

## Water meters - Part 4: Additional functionalities

This document is a preview generated by EVS

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

See Eesti standard EVS-EN 14154-4:2014 sisaldab Euroopa standardi EN 14154-4:2014 ingliskeelset teksti.	This Estonian standard EVS-EN 14154-4:2014 consists of the English text of the European standard EN 14154-4:2014.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 12.11.2014.	Date of Availability of the European standard is 12.11.2014.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile [standardiosakond@evs.ee](mailto:standardiosakond@evs.ee).

ICS 91.140.60

### **Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele**

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:  
Aru 10, 10317 Tallinn, Eesti; [www.evs.ee](http://www.evs.ee); telefon 605 5050; e-post [info@evs.ee](mailto:info@evs.ee)

### **The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation**

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:  
Aru 10, 10317 Tallinn, Estonia; [www.evs.ee](http://www.evs.ee); phone 605 5050; e-mail [info@evs.ee](mailto:info@evs.ee)

ICS 91.140.60

English Version

## Water meters - Part 4: Additional functionalities

Compteurs d'eau - Partie 4: Fonctionnalités additionnelles

Wassermähler - 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**

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

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