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Date	Description of modification	Revision number
01/05/2016	Initial version	1.1
10/03/2017	Addition of air/air product Editorial changes Clarifications of tolerances Tolerance on Prated (heating and cooling) has been deleted Annex E has been deleted	2
12/09/2017	Ownership of HP-KEYMARK Editorial changes Add reference to guideline in the introduction Reference to annex D1 is withdrawn	3
07/03/2018	Addition of "one off admission testing approach" Addition that only latest version of standard applies	4
13/09/2018	Addition of space cooling certification for water based heat pumps Clarification of certificate content Update of EN12102 standard Addition of non heated space air heat source for domestic hot water heat pumps Addition to reference to annex K	5

## Foreword

This KEYMARK Scheme for heat pumps is prepared by the European Scheme Group for Heat Pumps (SG-HP) under coordination of the European Heat Pump Association (EHPA) and is finally approved by DIN CERTCO on behalf of CEN.

## Revision of KEYMARK Heat Pump certification documents

Documents will be revised by issue of revised editions or amendments. Details will be posted on the website at [www.heatpumpkeymark.com](http://www.heatpumpkeymark.com).


Technical or other changes which affect the requirements for the approval or certification of the product or service will result in a new issue. Minor or administrative changes (e.g. corrections of spelling and typographical errors, changes to address and copyright details, the addition of notes for clarification etc.) may be made as amendments.

The issue number will be given in decimal format with the integer part giving the issue number and the fractional part giving the number of amendments (e.g. Issue 3.2 indicates that the document is at Issue 3 with 2 amendments).

Users of this document should ensure that they possess the latest issue and all amendments.


## Start of validity

This certification scheme comes into effect on 2016-05-01.

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## 1 Introduction

This Scheme document identifies the certification requirements and practices for the purposes of KEYMARK certification and listing of heat pumps for space heating and or cooling and/or domestic hot water production. Certification and listing of products is based on evidence acceptable to the certification body:

- that the product tested meets the requirements of this scheme document; and,
- that the product manufacturer has staff, processes and systems in place to ensure that the KEYMARK certified products meet and will continue to meet the requirements of this scheme document.

And on:

- regular audits of the product manufacturer including audit testing of products as appropriate; and,
- compliance with the contract with the Certification Body for the certification and listing of products, including agreement to rectify faults as appropriate.

A guideline is available which includes definitions and general guidance.

## 2 Ownership

The KEYMARK certification scheme for heat pumps is owned by

### **CEN-CENELEC Management Centre**

Avenue Marnix 17 - B-1000 Brussels

Tel: +32 5 550 08 11 - Fax: +32 2 777 70 79

Email: [legal@cenelec.eu](mailto:legal@cenelec.eu)


The most recent contact information can be found at [www.heatpumpkeymark.com](http://www.heatpumpkeymark.com)

Documents, Website and database are property of the scheme and thus owned by CEN.

## 3 Scope, testing and certification basis

The scope of this KEYMARK scheme is currently limited to heat pumps included in COMMISSION REGULATION (EU) No 813/2013 or 814/2013 of 2 August 2013, or COMMISSION REGULATION (EU) No 206/2012 of 6 March 2012, where industry recognised European products and testing standards are available. This includes:

- Heat pump space heaters providing heat to water-based central heating systems for space heating purposes, with heating capacities up to 400 kW
- Heat pump combination heaters providing heat to water-based central heating systems for space heating purposes and heat to deliver domestic hot water, with heating capacities up to 400 kW

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- Heat pump water heaters, which are dedicated to providing domestic hot water, with heating capacities up to 400 kW
- Air/air heat pumps up to 12 kW cooling capacity (or heating capacity for air/air heating only products), except single duct and double duct units.


