

	HYDRO PROJECTS ENGINEERING DIVISION	SPECIFICATION NO.	REV 00
	TITLE : 2-PATH CLAMP-ON TYPE ULTRASONIC FLOW METERS FOR OVER VELOCITY INDICATION	241591968	Page 1 of 3

PROJECT: KAMENG HEP, ARUNACHAL PRADESH

1. SCOPE:

SL NO.	ITEM DESCRIPTION	QUANTITY
1.	SUPPLY OF 2-PATH CLAMP-ON TYPE ULTRASONIC FLOW MEASUREMENT SYSTEM FOR OVER VELOCITY INDICATION IN BF VALVE HOUSE OF KAMENG HEP	2 SETS
2.	INSTALLATION & COMMISSIONING OF 2-PATH CLAMP-ON TYPE ULTRASONIC FLOW MEASUREMENT SYSTEM (IN TWO UNITS) FOR OVER VELOCITY INDICATION IN BF VALVE HOUSE OF KAMENG HEP	1 SET

2 APPLICATION:

The 2-path Clamp on Type Ultrasonic Flow Measurement System shall be used for Over Velocity indication in Kameng HEP. The instruments shall be permanently installed in 2 Penstocks shown in the enclosed drawing (Annexure A). In one Penstock, the sensors shall be installed in the straight length available before the BFV while in the second Penstock, instruments shall be installed in the straight length available after the BFV. These Flow meters shall give the value of Velocity and Discharge of Water flowing in the Penstock.

3. SCOPE OF SUPPLY:

- a. Two Sets of 2- Path Clamp-on Ultrasonic Flow Measurement System, Each Set Comprising of The Following:
 - i. Clamp-on type Ultrasonic Sensors-4 Nos
 - ii. Flow Meter Electronics / Controller- 1 No.
 - iii. Coaxial Cable connecting Sensors and Electronics (not less than 50 Meters Long) - 4 Nos.
 - iv. All the necessary hardware like cable connectors, conduits, clamps, Junction Boxes and other accessories etc required for connection of cables to Flow Controller.

REV.NO		DISTRIBUTION.	QTY.	APPROVED:			
PREPARED							
CHECKED		HPE	01	PREPARED	CHECKED	ISSUED	DATE
APPROVED		MM(H)	04				

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- b. Complete Installation and Commissioning of Clamp-on Sensors in 2 Penstocks near BF Valve House at Kameng HEP- 1 Set
- c. Common Items for 2 Units:
 - a. Special Tools & Tackles (if applicable), Glue, Couplant etc. required for Installation & Commissioning if any
 - b. Technical Interface Manual for O&M.
 - c. Software CD

4. TECHNICAL DESCRIPTION / REQUIREMENTS :

1. The Diameter of each Penstock where sensors are to be installed is 3750 mm. The thickness of each Penstock is 40 mm.
2. The accuracy of the Flow and Discharge given by the system shall be $\pm 2\%$ when the sensors are installed near BFV at the location as per enclosed drawing.
3. The sensors shall be capable of measuring the Flow and Discharge passing through Penstock in high silt content.
4. The Flow Meter shall be calibrated for measuring the Velocity for the range 0 -15 m/sec.
5. The Flow Meter Electronics should be weatherproof and shall have Protection Class of IP65 or better.
6. The Flow Meter shall give an Analog Output of 4-20 mA.
7. The Flow Meter shall have provision of RS 232 or RS 485 interface.
8. The Flow Meter shall work on 230 V AC.
9. The Flow Meter shall have LCD Display for displaying Flow velocity, Volumetric Flow and Totalized Flow.
10. M/s Accusonic make Insertion Type Ultrasonic Sensors have already been installed in one of the two Penstocks. Vendor shall ensure that sufficient length is available for installing the Clamp-on sensors in that Penstock and there should be no interference of signals.
11. The Flow Meter Electronics shall have the provision of Diagnostic cum calibration buttons (Push type / Optical keys / Magnetic keys) to change the configuration at site.

5. INSTALLATION & COMMISSIONING AT KAMENG HEP, ARUNACHAL PRADESH

Complete installation and commissioning of 2- Path Clamp on Type Ultrasonic Flow Measurement System in both the Penstocks shall be in vendor scope. The vendor shall offer lump sum installation & commissioning charges for both the units. Offers containing charges on man-day basis, per visit basis etc shall not be accepted. Vendor should cover all the charges of manpower, T&P, lodging & boarding, travel etc in the offer. Vendor shall be given advance intimation of 2 weeks for deputation of installation and commissioning engineer to site.

All the material, labor, T&P and consumables required for installation and commissioning shall be in vendor scope.

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During the installation of the sensors, vendor should take care of the already existing Insertion Type Ultrasonic Sensors (M/s Accusonic make) that has been installed in one of the Penstocks. The sensors in that Penstock shall be installed suitably so as to avoid any interference of Ultrasonic signals.

6. DOCUMENTS REQUIRED WITH THE OFFER

The vendor shall submit complete Technical Details/catalogues/write-up of the model offered complying to the specification. Detailed arrangement drawing for installation of sensors shall be required with the offer for our review. The relevant electrical wiring diagrams shall also be included with the offer.

7. TEST CERTIFICATES

After placement of order, vendor shall submit all the test certificates, inspection reports and calibration reports of the sensors and Flow Meters for BHEL review and dispatch clearance.

8. GUARANTEE

Instrument shall bear suppliers warranty for trouble free operation and good workmanship for a period of 24 Months from the date of dispatch or 12 months from the date of commissioning. Supplier should undertake to replace free of charge any material / components found defective in operation during warranty period.

9. PACKING AND O&M MANUALS

Instruments shall be packed in with silica gel packet and placed in a cartoon, or case adequate cushioning material, and water proof cover in minimize the movement of internals and ensure that the instrument is capable of withstanding the transit condition without damage.

The vendor shall provide 4 CD (soft copy of O&M Manuals) and 6 sets of Hard Copies of the Operational / O&M Manuals with the instruments.

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