in case of change/update in the WD by the vendor.

**APPROVED**  
By PE-C&I, NTPC Ltd at 4:50 pm, May 15, 2019

**SIL NOTES (Superseding Sheet 2 Notes)**

Independently Certified to IEC61508-2 (2010) as an element suitable for use in safety related systems up to and including SIL 2 (1001) and SIL 3 (1002). Must be installed, commissioned, tested and operated fully in accordance with the Safety Manual. Refer to SIL Safety Manual - PUB002-057

**SIL STAYPUT (Safety Function 1):** The control signal must be applied to terminal 34 before an open or closed control signal will operate the actuator. This is a high demand safety function, actuator will not move spuriously.

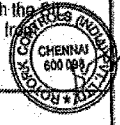
If the safety function is configured for SIL STAYPUT only, terminal 25 will be a standard (Non-SIL) ESD terminal, as per PUB002-040.

**SIL MOVE TO LIMIT (Safety Function 2):** The control signal must be removed to terminal 25 to cause the actuator to move to the configured end of travel position (Open or Close limit). This is not a maintained input, SF2 control signal must be removed for the duration of operation to the configured limit position. This is a low demand safety function.

If the safety function is configured for SIL MOVE TO LIMIT (SF2) ONLY, terminal 34 will be a standard Stop/Maintain input in accordance with PUB002-041.

**Safety Function 1 + Safety Function 2:** Where both safety functions are required, the priority and functions must be configured in accordance with the Safety Manual - PUB002-057. The common for SF1 (terminal 36) and SF2 (terminal 31) are independent allowing the control signal to be derived from separate, independent systems. If required, where signals are derived from the same system, the commons can be linked together.

SF1 and SF2 Signals must be within the range 16-60VDC, positive supply switched only.



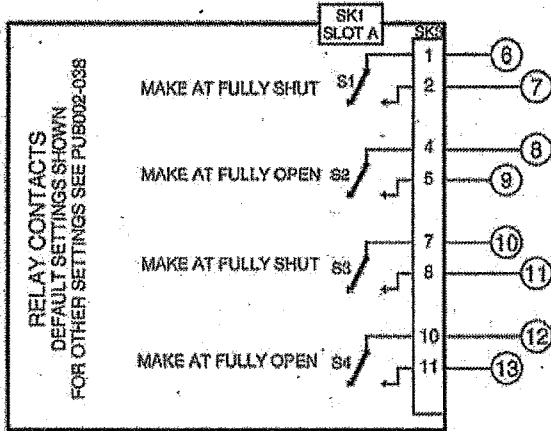
Iss	Date	Chkd	Revision Details	www.rotork.com	IQ + SIL
4	081216	PMJ	EXTRA NOTE ADDED FOR TERMINAL 34.	ROTORK CONTROLS LTD BATH, BA1 3JQ ENGLAND Tel:01225-730200	Drawn by: PMJ Date : 020814 Base WD: 700B0000 Job No : ... Mtl No : ...
5	160217	PMJ	SIL NOTES PAGE 1 ADDED	ROTORK CONTROLS (INDIA) ROCHESTER NY 14624, USA Tel:585-247-2804	Circuit Diagram Number <b>700B0000</b> Issue No <b>5</b> Sheet <b>1</b> of 2

**APPROVED**  
By Deepak at 9:16 am, Oct 16, 2024

CIRCUIT DRAWN WITH POWER SUPPLY OFF

# SLOT A

ppm4-49-4252



**APPROVED**  
By Deepak at 9:16 am, Oct 16, 2024

This approval status shall be interpreted as laid down in the contract and it shall not relieve contractor from contractual obligations

APPROVAL CATEGORY AWARDED	
<input checked="" type="checkbox"/> CAT I	- APPROVED
<input type="checkbox"/> CAT II	- APPROVED WITH COMMENTS AS NOTED
<input type="checkbox"/> CAT III	- NOT APPROVED
<input type="checkbox"/> CAT IV	- REFERENCE DRAWING
APPROVED BY	
BHEL-PEM	MPL
DEPARTMENT	
NAME	SIGNATURE
Deepak	<i>Deepak</i>
	DATE
	16.10.2024



**NOTES**

- FUSES:**
  - PS1 is a self-resetting fuse.
  - Refer to publication PUB002-039 for approved fuses FS1 and FS2.
  - Actuator rated voltage specified on nameplate. Voltage tolerance +/-10%, applies for rated torque performance; duty cycle is not guaranteed.
- REMOTE CONTROL:**
  - For typical remote control circuits refer to:
    - RWS indicated or PUB002-041.
  - For DC and AC control, connect -ve/0V to terminal 36.
  - (For negative switch / positive common, refer to RWS indicated).
  - Control signal threshold voltages:
    - DC: "on" ≥16Vdc / "off" ≤3Vdc, max 60Vdc.
    - AC: "on" ≥60Vac / "off" ≤40Vac, max 120Vac.
  - Control signal duration to be 300ms minimum.
  - Maximum current drawn from remote control signals is:
    - 8mA at 24Vdc or 12mA at 120Vac.
  - Supply provided on terminals 4 & 5:
  - Intended for remote control.
  - Max external load 5W at 24Vdc / 5VA at 120Vac

**INDICATION:**

- For typical position, status and alarm indication see PUB002-041.
- “S” contacts are user configurable and are shown in their default setting.
- Refer to PUB002-040 for functions and configuration instructions.
- Monitor Relay indicates actuator availability for remote control (shown “unavailable”). It can be configured to exclude local/remote selection.
- Refer to PUB002-040 for monitored functions and configuration instructions.
- Voltage applied to Indication contacts must not exceed 150Vac
- Individual Switch current must not exceed 3.5A inductive, 5A resistive and no more than 8A in total for all 4 contacts.

**BATTERY:**

- Battery maintains local and remote “S” contact indication only.
- Refer to installation manual for approved replacement battery types.

See Sheet 1 for all Revision details/Information

Circuit Diagram Number	Issue No	Sheet
700B0000	5	2 of 2






**ADDITIONAL NOTE TO NTPC PROJECTS.**

In case when safety PLC/DCS is not available / not connected , both SF1 & SF2 are to be disabled in actuator using supplied Blue tooth configuration tool.

**APPROVED**  
By Deepak at 9:16 am, Oct 16, 2024

This approval status shall be interpreted as laid down in the contract and it shall not relieve contractor from contractual obligations

APPROVAL CATEGORY AWARDED		
<input checked="" type="checkbox"/> CAT I	- APPROVED	
<input type="checkbox"/> CAT II	- APPROVED WITH COMMENTS AS NOTED	
<input type="checkbox"/> CAT III	- NOT APPROVED	
<input type="checkbox"/> CAT IV	- REFERENCE DRAWING	
BHEL-FEM	APPROVED BY	
DEPARTMENT	MPL	
NAME	SIGNATURE	DATE
Deepak		16.10.2024

Digitally signed by Deepak Date: 2024.10.16 09:25:51+05'30'

Circuit Diagram Number	Issue No
<b>700B0000</b>	<b>5</b>