

# OPERATIONS MANUAL

## DIRECT HEATING EQUIPMENT CERTIFICATION PROGRAM

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**AHRI OM DHE– JANUARY 2018**

2111 Wilson Blvd, Suite 500  
Arlington, Virginia 22201  
(703) 524-8800

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## PREFACE

The following manual outlines the procedures and policies of the Performance Certification Program for Direct Heating Equipment (DHE) operated by the Air-Conditioning, Heating, and Refrigeration Institute (AHRI). This manual is to be used in conjunction with the General Operations Manual for AHRI Certification Programs. Where the General Operations Manual and this product-specific manual differ, this product-specific operations manual shall prevail.

The revision of this manual supersedes all previous revisions. The current edition of this manual, as well as the General Operations Manual, can be accessed through the AHRI website, [www.ahrinet.org](http://www.ahrinet.org).

The DHE Certification Program by AHRI provides for independent verification of the Direct Heating manufacturer's stated equipment performance. Safety criteria are not within the scope of this program.

Participation in the program is voluntary. Any manufacturer, regardless of AHRI membership, may obtain approval of Program Ratings and use of the AHRI DHE Certification Mark hereinafter referred to as the "Mark". The Mark is the Participant's public representation that the ratings of randomly selected units have been verified by an independent laboratory in accordance with test procedures prescribed by this operations manual. A Certification Agreement is executed between the Participant and AHRI specifying the conditions under which such Ratings and the Mark may be used. No manufacturer has the right to use Program Ratings or to state that their products have been tested in conformance with the procedures outlined in this Rating Procedure unless and until they have received written authority from AHRI to use the Marks as applied to the specific approved Program Ratings.

This Operations Manual has been prepared to assure that administration of the program is carried out in a uniform manner. It is an amplification of the Certification Agreement signed by licensees and AHRI. General information, procedural details, and copies of forms are included in this Operations Manual. Provisions of the Operations Manual may be amended as provided in the Certification Agreements.

This certification program complies with requirements of the ISO/IEC Standard 17065:2012, *General Requirements for Bodies Operating Product Certification Systems*.

### Note:

This manual supersedes the Direct Heating Equipment Operations Manual, January 2017.

# CERTIFICATION OPERATIONS MANUAL FOR

## DIRECT HEATING EQUIPMENT

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## 1. Program Overview

1.1 Applicable Rating Standard. It is mandatory for program Participants to comply with the provisions of the Department of Energy (DOE) Home Heating Equipment Test Procedures as published in the latest edition of the Code of Federal Regulations, 10 CFR Part 430. A copy of the CFR is available for download from the U.S. Government Printing Office website, GPO Access, at <https://www.gpo.gov/fdsys/>.

### 1.2 Product Definitions.

1.2.1 Direct Heating Equipment (DHE). A product which is either a gas-fired or oil-fired Direct Heating Equipment. “Vented home heating equipment” or “vented heater” means a call of home heating equipment, not including central furnaces, designed to furnish warmed air to the living space of a residence, directly from the device, without duct connections (except with boots), not to exceed 10 inches beyond the casing may be permitted: vented wall furnaces, vented floor furnace, and vented room heaters.

- Vented Wall Furnace. A self-contained vented heater complete with grilles or the equivalent, designed for incorporation in, or permanent attachment to, a wall or a residence and furnishing heated air circulated by gravity or by a fan directly into the space to be heated through openings in the casing.
- Vented Floor Furnace. A self-contained vented heater suspended from the floor of the space heated, taking air for combustion from outside the space. The Vented Floor Furnace supplies heated air, circulated by gravity or by a fan, directly into the space to be heated through openings in the casing.
- Vented Room Heater. A self-contained, free standing, non-recessed, vented heater for furnishing warmed air to the space in which it is installed. The Vented Room Heater supplies heated air, circulated by gravity or by a fan, directly into the space to be heated through openings in the casing.

1.2.1.1 Residential Gas-Fired Direct Heating Equipment. Direct Heating equipment utilizes natural gas or propane as its fuel source.

