SLOVENSKI STANDARD
SIST EN 14154-4:2023

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Vodomeri - 4. del: Dodatne funkcije

Water meters - Part 4: Additional functionalities

Wasserzähler - Teil 4: Zusätzliche Funktionalitäten

Compteurs d'eau - Partie 4 : Fonctionnalités additionnelles

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ICS:

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SIST EN 14154-4:2023 **en,fr,de**

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Wasserzähler - Teil 4: Zusätzliche Funktionalitäten

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European foreword

This document (EN 14154-4:2023) has been prepared by Technical Committee CEN/TC 92 “Water meters”, the secretariat of which is held by SNV.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2023, and conflicting national standards shall be withdrawn at the latest by September 2023.

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

This document supersedes EN 14154-4:2014.

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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Introduction

This document has been developed as part of the work being undertaken by the European Standards Organizations (CEN/CENELEC/ETSI) under the Commission Mandate M/441. This document utilizes the six functionalities agreed by the Smart Meters Coordination Group (SM-CG) (see Annex B) as the basis for its additional functionalities. It is not required for the Additional Functionality Device (AFD) to incorporate all functions described in this document.

Communications for water meters are outside the scope of this document and are covered by the appropriate parts of the EN 13757 series, which provides a number of protocols and transport layers for meter communications for Gas, Water and Thermal Energy meters. The additional functionality for water meters can be provided by a number of methods; these are illustrated below, see Figure 1 (4.1), and described in detail within this document. The AFD can be integrated in the meter, attached to the meter or remote from the meter.

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1 Scope

This document specifies definitions, requirements and testing of additional functionalities for water meters, without metrological impact, in combination with Additional Functionality Devices (AFD) and in response to EU/EFTA Mandate M/441 EN. These AFDs are considered as “ancillary devices” as defined in EN ISO 4064-1:2017 and EN ISO 4064-4:2014.

This document does not cover the changing of metrological software within the meter or the upload/download of metrological software.

NOTE A manufacturer can claim compliance only for additional functionalities described in this document. It is not mandatory that an AFD complies with all additional functionalities described herein.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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.

EN ISO 4064-1:2017, *Water meters for cold potable water and hot water - Part 1: Metrological and technical requirements (ISO 4064-1:2014)*

EN ISO 4064-2:2017, *Water meters for cold potable water and hot water - Part 2: Test methods (ISO 4064-2:2014)*

EN ISO 4064-4:2014, *Water meters for cold potable water and hot water - Part 4: Non-metrological requirements not covered in ISO 4064-1 (ISO 4064-4:2014)*

EN ISO 4064-5:2017, *Water meters for cold potable water and hot water - Part 5: Installation requirements (ISO 4064-5:2014)*

EN 60529:1991, *Degrees of protection provided by enclosures (IP Code)*

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3 Terms and definitions

For the purposes of this document, the terms, definitions and symbols given in EN ISO 4064-1:2017, EN ISO 4064-2:2017, EN ISO 4064-4:2014 and EN ISO 4064-5:2017 and the following apply.

NOTE The following terms and definitions are only related to additional functionalities.

3.1
functionality
process which constantly or at specified intervals, automatically or on demand, performs specific activities such as sampling data, reading a data set, verifying or changing a status, or activating a switch

3.2
additional functionality
functionality that a smart meter provides, over and above the metrological functionality covered by the Measuring Instruments Directive

3.3
additional functionality device
device providing any additional functionality

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3.4
additional functionality device type 1
AFD1
additional functionality device integrated into the meter

3.5
additional functionality device type 2
AFD2
additional functionality device directly attached to the meter

3.6
additional functionality device type 3
AFD3
additional functionality device remotely connected to the meter

3.7
automatic meter reading
technology for obtaining metering data from an on-site meter by communication from a remote access point

3.8
universal time coordinated
UTC
world time, without daylight savings

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3.9
reading
primary indication of the total volume passed through the meter

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3.10
metrological software
software identified during the type testing examination, which is part of the meter and is critical to its metrological characteristics

3.11
register
indication of the specific section in the memory of the control and metering unit that records data as determined by the programme in the unit

3.12
event
condition requiring action or to log an action

3.13
event log
temporary or mid-term memorized listing of events, containing their occurrence, actions taken and their reset

3.14
interface
point or means of interaction between two systems

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4 General requirements

4.1 Types of additional functionality devices and requirements

The additional functionality shall be provided by one of the following devices:

— AFD1; where all functions are within the same metrological enclosure as the meter;

— AFD2; where the AFD is attached directly to the meter. The manufacturer shall declare the appropriate device compatibility;

— AFD3; where the AFD is located remotely and connected to the meter via a pulse interface or communication interface. The manufacturer shall declare the appropriate device compatibility.