This KEYMARK scheme provides on-going independent assessment and approval of companies who wish to demonstrate that their heat pump(s) meets and continues to meet the requirements of COMMISSION REGULATION (EU) No 813/2013 or 814/2013 of 2 August 2013 or COMMISSION REGULATION (EU) No206/2012 of 6 March 2012 including testing which is compliant with the appropriate European standard:

- EN 14511 Parts 1 – 4 “Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling”; or
  - EN 12309 parts 1 - 7 “Gas-fired absorption and adsorption air-conditioning and/or heat pump appliances with a net heat input not exceeding 70 kW”; or
  - EN 16147 “Heat pumps with electrically driven compressors. Testing and requirements for marking of domestic hot water units.”
  - EN 14825 “Air conditioners, liquid chilling packages and heat pumps, with electrically driven compressors, for space heating and cooling. Testing and rating at part load conditions and calculation of seasonal performance.”
- EN 12102-1 “Air conditioners, liquid chilling packages, heat pumps, process chillers and dehumidifiers with electrically driven compressors – Determination of the sound power level – Part 1: Air conditioners, liquid chilling packages, heat pumps for space heating and cooling, dehumidifiers and process chillers
- EN 15879-1 “Testing and rating of direct exchange ground coupled heat pumps with electrically driven compressors for space heating and/or cooling. Part 1: direct exchange to water heat pumps.”
  - Relevant annexes of this Scheme Document
  - The performance and testing criteria detailed in section 7
  - CEN/CENELEC Internal Regulations, Part 4 “Certification”

Only valid standard versions apply. Provisions are made in annex A to handle standard revisions.

#### **4 Application to join the scheme**

Applications shall be made to an empowered certification body operating this KEYMARK scheme, which will provide the appropriate application form and details of the applicable fees.

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## 5 Management systems certification

Manufacturers shall operate a documented and product related Factory Production Control (FPC) in compliance with the requirements of the Heat Pump KEYMARK Factory Inspection Requirements (see Annex B).

## 6 Certification and approval

Certification and approval is based on demonstration of satisfactory compliance with the appropriate standards and the requirements of this scheme document, taking into account any limitations imposed by the standard(s), scheme document(s) and other appropriate guidelines, and satisfactory verification/assessment of the applicant's manufacturing processes (Factory Inspection) and technical documentation.

There are two alternatives to apply to the HP-KEYMARK from which any applicant shall choose from. The first certification approach consists of a random test at admission of one or several heat pumps and periodic surveillance test whereas the other approach is based on testing every product at admission and does not include any periodic surveillance test but technical document control. The first certification approach is named "periodic testing approach", the second one "one off admission testing approach".

A unique approach shall be chosen for each product type. Changing of approach shall only be possible if certification process is restarted.

For both certification approaches, evidence of compliance is given by:

- a) Results from testing by a testing laboratory recognised by any of the empowered certification bodies. Requirements for testing laboratories are given in Annex H.
- b) Verification of the establishment and maintenance of the manufacturing company's quality management system in accordance with FPC requirements (see Annex B) and,
- c) Review of the technical documentation relating to the product (see section 7).

Applications for a type of common products (sub-types) will be dealt in accordance to the process defined in Annex A.


A certificate is awarded following demonstration of satisfactory compliance with the scheme requirements. A certificate is awarded for each certified sub-type. Several models can be included in the same certificate.

Certificates will be prepared according to the KEYMARK certificate template (see Annex D2)

Certificates are valid from the date of issue, and are maintained and held in force subject to satisfactory completion of the requirements for maintenance of certification (see section 9), but remain the property of the issuing certification body.

Details of the certificate holder and the certified product(s) are listed at [www.heatpumpkeymark.com](http://www.heatpumpkeymark.com).

## 7 Technical Documentation

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Technical documentation for the product must be submitted for review during technical assessment. This documentation shall be presented in English, or another language agreed by the certification body and shall be such that it can be assured that the products submitted for test are equivalent to those that are to be manufactured for normal production. The documentation must consist of the following:

- a) Details of intended use, application and classifications (if any) required
- b) The revision number of the product
- c) Key component part list document in accordance with the key components listed below. For each key component, type, reference and brand shall be provided.
- d) Test/examination reports in accordance with the relevant standards defined above.
- e) Installation, use and maintenance instructions

Key components, if present, are: compressor(s), circulating pump(s), condenser(s), evaporator(s), expansion valve(s), fan(s); motor(s), refrigerant (designation and amount shall be given), pressure switches.

