
**Hydrometry — Acoustic Doppler
profiler — Method and application for
measurement of flow in open channels**

*Hydrométrie — Profils Doppler acoustiques — Méthode et application
pour le mesurage du débit en conduites ouvertes*



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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

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Hydrometry — Acoustic Doppler profiler — Method and application for measurement of flow in open channels

1 Scope

This Technical Report deals with the use of boat-mounted acoustic Doppler current profilers (ADCPs) for determining flow in open channels without ice cover. It describes a number of methods of deploying ADCPs to determine flow. Although, in some cases, these measurements are intended to determine the stage-discharge relationship of a gauging station, this Technical Report deals only with single determination of discharge.

The term ADCP has been adopted as a generic term for a technology that is manufactured by various companies worldwide. They are also called acoustic Doppler velocity profilers (ADVPs) or acoustic Doppler profilers (ADPs). ADCPs can be used to measure a variety of parameters, such as current or stream flow, water velocity fields, channel bathymetry and estimation of sediment concentration from acoustic backscatter. This Technical Report is generic in form and contains no operational details specific to particular ADCP makes and models. Accordingly, to use this document effectively, it is essential that users are familiar with the terminology and functions of their own ADCP equipment.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 772, *Hydrometry — Vocabulary and symbols*

3 Terms and definitions

For the purpose of this document, the terms and definitions given in ISO 772 and the following apply

3.1

ADCP depth

transducer depth

depth of the ADCP transducers below the water surface during deployment measured from the centre point of the transducer to the water surface

NOTE The ADCP depth may be measured either manually or by using an automatic pressure transducer.

3.2

bin

depth cell

truncated cone-shaped volume of water at a known distance and orientation from the transducers

NOTE The ADCP determines an estimated velocity for each cell using a weighted averaging scheme, which takes account of the water not only in the bin itself but also in the two adjacent bins.

3.3

blank

blanking distance

distance travelled by the signal when the vibration of the transducer during transmission prevents the transducer from receiving echoes or return signals

NOTE 1 This is the distance immediately below the ADCP transducers in which no measurement is taken.