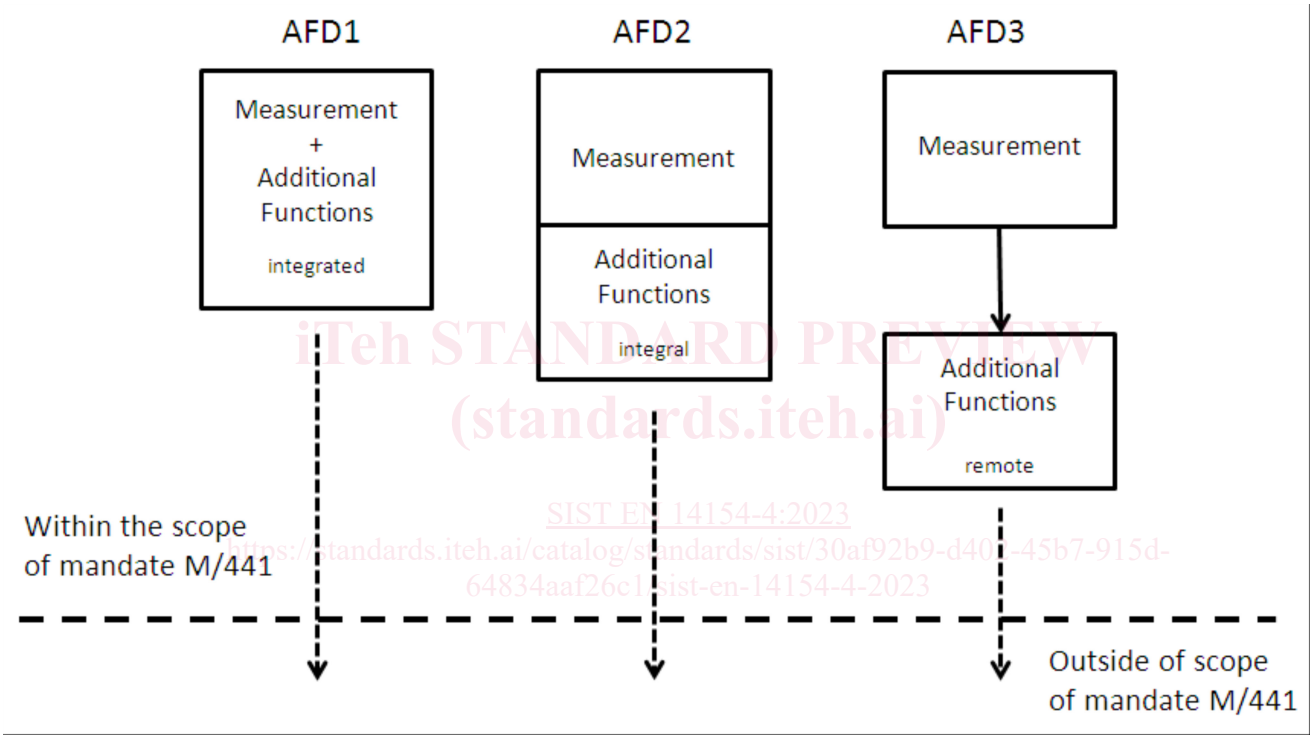

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Figure 1 — Additional functionality devices

4.2 Connection requirements

The AFD2 and AFD3 shall be connected to the meter and tested as a combined unit in all the tests given in 4.11.2 to ensure the connection of the AFD to the meter has no metrological influence.

The connection of the AFD to the meter or any labelling on the meter or the AFD shall not obscure or damage any metrological seal of the meter or the regulatory marking.

When the AFD is connected, the consumer shall be able to read the primary indication on the meter to units of at least cubic meters without the use of tools.

4.3 Environmental conditions

The AFD shall work with the meter at all operating conditions of the meter as required by the appropriate standards.

Any AFD should be suitable to meet one of the environmental classes from EN ISO 4064-1:2017, A.2 and A.3 and the related tests. An AFD3 may have a different environmental class to that of the meter.

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4.4 Security

4.4.1 General

The AFD shall be constructed in such a way that any unauthorized intervention shall either cause permanently visible damage to the AFD or its protective seals, or creates a report in the event log. Any physical seals shall be visibly fixed, and easily accessible.

4.4.2 Software, data and hardware security

4.4.2.1 Requirement

When tested in accordance with 4.4.2.2 the requirements below shall be met.

All available connections, ports and interfaces of the AFD which can be used for unauthorized adjustment of the AFDs characteristics and additional functionality shall be effectively secured by protective seals.

No access shall be allowed to software and firmware by unauthorised persons. Software and data shall be protected against accidental or intentional changes by the breaking of a physical seal or by using an electronic seal.

For electronic seals the following requirements shall be met:

a) access shall only be obtained by using a password or a code;

b) unauthorized intervention shall be registered in the event log and the type of intervention identified, and where available date and time to be included.

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In the case of intended consumer access to the AFD, it shall be ensured that the access by the consumer cannot inadvertently drain the battery capacity, where applicable.

4.4.2.2 Test

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Compliance with the above requirements shall be checked by visual inspection and evaluation of the manufacturer's technical documentation.

4.4.3 Firmware upgrade of AFD

This part of the document covers non-metrological upgrades only, providing there is clear separation between the metrological and non-metrological functions.

Following any upgrade, the information/functionality of the AFD shall be as declared by the manufacturer. Any data still present shall be the same as prior to the upgrade.

NOTE Further guidance is available in WELMEC Guide 7.2.

4.4.4 Software identification

The software (including version) shall have an unambiguous identifier that is retrievable.

4.5 Power supply

The power supply of the AFD shall comply with EN ISO 4064-1:2017, EN ISO 4064-4:2014 and shall be tested accordingly.

For battery powered AFD, the manufacturer shall specify the minimum operational lifetime of the battery depending on the stated functionality and operation (e.g. transmission intervals of radio communication device).