## 8 Performance and Testing Criteria

This section provides performance and testing criteria for the following heat pump types:

- Electrically driven or gas absorption and adsorption heat pumps
  - Air/water
  - Water/water
  - Brine/water
  - Exhaust air/water
  - Direct expansion/water

For space heating and /or domestic hot water production with optional space cooling

- Electrically driven air-to-air heat pumps and conditioners for space heating and/or cooling


### 8.1 Product testing and performance criteria for heat pumps for space heating

For compliance with this scheme, heat pumps shall meet the minimum criteria defined in COMMISSION REGULATION (EU) No 813/2013 of 2 August 2013 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for space heaters and combination heaters. In particular, the minimum performance criteria in Annex II section 1 and the requirements for sound power level in Annex II section 3.

The certification of space heating performance ( $P_{\text{rated}}$ ,  $\eta_s$ ) and sound power level of indoor and outdoor units, when relevant) for average climate is mandatory. The certification of performance for colder and warmer climates is optional.

Evidence of testing of products shall be provided in accordance with Annex A.

The tolerances related to the space heating performance are the following:

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- $\eta_s$ : - 8 % (relative)
- Acoustic: + 2 dB(A)

Space cooling performance can be certified as an option. The certified performances are ( $P_{\text{designc}}$ , SEER) and the evidence of testing of products shall be provided in accordance with annex A.

The tolerance related to the space cooling performance is the following:

- SEER: -8% (relative)

The applicant has to declare performance data in the Heat Pump KEYMARK database.

## 8.2 Product testing and performance criteria for combination heat pumps

For compliance with this scheme, heat pumps for space heating and domestic hot water production shall meet the minimum criteria defined in COMMISSION REGULATION (EU) No 813/2013 of 2 August 2013 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for space heaters and combination heaters. In particular the minimum performance criteria in Annex II section 1 and section 2 and the requirements for sound power level in Annex II section 3.

The certification of space heating and domestic hot water production performance ( $P_{\text{rated}}$ ,  $\eta_s$ , Load profile,  $\eta_{\text{DHW}}$ , and sound power level of indoor and outdoor units in space heating mode, when relevant) for average climate is mandatory. The certification of performance for colder and warmer climates is optional.

Evidence of testing of products shall be provided in accordance with Annex A.

The tolerances related to space heating and domestic hot water performances are the following:

- $\eta_s$ : -8 % (relative)
- $\eta_{\text{DHW}}$ : - 8 % (relative)
- Acoustic: +2 dB(A)


Space cooling performance can be certified as an option. The certified performances are ( $P_{\text{designc}}$ , SEER) and the evidence of testing of products shall be provided in accordance with annex A.

The tolerance related to the space cooling performance is the following:  
SEER: -8% (relative)

The applicant has to declare performance data in the Heat Pump KEYMARK database.

## 8.3 Product testing and performance criteria for heat pumps designed for domestic hot water production

For compliance with this scheme, heat pumps designed for domestic hot water production shall meet the minimum criteria defined in COMMISSION REGULATION (EU) No 814/2013 of 2 August 2013 implementing Directive 2009/125/EC of the European Parliament and of

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the Council with regard to ecodesign requirements for water heaters and water storage tanks.

The certification of performance (Load profile,  $\eta_{DHW}$ , mixed water volume at 40 °C and sound power level of indoor and outdoor units, when relevant) for average climate is mandatory. The certification of performance for colder and warmer climates is optional. Certification of products using non-heated space air as a heat source may be conducted as an option. Certification under this heat source shall be conducted in addition to the certification using a heat source defined in regulation 814/2013.

Evidence of testing of products shall be provided in accordance with Annex A.

The tolerances are the following:

- $\eta_{DHW}$ : -8 % (relative)
- Mixed water volume at 40 °C: 3 % (relative)
- Acoustic: +2 dB(A)

The applicant has to declare performance data in the Heat Pump KEYMARK database.

#### **8.4 Product testing and performance criteria for air/air heat pumps and air conditioning units**

For compliance with this scheme, heat pumps shall meet the minimum criteria defined in COMMISSION REGULATION (EU) No206/2012 of 6 March 2012 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for air conditioning units up to 12 kW.

In particular, the minimum performance criteria and the requirements for sound power level in Annex I.

The certification of performance ( $P_{rated}$ , SCOP/SEER) and sound power level of indoor and outdoor units, for average climate (when relevant) is mandatory. The certification of performance in heating mode for colder and warmer climates is optional.

Evidence of testing of products shall be provided in accordance with Annex A.

The tolerances are the following:


- SCOP/SEER: -8 % (relative)
- Acoustic: +2 dB(A)

The applicant has to declare performance data in the Heat Pump KEYMARK database.

