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**Input/output protocols and electronic  
interfaces for water meters —  
Requirements**

*Protocoles d'entrée/sortie et interfaces électroniques pour compteurs  
d'eau — Exigences*



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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.

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 22158 was prepared by Technical Committee ISO/TC 30, *Measurement of fluid flow in closed conduits*, Subcommittee SC 7, *Volume methods including water meters*.

## Introduction

The need to be able to communicate with metered systems has become apparent. This International Standard seeks to address the issues associated with water meters, but can be used in conjunction with other metered systems such as gas and electricity supply that utilize common interfaces and protocols.

During recent years, an increasing number of electronic devices have been introduced into water meters, e.g.:

- pulse output systems;
- absolute encoded systems;
- bidirectional addressable bus systems.

Currently, there is no clear definition of either hardware interfaces or the protocols of such systems and this International Standard attempts to solve the problems arising from this.

Existing technology for water meter communications can be split into three distinct groups, which are defined as follows:

- pulse output water meters — referred to in this International Standard as type A;
- non-addressable water meters — referred to in this International Standard as type B;
- addressable water meters — referred to in this International Standard as type C.

This International Standard describes the general requirements of the protocols and electronic interfaces for water meters. It is intended to provide the necessary guidance for designers of meter registers and reading equipment.

The provisions have been determined by analysing applications currently in use and by consultation within the water industry. However, the list of applications is not exhaustive.



# Input/output protocols and electronic interfaces for water meters — Requirements

## 1 Scope

This International Standard specifies the minimum communication requirements for water meters which have the capability to exchange or provide data by means of an electronic interface.

This International Standard only specifies the interface conditions present at the electrical and electronic connections of water meters and does not prescribe any specific equipment such as transponders and inductive pads, which might be connected to the water meter for automatic meter reading or remote meter reading purposes.

## 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 1155, *Information processing — Use of longitudinal parity to detect errors in information messages*

IEC 60870-5-1, *Telecontrol equipment and systems — Part 5: Transmission protocols — Section One: Transmission frame formats*

IEC 60870-5-2, *Telecontrol equipment and systems — Part 5: Transmission protocols — Section 2: Link transmission procedures*

IEC 60947-5-6, *Low-voltage switchgear and controlgear — Part 5-6: Control circuit devices and switching elements — DC interface for proximity sensors and switching amplifiers (NAMUR)*

EN 13757 (all parts), *Communication systems for meters and remote reading of meters*

JIS X 5001:1982, *Character structure on the transmission circuits and horizontal parity method*

NABS<sup>1)</sup>, *Communication system by addressable 8-bit electronic water meters — Specifications, ver. 1.0, 2008. Available [2011-04-27] from: <http://www.keikoren.or.jp/eng/pub.html>*

M-bus<sup>2)</sup>, *The M-bus: A documentation Rev. 4.8, 1997. Available [2011-04-27] at <http://www.m-bus.com>*

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1) Published by the Japan Water Meter Manufacturers' Association.

2) Published by the M-bus User Group.