1.2.1.2 Residential Oil-Fired Direct Heating Equipment. Direct Heating equipment utilizes heating oil as its fuel source.

1.3 Program Scope. This program applies to all Production Models of Direct Heating Equipment defined in Section 1.2.

1.4 Intended Market. The Intended Market for this certification program, where the Standard applies, includes all products defined in Section 1.3 that are sold for use in the U.S. and Canada (U.S., U.S. Territories and Canada).

1.5 Basic Model Groups (BMGs). Each Participant's listing shall be grouped by BMG. A BMG is a family of models of the same type (as defined in Section 1.2.1) which have identical ratings for Input, Output Heating Capacity, and Annual Fuel Utilization Efficiency (AFUE).

1.6 Certify-All Policy. All products that fall within the program scope and the intended market shall be required to be AHRI certified.

## 2. Qualification Process

2.1 Original Equipment Manufacturer (OEM) Applicants. With the additions noted below, the OEM qualification process shall proceed according to the AHRI General Operations Manual, Section 4.

STEP 2.1.1 Certification Application Package. In addition to the Application for AHRI Certification and Annual Sales Volume Form noted in the AHRI General Operations Manual, Section 4, STEP 4.1, Applicants shall submit the following documentation to AHRI:

- Form DHE-DS1,
- One test report for each BMG supporting the claimed ratings; and
- An Applicant requesting AHRI to submit data to CEC, DOE, and FTC shall submit third-party authorization, compliance forms and other necessary information.

Electronic forms shall be obtained from AHRI.

STEP 2.1.2 Processing Application Package.

STEP 2.1.2.1 Performance Certification Agreement for Original Equipment Manufacturer (OEM Agreement). No further action required beyond that listed in Section 4, STEP 4.2 of the AHRI General Operations Manual.

STEP 2.1.2.2 Participation and Licensing Fee Invoice. Payment of the Participation and Licensing Fee is due within 30 calendar days of the invoice issue date. Testing shall not be conducted until the invoice is paid in full. No further action required beyond that listed in Section 4, STEP 4.2 of the AHRI General Operations Manual.

STEP 2.1.3 Selection and Acquisition of Test Samples.

STEP 2.1.3.1 Number of Qualification Tests. 30% of an Applicant's BMGs shall be tested, with a minimum of two (2) models. Fractional numbers shall be rounded to the nearest whole number using traditional rounding methods.

STEP 2.1.3.2 Acquisition of Qualification Test Samples/Selection Criteria. Within 30 calendar days of a request from AHRI, the Applicant shall have samples available for selection. Samples shall be acquired in accordance with Section 3 of this manual.

STEP 2.1.4 Qualification Testing. AHRI shall supply the Independent Third-party Laboratory Contracted by AHRI (Laboratory) with the Published Ratings. The Laboratory shall conduct the testing of the samples in accordance with the Standard, against the Published Ratings.

STEP 2.1.4.1 Successful Completion of All Qualification Tests. If all qualification tests pass, proceed to STEP 2.1.5.

STEP 2.1.4.2 First Sample Qualification Test Failure. Refer to Section 4, STEP 4.4.2 of the AHRI General Operations Manual for details regarding the first sample qualification failure options:

STEP 2.1.4.3 Second Sample Qualification Test Failure. Refer to Section 4, STEP 4.4.3 of the AHRI General Operations Manual for details regarding the second sample qualification failure options.

STEP 2.1.5 Welcome to the Program. No further action required beyond that listed in Section 4, STEP 4.5 of the AHRI General Operations Manual.

2.2 Private Brand Marketer (PBM) Applicants. With the additions noted below, the PBM qualification process shall proceed according to the AHRI General Operations Manual, Section 5.

PBM Applicants are not required to undergo qualification testing. PBM product certification is contingent upon the certification of the associated OEM product.

