


764957/2022/HEP-HPERO 	HYPERO PROJECTS ENGINEERING DIVISION TITLE : SPECIFICATION OF GUIDEVANE POSITION FEEDBACK DEVICE	SPECIFICATION NO. 241516461	REV 00 Page 1 of 4
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1. PROJECT: ARUN-III HEP (4 x 225 MW – V. FRANCIS)

2. DESCRIPTION :

The Guide vane (GV) position feedback device is linear position feedback device of Magnetostrictive type of sensor (MLDT) with profile housing design, which measures the position of sliding magnet and provides the 4-20 mA DC output for SCADA system. The sliding magnet is connected with the moving part of the gate servomotor. The sliding magnet moves freely on the profile of the sensor.

3. APPLICATION:

This specification covers detail of Magnetostrictive type linear position feedback device for measuring the stroke of the gate servomotor (hydraulic cylinder). The sensor design shall be of profile housing type.

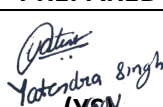
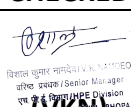
The profile housing sensor shall be fixed on the upper side of the body of gate servomotor (hydraulic cylinder) and the sliding magnet is connected with the moving part of the gate servomotor. The sliding magnet moves freely on the profile of the sensor.


4. SCOPE OF SUPPLY:

Sl. No.	Item Description	Active electric stroke	Quantity
1.	Guide vane (Linear) position feedback device for gate servomotor	300 mm	12 Sets

4.1 One set of Guide vane (Linear) position feedback device consist of the following:


- One No. profile housing type sensor
- One No. Cable with connector
- One No. sliding magnet
- Two nos. mounting clamps along with screws

REV.NO.		DISTRIBUTION	QTY.	APPROVED:			
PREPARED		HPE	01	(MS)			
CHECKED				PREPARED	CHECKED	ISSUED	DATE
APPROVED		MHX	01	 Yashendra Singh HPE (MS) BHEL Bhopal	 VKN Senior Manager HEP Division BHEL Bhopal		25.03.22
DATE						(AP)	

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5. TECHNICAL SPECIFICATION:
LINEAR POSITION FEEDBACK DEVICE:

- | | |
|---------------------------------------|---|
| a) Type | - Magnetostrictive type |
| b) Sensor type | - Profile housing type sensor |
| c) Measured variable | - Gate servomotor (servo cylinder) position feedback |
| d) Measuring Stroke Length | - As per table in clause 4 i.e. scope of supply
(Active electrical stroke) |
| e) Input Voltage | - 24 V DC, Reverse polarity protection |
| f) Output Signal | - Current, 4 - 20 mA (Suitable for load up to 500 Ω) |
| g) Output connection | - Connector type with Cable (PTFE / PUR),
Cable Length = 10 Meter single |
| h) Linearity | - ≤ 0.05 % of FS |
| i) Resolution | - ≤ 0.05 % of FS |
| j) Repeatability | - ≤ 0.05 % of full stroke |
| k) Resolution | - 16 bit |
| l) Operating Temperature Range | - - 10° to +70° C |
| m) Electronic head | - Aluminum housing with <u>optional diagnostic LED</u> |
| n) Profile housing material | - Aluminum |
| o) Sensor mounting | - Mounting clamps (two nos.) along with nonmagnetic screws should be supplied along with the assembly. |
| p) Protection class | - IP65 or better |
| q) Wiring | - Furnish the wiring diagram with color code along with dimensional drawing / catalog, along with the offer. |
| r) Magnet / Encoder | - Sliding magnet / captive encoder housed in metallic material, moves above and along the profile rail / channel of the sensor. |
| s) Magnet head | - The sliding magnet should have spherical ball bearing type head joints with jointing stud (male / female thread) for connecting it with the moving part of gate servomotor. |

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6. DOCUMENTS TO BE FURNISHED:

Along with the offer:

- (a) Catalogues giving all the technical particulars with model code.
- (b) List of deviations, if any. Otherwise, it shall be understood that the vendor is meeting all the requirements specified by us.

Vendor to note that if above documents are not furnished along with the offer; the offer shall be liable for outright rejection.

After placement of order:

- (a) Supplier has to submit the drawing / catalog/datasheet showing over all dimensions, mounting details, wiring schematic and constructional details of Linear position feedback device for our approval within 3 week after placement of P.O.
- (b) Supplier has to submit QAP of Guide vane (Linear) position feedback device for our approval.

At the time of supply:

- (a) 2 copies of test certificates / Calibration certificate and guarantee certificates to BHEL items. 1 copy of the above documents shall be put inside the case/ package.
- (b) Shipping / packing lists of the linear position feedback device.
- (c) O & M Manual containing the following (To be sent in soft copy also).
 - Operating principle
 - Mounting details
 - Calibration & adjustment procedure
 - Trouble shooting

7. TEST CERTIFICATES:

- (a) Calibration certificates issued by an ISO 17025 accredited certified Lab / Test certificate from the manufacturer for each linear position feedback device are required.

8. GUARANTEE:

The item must be guaranteed for trouble free operation, good workmanship for a period of 18 months from the date of dispatch.

9. PACKAGING:

**TITLE : SPECIFICATION OF GUIDEVANE
POSITION FEEDBACK DEVICE**

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Each Guide vane (Linear) position feedback device shall be packed in individual carton with silica gel, adequate cushioning material and waterproof cover to avoid the movement of the internals and ensure that the instrument is capable of withstanding the transit conditions without damages.

Item shall be identified with following information.

- i) Manufacturer's Name
- ii) Manufacturer's Model No. & Serial No.
- iii) Input voltage
- iv) Output signal
- v) Input/output connection
- vi) Stroke length in mm

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BHARAT HEAVY ELECTRICALS LIMITED – BHOPAL

QUALITY ASSURANCE PLAN

SHEET: 1 OF 1

PROJECT: ARUN-III HEP

EQUIPMENT: GUIDE VANE POSITION FEEDBACK DEVICE

SAMPLE QA PLAN NO: **241516461-QAP**

DATE: 25.03.2022

SL NO	COMPONENT/ASSY/ OPERATION	CHARACTERISTICS	QUANTUM	REF. DOC. /ACCEPANCE NORMS	RECORD FORMAT	AGENCY		REMARKS
						OEM	BHEL	
1	GUIDE VANE POSITION FEEDBACK DEVICE	CALIBRATION CERTIFICATE / TEST CERTIFICATE	100%	Drg / Spec.	TC	P	V	TC
CUSTOMER			BHEL					

Note : Packing of the each item should be as per clause no. 9 (Packaging) of our specification.