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Measurement of water flow in open channels

Part 5.3: Guidelines for the application of acoustic velocity meters using the Doppler and echo correlation methods (ISO 15769:2010, IDT)



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Preface

This Standard was prepared by the Standards Australia Committee CE-024, Measurement of water flow in open channels and closed conduits, to supersede AS 3778.5.3—2007, *Measurement of water flow in open channels, Part 5.3: Liquid flow in open channels and partly filled pipes—Guidelines for the application of Doppler-based flow measurements*.

The objective of this document is to provide guidelines on the principles of operation and the selection and use of Doppler-based and echo correlation velocity meters for continuous-flow gauging.

This document is applicable to channel flow determination in open channels and partially filled pipes using one or more meters located at fixed points in the cross-section.

This document is identical with, and has been reproduced from, ISO 15769:2010, *Hydrology — Guidelines for the application of acoustic velocity meters using the Doppler and echo correlation methods*.

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Contents

Preface	ii
Foreword	v
1 Scope	1
2 Normative references	1
3 Terms, definitions and abbreviated terms	1
3.1 Terms and definitions	1
3.2 Abbreviated terms	3
4 Principles of operation of the techniques	3
4.1 Ultrasonic Doppler	3
4.2 Operating techniques	5
4.2.1 Introduction	5
4.2.2 Continuous wave Dopplers	5
4.2.3 Pulse incoherent	5
4.2.4 Pulse-to-pulse coherent	5
4.2.5 Spread spectrum (broad band)	6
4.2.6 Range gating	6
4.3 Bed-mounted Doppler systems	6
4.4 Side-looking/horizontal ADCPs	6
4.5 Acoustic (echo) correlation method	8
4.6 Velocity-index ratings	11
5 Factors affecting operation and accuracy	12
5.1 General	12
5.2 Characteristics of the instrument	12
5.2.1 Introduction	12
5.2.2 Ultrasonic beam angle (continuous wave Dopplers)	12
5.2.3 Beam “width”	14
5.2.4 Ultrasonic frequency	14
5.2.5 Method of determining velocity of sound	14
5.2.6 Signal processing	15
5.2.7 Instrument position and portion of the cross-section sampled	15
5.3 Channel and water characteristics	16
5.3.1 Channel geometry	16
5.3.2 Depth	18
5.3.3 Reflector density and efficiency	18
5.3.4 Homogeneity	18
5.3.5 Velocity of sound	19
5.3.6 Bed-mounted devices: siltation, sensor position	19
5.3.7 Significance of water level uncertainty	21
5.4 Effect of weed	21
6 Site selection	21
6.1 General	21
6.2 General site requirements for Dopplers and echo correlation devices	21
6.3 Bed-mounted ultrasonic Doppler and echo correlation devices	22
6.4 Side-lookers	23
7 Measurements	23
7.1 Velocity	23
7.1.1 Ultrasonic Dopplers (bed mounted)	23
7.1.2 Ultrasonic Dopplers (H-ADCPs/side-lookers)	23
7.1.3 Echo correlation	23
7.2 Water level	24
7.3 Determination of cross-sectional area	24

8	Installation, operation and maintenance	25
8.1	Installation considerations.....	25
8.1.1	General.....	25
8.1.2	Bed-mounted instruments.....	25
8.1.3	H-ADCPs/side-lookers.....	26
8.2	General maintenance considerations.....	26
9	Calibration, evaluation and verification	27
9.1	General.....	27
9.2	Calibration and performance checking.....	28
9.2.1	General.....	28
9.2.2	Indexing method.....	28
9.2.3	Performance checking.....	28
10	Determination of discharge	28
10.1	General.....	28
10.2	Velocity-index ratings.....	29
10.2.1	General.....	29
10.2.2	Determination of mean velocity from calibration data.....	30
10.2.3	Distribution of velocity in open channels.....	31
10.2.4	Forms of velocity-index ratings.....	31
11	Uncertainties in discharge determinations	33
11.1	General.....	33
11.2	Definition of uncertainty.....	33
11.3	General expectations of performance.....	34
11.4	Methodology of estimating the uncertainty in discharge determination.....	35
11.4.1	Sources of uncertainty.....	35
11.4.2	Determination of the uncertainty in the velocity index rating.....	36
11.4.3	Uncertainty in the stage.....	36
11.4.4	Overall uncertainty.....	37
11.4.5	Uncertainty — Example of uncertainty estimation.....	37
11.4.5.1	Introduction.....	37
11.4.5.2	Uncertainty in the measured velocity u_{VI}	38
11.4.5.3	Uncertainty in velocity index rating u_{VR}	38
11.4.5.4	Uncertainty in the stage measurement u_h	38
11.4.5.5	Uncertainty in the cross-sectional area u_{Ar}	39
11.4.5.6	Uncertainty budget.....	39
11.4.5.7	Overall uncertainty U_Q	39
12	Points to consider when selecting equipment	39
Annex A	(informative) Selection considerations for ultrasonic Doppler and echo correlation devices	41
Annex B	(informative) Practical considerations	43
Annex C	(informative) Introduction to measurement uncertainty	47
Annex D	(informative) Performance guide for hydrometric equipment for use in technical standards	55
Annex E	(informative) Sample questionnaire — Doppler- and echo-correlation-based flowmeters	57
Bibliography	62

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

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.

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 15769 was prepared by Technical Committee ISO/TC 113, *Hydrometry*, Subcommittee SC 1, *Velocity area methods*.

This first edition of ISO 15769 cancels and replaces ISO/TS 15769:2000, which has been technically revised.

NOTES

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1 Scope

This International Standard provides guidelines on the principles of operation and the selection and use of Doppler-based and echo correlation velocity meters for continuous-flow gauging.

This International Standard is applicable to channel flow determination in open channels and partially filled pipes using one or more meters located at fixed points in the cross-section.

NOTE A limitation of the techniques is that measurement is made of the velocity of particles, other reflectors or disturbances.

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 applies.

ISO/TS 25377:2007, *Hydrometric uncertainty guidance (HUG)*

ISO 772, *Hydrometry — Vocabulary and symbols*

3 Terms, definitions and abbreviated terms

3.1 Terms and definitions

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

3.1.1

beam angle

mounting angle of the acoustic transducer relative to the normalized profiling direction

Note 1 to entry: Different beam angles will be suitable for different applications.

3.1.2

beam width

width of the acoustic signal transmitted, in degrees ($^{\circ}$), from the centre of the transducer

Note 1 to entry: This, coupled with the side lobe of the acoustic signal, will affect the suitability of a particular instrument for its application, based on the mounting location and the distance of the water volume measured from the sensor.

3.1.3

bed-mounted device

upward-looking Doppler or echo correlation device that measures velocities within a beam looking upwards at an angle through the water column