STEP 2.2.1 Certification Application Package. In addition to the Application for AHRI Certification Form noted in the AHRI General Operations Manual, Section 5, STEP 5.1, Applicants shall submit the following documentation to AHRI:

- An Applicant requesting AHRI to submit data to CEC, DOE, and FTC shall submit third-party authorization, compliance forms and other necessary information.

STEP 2.2.2 Processing Application Package.

STEP 2.2.2.1 Performance Certification Agreement for Private Brand Marketer (PBM Agreement). No further action required beyond that listed in Section 5, STEP 5.2.1 of the AHRI General Operations Manual.

STEP 2.2.2.2 OEM Agreement on Behalf of the PBM Applicant. No further action required beyond that listed in Section 5, STEP 5.2.2 of the AHRI General Operations Manual.

STEP 2.2.2.3 Licensing Fee Invoice. Payment of the Licensing Fee is due within 30 calendar days of the invoice issue date.

STEP 2.2.3 Welcome to the Program. No further action required beyond that listed in Section 5, STEP 5.3 of the AHRI General Operations Manual.

### 3. Equipment Selection and Testing

3.1 Annual Testing Requirement. 20% of a Participant's BMGs shall be tested annually, with a minimum of two (2) models. Fractional numbers shall be rounded to the nearest whole number using traditional rounding methods.

3.2 Location of Tests. Testing shall be performed at the Laboratory.

3.3 Selection of Test Samples. Selections shall be made based on data contained in the Directory. AHRI shall inform the Participant, in writing, of the sample(s) selected for test.

3.4 Methods for Acquiring Test Samples. The Laboratory personnel shall make a Random Sample Selection of a sample from the Participant's stock inventory, or production lines within 30 calendar days of a selection by AHRI. Selected samples shall be shipped to the Laboratory accompanied by the Participant's published installation instructions in printed or electronic format. Refer to Section 9 of the AHRI General Operations Manual.

3.5 Sample Acquisition Timeframe. The Participant shall deliver the selected sample(s) to the Laboratory within 14 calendar days of the Random Sample Selection by the Laboratory personnel.

3.6 Sample Installation and Start-Up. Installation and start-up of the sample shall be in accordance with the Participant's published installation instructions in printed or electronic format.

3.7 Damaged Samples. Samples received at the Laboratory which are damaged, produce more than 400 parts per million (ppm) air free CO (sample taken at steady state following the procedure described in ANSI Z21.86) at normal input, or otherwise cannot be tested, shall be deemed a Damaged Sample.

3.7.1 Disposition of Damaged Samples. All Damaged Samples shall be returned, with all costs associated with the Damaged Sample borne by the Participant. Time limitation on the acquisition of a new sample shall be the same as Section 3.4.

3.8 Certified Data. At conditions specified in the DOE vented home heater test procedures as published in the latest edition of 10 CFR Part 430, the following certified ratings are verified, by test:

- Annual Fuel Utilization Efficiency, %
- Output Heating Capacity, Btu/h

3.9 Tolerances. The Standard Rating shall be such that any Direct Heating Equipment selected and tested in accordance with the Standard has an AFUE and an Output Heating Capacity not less than 95% of the Standard Ratings.

3.10 Test Failures.

3.10.1 Options Following First Sample Failure. When the Participant is notified of a first sample certified rating failure, it has seven (7) calendar days to select one (1) of the following options:

- Re-rate all models in the BMG proportionate to the failed test's results. The failed model shall be re-rated to the nearest 0.10% for AFUE and the nearest thousand Btu/h of the Output Heating Capacity, and no better than the test results. Other models in the BMG shall be re-rated in accordance with the percentage by which the tested unit failed.
- Test second sample of the same model (sample shall be available within 30 calendar days following notification of failure).
- Obsolete the model, which also obsoletes all models within the corresponding BMG.

3.10.2 Options Following 2<sup>nd</sup> Sample Failure. When the Participant is notified of a second sample certified rating failure, it has seven (7) calendar days to select one (1) of the following options:

- Re-rate all models in the BMG proportionate to the failed test's results. The failed model shall be re-rated to the nearest 0.10% for AFUE and the nearest thousand Btu/h of the Output Heating Capacity, and no better than the test results. Other models in the BMG shall be re-rated in accordance with the percentage by which the tested unit failed.
- Test additional units of the same model per 3.10.2.1;
- Obsolete the model, which also obsoletes all models within the corresponding BMG.

