AS 3778.6.4:2022
ISO 4366:2007

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Measurement of water flow in open channels

Part 6.4: Measuring devices, instruments and equipment — Echo sounders for water depth measurements (ISO 4366:2007, IDT)

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Australian Bureau of Meteorology
Australian Hydrographers Association
Australian Industry Group
Department of Planning, Industry and Environment, NSW
Engineers Australia
Institute of Instrumentation, Control & Automation Australia
Irrigation Australia
Joint Accreditation System of Australia & New Zealand
National Measurement Institute
Water NSW

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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 3778.6.4—1992, *Measurement of water flow in open channels, Part 6.4: Measuring devices, instruments and equipment — Echo sounders for water depth measurements*.

The objective of this document is to provide information concerning the principles of operation, selection and performance criteria for echo sounders used in depth measurements for open-channel flow (and related) measurements. The use of standard terminology is promoted.

This document is identical with, and has been reproduced from, ISO 4366:2007, *Hydrometry — Echo sounders for water depth measurements*.

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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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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 4366 was prepared by Technical Committee ISO/TC 113, *Hydrometry*, Subcommittee SC 5, *Instruments, equipment and data management*.

This second edition cancels and replaces the first edition (ISO 4366:1979), which has been technically revised.

Australian Standard®

Measurement of water flow in open channels

Part 6.4: Measuring devices, instruments and equipment — Echo sounders for water depth measurements (ISO 4366:2007, IDT)

1 Scope

This International Standard provides information concerning the principles of operation, selection and performance criteria for echo sounders used in depth measurements for open-channel flow (and related) measurements. The use of standard terminology is promoted.

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*

ISO 6420, *Liquid flow measurement in open channels — Position fixing equipment for hydrometric boats*

3 Terms and definitions

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

3.1
tracking window
vertical distance of limited size that follows and automatically centres itself on the depth indicated by the last received echo

Note 1 to entry: If the next echo falls within the window, the signal is accepted as correct; if it does not, the signal is rejected. The purpose of a tracking window is to screen out erroneous readings caused by reflecting materials in the water (fish, debris, etc.).

4 Units of measure

The units of measurement used in this International Standard are SI units and decibels.

5 Principles of operation

5.1 General

The state-of-the-art of echo sounders is well advanced, and sounders have been put into widespread use for many different applications. Consequently, a variety of specialized echo sounders have evolved to best meet the specific requirements of the application. A digital echo sounder with an integrated analog chart generated by a thermal or inkjet print head is the most common echo sounder used for open-channel applications. Multiple-transducer systems are in common use by many professional surveyors and the use of single-transducer, multibeam-swath systems is expanding rapidly.

5.2 Theory of operation

The echo sounder is an electroacoustic instrument that determines the depth of water by measuring the time required for a burst of acoustic energy to travel from a transducer to the streambed and reflect