TECHNICAL SPECIFICATION

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Hydrometry — Measuring river velocity and discharge with acoustic Doppler profilers

Hydrométrie — Mesure de la vitesse et du débit des rivières au moyen de profileurs à effet Doppler

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Foreword

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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 other circumstances, particularly when there is an urgent market requirement for such documents, a technical committee may decide to publish other types of normative document:

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An ISO/PAS or ISO/TS is reviewed after three years in order to decide whether it will be confirmed for a further three years, revised to become an International Standard, or withdrawn. If the ISO/PAS or ISO/TS is confirmed, it is reviewed again after a further three years, at which time it must either be transformed into an International Standard or be withdrawn.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO/TS 24154 was prepared by Technical Committee ISO/TC 113, *Hydrometry*, Subcommittee SC 5, *Instruments, equipment and data management*.

Hydrometry — Measuring river velocity and discharge with acoustic Doppler profilers

1 Scope

Acoustic Doppler profilers are instruments and software packages used to measure water velocity, channel bathymetry, and river discharge. This Technical Specification gives the principles of operation, construction, maintenance and application of acoustic Doppler profilers to the measurement of velocity and discharge, and discusses calibration and verification issues. It is applicable to open-channel flow measurements with an instrument mounted on a moving vessel.

It is not applicable to measurement of liquid flow in small channels or partly-filled pipes using a single Doppler-based flowmeter at a fixed point in the cross section.

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, *Hydrometric determinations — Vocabulary and symbols*

3 Terms and definitions

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

3.1
Doppler shift
⟨general⟩ change in frequency of a sound source as it approaches and recedes from an observer

3.2
Doppler shift
⟨acoustic Doppler instruments⟩ difference or shift in frequency of emitted sound waves as they are reflected back from moving particles in the water

3.3
Doppler-based flowmeter
class of instruments that uses the principle of Doppler shift to compute water velocity and discharge

NOTE These instruments can be deployed at a fixed point in a cross section or on a moving vessel.

3.4
acoustic Doppler profiler
ADP
instrument that uses the principle of Doppler shift to compute water velocity and discharge

NOTE The instrument is usually mounted on a vessel that transits across a river channel perpendicular to flow.