3.10.2.1 Additional Unit Testing for the Same Model. In an effort to preserve the Published Ratings for the failed model, the Participant may opt to test up to 20 additional samples of the model that failed. If possible, the samples should be selected from different production runs. The final rating shall be the average of the 1<sup>st</sup> sample, 2<sup>nd</sup> sample, and all tests requested by the Participant.

If a Participant exercises this option, testing of additional sample shall be completed within six (6) months of the second sample test.

3.11 Clarification in Running of the Test Procedure. The AHRI DHE Test Procedure Guideline shall be used to help standardize running of the DOE test procedures. Such guidelines shall not revise or modify the basic DOE test procedure, but shall seek to provide uniformity in interpretation of terms, measurements, and application of procedures.

#### 4. Challenge Tests

Refer to Section 10 of the AHRI General Operations Manual.



## 5. AHRI Directory of Certified Product Performance

All certified products shall be listed in the Directory, [www.ahridirectory.org](http://www.ahridirectory.org). Certification shall not be implied or claimed for any product not listed in the Directory. Except as noted below, the Participant shall follow the steps outlined in Section 11 of the AHRI General Operations Manual.

5.1 Publication of Ratings in Certified Directory. For each certified model, the Directory lists:

- AHRI Certified Reference Number
- Name of Manufacturer
- Model Status
- Trade/Brand Name of Model
- Model Number(s) or Designation(s)
- Fuel type (gas or oil)
- Model Number(s) or Designation(s)
- Input, MBH
- Output Heating Capacity, Btu/h
- Annual Fuel Utilization Efficiency, % (AFUE)
- Equipment Type

Additional data may be shown for products sold in areas requiring further product information or ratings.

5.2 Data Forms. Each Participant shall list its products by BMG. OEM and PBM Participants shall submit/edit product data via the Directory.

## 6. Assessment and Payment of Certification Fees

6.1 Equipment Delivery/Disposal Fees. The Participant is responsible for the delivery and expenses associated with shipping test samples to and from the Laboratory. Following the completion of the test, the Participant shall provide instruction to the Laboratory regarding the disposal/shipment of the sample(s). The Laboratory shall invoice the Participant for expenses associated with the disposal/shipment of the sample from the Laboratory's facility to a location designated by the Participant.

## 7. Issuance of Violations and/or Termination

Refer to Section 14 of the AHRI General Operations Manual.

## 8. Program Hierarchy, Complaints, and the Appeals Process

Except as noted below, the Program hierarchy, complaints and the appeals process shall proceed according to the AHRI General Operations Manual, Section 15.

8.1 Test Results' Appeals and Dispute Resolution. The test results' appeal process shall proceed according to the AHRI General Operations Manual, Section 15.

8.2 Test Procedure Revisions. The DOE Test Procedure upon which the program is based cannot be changed without proposed amendments being published in the Code of Federal Regulations by DOE and giving interested parties at least 60 days to present oral and written views. See Section 323(b)(2) of the Energy Policy and Conservation Act, 42 USC 6293(b)(2). As a possible step prior to petitioning DOE to amend its Test Procedure, the AHRI Certification Program for Direct Heating Equipment offers an opportunity to first have a proposed amendment developed by industry experts that perhaps can achieve industry consensus on needed changes and can be submitted to DOE as a Program-recommended amendment.

