Irish Standard
I.S. EN 14154-4:2014

Water meters - Part 4: Additional functionalities

I.S. EN 14154-4:2014

Incorporating amendments/corrigenda/National Annexes issued since publication:

The National Standards Authority of Ireland (NSAI) produces the following categories of formal documents:

I.S. xxx: Irish Standard — national specification based on the consensus of an expert panel and subject to public consultation.

S.R. xxx: Standard Recommendation — recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

This document replaces/revises/consolidates the NSAI adoption of the document(s) indicated on the CEN/CENELEC cover/Foreword and the following National document(s):

NOTE: The date of any NSAI previous adoption may not match the date of its original CEN/CENELEC document.

This document is based on:	*Published:*
EN 14154-4:2014	2014-11-12

This document was published under the authority of the NSAI and comes into effect on:	ICS number:
2014-12-01	91.140.60
	NOTE: If blank see CEN/CENELEC cover page

NSAI	T +353 1 807 3800	Sales:
1 Swift Square,	F +353 1 807 3838	T +353 1 857 6730
Northwood, Santry	E standards@nsai.ie	F +353 1 857 6729
Dublin 9	W NSAI.ie	W standards.ie

Údarás um Chaighdeáin Náisiúnta na hÉireann

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 14154-4

November 2014

ICS 91.140.60

English Version

Water meters - Part 4: Additional functionalities

Compteurs d'eau - Partie 4: Fonctionnalités additionnelles

Wasserzähler - Teil 4: Zusätzliche Funktionalitäten

This European Standard was approved by CEN on 6 September 2014.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. EN 14154-4:2014 E

Contents

Page

Foreword 4
Introduction 5
1 Scope 6
2 Normative references 6
3 Terms and definitions 6
4 General requirements 7
4.1 Types of additional functionality devices and requirements 7
4.2 Connection requirements 8
4.3 Environmental conditions 8
4.4 Security 9
4.4.1 General 9
4.4.2 Software, data and hardware security 9
4.4.3 Firmware upgrade of AFD 9
4.4.4 Software identification 9
4.5 Power supply 9
4.6 Data storage 10
4.7 Clock requirements 10
4.7.1 General 10
4.7.2 Clock synchronisation 10
4.7.3 Clock setting 10
4.8 Marking 10
4.8.1 Requirements 10
4.8.2 Test 11
4.9 Documentation 11
4.9.1 General 11
4.9.2 Declaration of conformity 11
4.9.3 Instruction manual 11
4.10 Display 12
4.10.1 General 12
4.10.2 Requirements 12
4.10.3 Test 12
4.11 Metrological influence 12
4.11.1 Requirement 12
4.11.2 Test 12
4.12 Input to AFD / Output from AFD 13
4.12.1 General 13
4.12.2 Requirement 13
4.12.3 Test 13
5 Additional functionalities 13
5.1 General 13
5.2 Use cases 13
5.2.1 Scheduled read 13
5.2.2 Pre-programmed reading date 14
5.2.3 On demand read 14
5.2.4 History of consumption 14
5.2.5 Background leak 14
5.2.6 Burst 15
5.2.7 Reverse flow 15

5.2.8 Zero flow 16
5.2.9 Tamper of AFD 16
5.2.10 Tamper of meter 16
5.2.11 Battery low 16
5.2.12 Presence of air 17
5.2.13 Access profiles 17
6 Environmental considerations 17
Annex A (normative) Declaration of conformity to EN 14154-4 18
Annex B (informative) Smart Metering, overview, core functionalities and definitions 19
B.1 General 19
B.2 M2M Gateway 19
B.3 Clusters 20
B.4 Primary Use Cases 20
B.5 Secondary Use Cases 20
B.6 Primary Actors 20
B.7 Actors 20
B.8 Use Cases 20
Annex C (informative) References to EN 14154-1, EN 14154-2 and EN 14154-3 and EN ISO 4064-1, EN ISO 4064-2, EN ISO 4064-3, EN ISO 4064-4, EN ISO 4064-5 21
Bibliography 23

Foreword

This document (EN 14154-4:2014) 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 May 2015, and conflicting national standards shall be withdrawn at the latest by May 2015.

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

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

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This European Standard has been defined as part of the work being undertaken by the European Standards Organizations (CEN/CENELEC/ETSI) under the Commission Mandate M/441. This standard 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 defined in this standard.

Communications for water meters are outside the scope of this standard and are covered by the appropriate parts of EN 13757-1, EN 13757-2, EN 13757-3, EN 13757-4, EN 13757-5 and EN 13757-6 which provide a number of protocols and transport layers for meter communications for Gas, Water and Heat meters. The additional functionality for water meters can be provided by a number of methods; these are illustrated below, see Figure 1, and described in detail within this standard. The AFD can be integrated in the meter, attached to the meter or remote from the meter.

1 Scope

This European Standard 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 to be considered as “ancillary devices" as defined in EN ISO 4064-1 and EN ISO 4064-4.

This European Standard 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 European Standard. It is not mandatory that an AFD complies with all additional functionalities described herein.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 14154-1, *Water meters – Part 1: General requirements*

EN 14154-2, *Water meters – Part 2: Installation and conditions of use*

EN 14154-3, *Water meters – Part 3: Test methods and equipment*

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

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

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

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

EN 60529:1991, *Degrees of protection provided by enclosures (IP Code) (IEC 60529:1989)*

3 Terms and definitions

The terms, definitions and symbols of EN ISO 4064-1, EN ISO 4064-2, EN ISO 4064-4 and EN ISO 4064-5, EN 14154-1, EN 14154-2 and EN 14154-3 apply.

NOTE Additionally for the purposes of this part of the European Standard, the following terms and definitions only related to additional functionalities apply.

3.1
functionality
process which constantly or at defined 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