### **9 Maintenance of certification and listing**

Certificates and listed products are maintained and held in force subject to satisfactory completion of the following requirements for maintenance of certification:



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### 9.1 Factory inspection

Certification is maintained through regular factory inspection of the manufacturer's FPC conducted according to Annex B, which shall include a detailed check that the product(s) being manufactured is to the same specification as the product(s) tested.

### 9.2 Periodical surveillance test

Periodical surveillance tests will be conducted according to Annex A.

### 9.3 Fees

By applying for the licence to use the Heat Pump KEYMARK, the manufacturer also agrees to meet:

1. the KEYMARK license fees specified in the CEN/CENELEC Internal Regulations, Part 4 "Certification"
2. the fees for the Administration of the HP KEYMARK as specified in Annex J.
3. the fees for the Scheme Group for Heat Pumps (SG-HP) specified in Annex J.

The fees under point 2 and 3 are set and revised by the SG-HP.

## 10 Certification mark and labelling

All approved products listed under this scheme shall be marked with a label to confirm that the product has been tested and certificated in accordance with the requirements of this scheme document. See below for details and CEN/CENELEC Internal Regulations Part 4, section 4.4 and its Annex A.

The manufacturer shall use the KEYMARK only in accordance with the certification body's instructions and the KEYMARK scheme.

An example of a certification mark that can be used for this scheme is as follows:



Format of registration No.


**xxx-000**

Where 'xxx' is the identification code of the involved certification body and "000" is the specific certificate number.

The certificate is valid for 10 years from date of issue.

Companies need to maintain certification by continuously fulfilling the requirements of the scheme. The use of the certificate can be discontinued according to the contractual relation with the certification body.

After 10 years, a new application for certification is required.

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## 11 KEYMARK certificates and sub-licenses for other brands, product names, and sellers

The rules for issuing certificates and sub-licenses within the KEYMARK certification for heat pumps are defined in Annex G.

## 12 Alteration of KEYMARK certified heat pumps

If certificate holders want to change a KEYMARK certified product, they have to inform the respective certification body in advance by using the template of Annex F.

## 13 Handling complaints on bodies engaged in testing and inspection

In order to:

- have a harmonised procedure for handling complaints,
- solve complaints in an appropriate time and way,
- maintain the high reputation of Heat Pump KEYMARK,
- ensure a fair competition between the testing laboratories, inspectors, and certification bodies.


the following procedure for complaints is applied:

- The complainant will inform the respective certification body (CB) in writing.
- The CB will forward the complaint to the relevant test laboratory / inspector and ask for clarification and appropriate corrective actions within a defined due time.
- The clarification and corrective action will be sent to the CB for assessment.
- The CB will assess this report and decide if a special audit at the respective party or a witness audit for the inspector is required. Especially with respect to testing laboratories, the CB should involve one of the other recognised and well experienced testing laboratories for technical support during the special audit.
- If the CB decides by itself or with recommendation of SG-HP certification working group that a special audit is required, the party has to pay for the audit as defined in the agreement between certification body and sub-contractors.
- If the CB agrees to the provided corrective actions and the complaint is solved, the CB will inform the complainant about the result by sending back the form.

If the complainant is still not satisfied with the response he may appeal against the decision. Notice of appeal shall be filed to the SG\_HP group no later than 30 days after previous decision.

- The SG-HP certification bodies working group will prepare a summary of all complaints and send to the SG-HP for presentation at next SG-HP meeting.

*Note: This procedure how to handle complaints should be extended in the near future to other parties such as certification bodies.*

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### List of Annexes

Annex A KEYMARK Requirements

Annex B Requirements for Factory Production Control (FPC) and Inspection

Annex C Factory Production Control (FPC) – Report

Annex D2 Template KEYMARK certificate

Annex F Report of modification to products certified according to the Heat Pump KEYMARK scheme

Annex G Rules for OBL and Brands

Annex H Requirements for and recognition of testing laboratories

Annex I KEYMARK transition rules

Annex J KEYMARK Scheme Group Fees

Annex K KEYMARK Physical Inspection

Heat Pump KEYMARK – Guideline and Definitions

Heat Pump KEYMARK – Scheme Group for Heat Pumps (SG-HP) – Internal Rules