8.2.1 Program Steps. Requests from Program Participants for either revisions of basic test procedures being used or modifications that would affect only certain models may be sent to AHRI to be processed as follows:

- STEP 1 AHRI shall distribute request to AHRI's Direct Heating Section Compliance Committee for a recommendation of whether the request is of obvious merit and without controversy and can be sent out for review and comment. If it can be so recommended, a petition shall be forwarded to DOE immediately by AHRI as provided for below.
- STEP 2 Alternatively, the Direct Heating Section Compliance Committee can recommend that AHRI distribute the request for comment to all Participants in the AHRI Certification Program.
- STEP 3 Comments shall then be reviewed by the Direct Heating Section Compliance Committee, which, together with the party requesting the modification, shall attempt to agree whether the request has
- Adequate consensus support,
  - Inadequate consensus support, or
  - Possible consensus support if modified.
- STEP 4 The Direct Heating Section Compliance Committee shall make a recommendation on the requests as presented (or modified with the approval of the requesting party) which, together with a tabulation of responses and pertinent comments resulting from distribution of the request as noted above, shall be included in a Letter Ballot to be sent to all Program Participants for approval by 80% of the Participants.
- STEP 5 If a Federal test procedure is involved, AHRI shall petition the Federal government to revise or modify the Federal test procedure in order to reflect any revision or modification recommended by the AHRI Certification Program.

## **9. Proper Use of the AHRI Certification Mark and Claims to Certification**

Refer to Section 8.1 of the AHRI General OM and the AHRI Brand Usage Guide.

APPENDIX A: Form DHE-DS1

AHRI DIRECT HEATING CERTIFICATION PROGRAM DATA SUBMITTAL SHEET

<b>AHRI CERTIFIED</b>		<b>FORM DHE-DS1</b>
<b>NOTE - * preceding field name indicates required field</b>		Updated - 10-01-11
<b>AHRI DIRECT HEATING PROGRAM</b>		
*OEM:		
*Location:		
<b>PROGRAM &amp; PRODUCT IDENTIFIERS</b>		<b>REQUIRED SECTION (complete all)</b>
*AHRI Program:		AHRI Certification Program -DIRECT HEATING - DHT
*AHRI Type:		type of unit - Vented Wall Furnace; Vented Floor Furnace; Vented Room Heater
*Trade/Brand Name:		(refer to OM for descriptions)
<b>PRODUCT MODEL CHARACTERISTICS</b>		<b>COMPLETE ONLY THE APPROPRIATE FIELDS</b>
*DIRECT HEATING MODEL:		*INPUT RATING (Btuh):
<b>DIRECT HEATING TYPE:</b>		*ELECTRIC POWER TO BURNER, PE (Watts)
*Vented Wall Furnace:		*AUXILIARY ELECTRICAL ENERGY CONSUMPTION, Eae (kWh/yr):
*Vented Floor Furnace:		*FOSSIL FUEL ENERGY CONSUMPTION, Ef MBTUH/yr)
*Vented Room Heater:		*MANUFACTURED HOUSING: Yes or No
*ENERGY SOURCE:		
*Natural Gas:		
*Propane:		
*Oil:		
<b>PRODUCT PERFORMANCE RATINGS</b>		<b>COMPLETE ONLY THE APPROPRIATE FIELDS</b>
*AFUE:		BASIC MODEL: Yes or No
*OUTPUT HEATING CAPACITY (Btuh)		
		*Sold in California? Yes or No (see below)
<b>Additional Data to be Submitted to California</b>		<b>Additional Data to be Submitted to California</b>
*BURNER TYPE: (Induced Draft; Luminous Burner; Injection Type Burner; Power or Pressure Burner)		*OFF-CYCLE DEVICES: (Electro-Mechanical Flue Damper; Electro-Mechanical Inlet Damper; Stack Damper; None)
*CONTINUOUSLY BURNING PILOT LIGHT: True or False		*FLUE GAS: Condensing: Yes or No Non-Condensing: Yes or No
*OUTDOOR INSTALLATION: True or False		*CONTROL: Single Stage; Two-Stage Modulating; Step Modulating
*ELECTRICAL PHASE: Single or Three-Phase		
*DRAFT EQUIPMENT: (Barometric Regulator, Draft Diverter, Draft Hood; None)		
By submission of this form, I certify that the model listed above meets all of the requirements of the applicable AHRI standards.		
Signed _____	Date: _____	Title: _____