

**DELHI JAL BOARD: GOVT OF NCT OF DELHI  
OFFICE OF THE MEMBER(WS)  
VARUNALAYA PH-II, KAROL BAGH, NEW DELHI**

No.F/5/DJB/Member(WS)/2014/ 2487

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**CIRCULAR**

**Sub: Specifications for Bulk Flow & Pressure measuring system for Water Auditing**

The Bulk Flow Meters are being used in DJB for measuring flow in transmission mains and distribution mains. The flow data is accessed remotely through a unit called RTU attached with the flow meters. These meters are installed at different field locations along the pipe lines. Considering constraints and limitations of providing electric connections at the field locations, it has been considered to use battery operated bulk flow meters for this purpose. Further, measurement of water pressure along with flow is also considered as the pressure and flow data can effectively be used for modeling the pipe network and assessment of water loss, bursts etc. Accordingly, the specifications of battery operated bulk flow meters and pressure sensors are attached herewith. All concerned are directed to use these specifications for procurement of bulk flow meters & pressure sensors to be installed for carrying out water audit of transmission mains of various WTPs.

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**(R.S. Tyagi)**  
**Member(WS)**

**All Chief Engineers/ DOR**

Copy to:

1. CEO
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5. All EEs/ All ZROs/ Consultant(PR)
6. EE(EDP) - with a request to upload on DJB's website
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*[Signature]*  
7/1/15  
**Member(WS)**



*AET*

*Programmer I*

*[Signature]*

**SPECIFICATIONS**

**1.1 Bulk Flow measuring systems for Water Auditing**

**1.1.1 Introduction**

The flow measurement system for bulk flow measurement shall be electromagnetic type meters with GPRS. Each water meter intended is for a potable water supply. It shall comprise two principal components, as follows:

- A flow sensor of the electromagnetic type, which shall be suitable for installation in a buried water main. The sensor shall be connected to the main by means of PN 16 flanged connections. The meter shall be suitable for installation in a flooded chamber and for being directly buried.
- An electronic display unit. This shall be installed in an above ground cabinet enclosure in a convenient location as close as possible to the water meter..

The water meter shall be powered by batteries which shall be integral to the electronic display unit. The batteries shall be capable of being replaced by the Employer's staff at site and capable of providing uninterrupted power supply at the specified voltage for not less than 3 years duration without battery replacement. The Contractor shall replace at no cost any batteries that fail or require routine replacement throughout the contract period.

On a minimum, water meter shall be provided with the following facilities at the electronic display unit:

- Integral real-time clock for date and time recording of flow data.
- Integral data logger for storing data for a minimum of 31 days.
- Serial or suitable communication port to enable data to be passed from the display unit to display flow and pressure details.
- A second serial or suitable communication port for the temporary connection of a laptop computer.
- Input /output block for connecting GPRS transmitter for the transfer of all display/error codes and status functions from the electronic display unit to the DJB central Monitoring system, to be executed by the contractor.

PSION and Laptop, leads and appropriate software and software licences shall be provided to facilitate configuration of the water meters and for down-loading the integral data logger for data analysis.

**1.1.2 General Specifications**

- a) Full bore electromagnetic flow meter shall consist of flow sensor (i.e. flow tube), flow transmitter and flow indicator and integrator and any other item required to complete the system. To avoid the effects of disturbances in the velocity profile, a straight and uninterrupted run, upstream as well as downstream from the location of the flow meter shall be provided, s required by the flow meter manufacturer and in line with the applicable



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standards. Contractor shall finalize the exact location of flow meter in consultation with Engineer.

- b) Flow measurement shall not be affected by physical properties of water viz., temperature, pressure etc., within given limits. Contractor shall provide compensating electronic circuits, if required.
- c) A lockable enclosure shall be provided for the flow transmitter cum computing unit.
- d) Flow meters shall be suitable for the water turbidity at site during various seasons. Flow tube shall be rugged in construction and shall be suitable for continuous operation. Flow tube shall have waterproof construction and shall be suitable for installation on underground / above ground pipe lines.
- e) The flow computer and transmitter shall be a single unit suitable for field mounting. It shall accept inputs from flow tube process the signals and shall provide an output proportional to the flow rate. The output shall be 4-20 MA.

a) General:		
1.	Accuracy of flow measurement during FAT	± 0.4% of measured value
2.	Overall accuracy of flow measurement loop.	± 1.0% of measured value
b)		
(i)	Application	: Water applications
(ii)	Type	: In line fill bore electromagnetic
(iii)	Size of flow tube	: To suit mains flow parameters, with pipe reducers provided as necessary
(iv)	Process connection	: Flanged
(v)	Weather Protection Class	: IP 68 as per IS 13947
(vi)	Material of Construction :	
	Electrodes	: Hastelloy C276/SS
	Coil Housing	: Non corrosive
	Flanges	: Carbon steel
	Grounding ring	: Hastelloy C276/SS
(vii)	Flow tube Lining	: EPDM
c) Flow Transmitter Unit		
(i)	Type	: Microprocessor based with facility to configure the ranges
(ii)	Type of display	: 4 digit backlit LCD/LCD for flow rate in m <sup>3</sup> /hr 8 digit backlit LCD/LCD for totalized flow in ML • Display with 8 digits for main information. Index, menu and status symbols for dedicated information • Key for toggling through the information and reset customer totalizer and call-up function • Selectable default information and accessible menus: - Operator - Meter - Service - Data Logger

