

Purpose

The current meter will be used for flowing water velocity and thus discharge measurements in rivers and canals. It may be used in wading or suspended mode.

Conditions & Requirements

- The current meter shall be of such a design that it operates reliably and accurately under the prevailing flow and environmental conditions.
- The current meter shall be easy to operate and maintain.
- The current meter shall be supplied with the accessories as needed for effective deployment.
- All materials of the current meter shall be non-corrosive.
- An operator's manual, related to the type and model of the current meter, shall be part of the delivery.
- The current meter shall come with the calibration data, i.e. actual calibration velocity versus actual revolutions per second as collected during the calibration process. Calibration data should uniquely identify the instrument body, the rotor, observer, rating tank, way of suspension, methodology and similar information.
- The current meter shall come with a rating table and a rating chart in m/s versus revolutions per second.
- The current meter shall have a provision to adjust its trimming.
- The design shall be sediment resistant and have an air-filled bearing chamber.
- The bearings should be field adjustable.
- The current meter shall come without a protection ring/yoke in front of the rotor. Such a yoke would make the current meter sensitive to its alignment into the flow, which should be avoided.
- The bearing chamber shall be as slim as possible to avoid excessive drag.
- The electrical connections shall not protrude into the current, but backwards instead.
- The electrical connections shall be of a reliable and sturdy construction.
- The current meter and accessories shall be supplied in a sturdy carrying case.
- An appropriate tool-set shall be included in the delivery.
- The current meter shall generally comply with IS 3910-1992
- For suspended operation, adequate fish weight shall be attached below the current meter.
- The fish weight shall have a streamlined form and shall be suspended from a bar of adequate strength
- The current meter shall have a facility to balance it into a horizontal attitude while submersed.
- Horizontal and vertical tail fins at the rear end shall align the fish weight in the direction of flow.
- Except for the suspension bar, no elements shall protrude from the body.
- The fish weight shall generally comply with IS 4073-1967 and ISO 3454-1983.

Specifications

1. Sensor

model	6 cup wheel
contact	every one revolution
range	0.05 to 3.5 m/s (starting up to maximum operational velocity)
accuracy	for velocities up to 0.3 m/s 1 % Full Scale

contact chamber for velocities >0.3 m/s 0.5 % FS
magnetic or optic fibre

2. Suspension

Wading

wading rod total length 3 m, graduation in cm
electrical cable running from current meter to counter, 10 m

From a cable

suspension cable electrical cable integrated in suspension cable
electrical cable from winch to counter, 7 m

cable torque torque free suspension cable

The suspension cable should not exert any torque that may adversely affect the alignment of the flow sensor into the direction of flow. In particular in case a heavy suspension weight is used, there is a risk of cable induced torque.

suspension-rod for cable suspended measurements with light weight sinkers
tail fin length >0.25 m beyond the attach point of the suspension

The tail fin shall be capable of aligning the current meter in the direction of flow and keep it stable in that position throughout the full velocity range.

3. Fish weight

model USGS Columbus or similar

material cast iron or lead

finish smooth, painted surface

mass 25, 50 and 100 kg as required for depth and current velocity

If the instrument is used from a cable way then an integrated bottom detector is required

suspension bar fitting current meter and cable terminal

Accessories

- standard instrument tools
- spare bearings
- carrying case for current meter with counter
- carrying case for fish weight(s)

Approval Date: 20 May 1998**Version: 1****Purpose**

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