© ASHRAE. Per international copyright law, additional reproduction, distribution, or transmission in either print or digital form is not permitted without ASHRAE's prior written permission.

CONTENTS

ANSI/ASHRAE Standard 207-2025
Laboratory Method of Test of Fault Detection and Diagnosis for Air Economizers

SECTION **PAGE**

Foreword 2

1 Purpose 2

2 Scope 2

3 Definitions 2

4 Methods of Test 4

5 Application of Testing 4

6 Detailed Test Procedures 5

7 References 8

Preview

NOTE

Approved addenda, errata, or interpretations for this standard can be downloaded free of charge from the ASHRAE website at www.ashrae.org/technology.

© 2025 ASHRAE

180 Technology Parkway · Peachtree Corners, GA 30092 · www.ashrae.org · All rights reserved.

ASHRAE is a registered trademark of the American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.
ANSI is a registered trademark of the American National Standards Institute.

© ASHRAE. Per international copyright law, additional reproduction, distribution, or transmission in either print or digital form is not permitted without ASHRAE's prior written permission.

(This foreword is not part of this standard. It is merely informative and does not contain requirements necessary for conformance to the standard. It has not been processed according to the ANSI requirements for a standard and may contain material that has not been subject to public review or a consensus process. Unresolved objectors on informative material are not offered the right to appeal at ASHRAE or ANSI.)

FOREWORD

ASHRAE Standard 207 provides users and specifiers of HVAC air economizers with fault detection and diagnosis (FDD) systems with verification that the capabilities of the systems meet their specifications.

It is intended that future standards or future editions of this standard will include tests of FDD systems for additional faults and/or system types (particularly for airflow and refrigeration faults).

This standard is a physical laboratory test method to verify a specification that an FDD system will annunciate true faults and will not annunciate false faults for the air economizer system to which it is applied.

The intended users of this standard include both specifiers of HVAC FDD system performance and HVAC test laboratories on behalf of the end users of HVAC equipment. The standard takes no position on who is qualified or responsible to specify or conduct the specified testing.

It is critical to understand that this standard does not prescribe what faults should be detected by an FDD system, the performance an FDD system should have, or how an FDD system should accomplish its detections. It is the responsibility of other parties (for example, a third-party evaluating compliance with building codes, an engineer creating a design specification, an efficiency program manager, an authoring body for equipment standards, or a manufacturer) to use the language of this standard to specify the performance of the FDD system. The format and contents required for these specifications are, however, defined in this standard, and the standard specifies a method of test for determining the actual performance of the FDD system to enable comparison with and verification of the performance specification for the FDD system or requirements on it.

Note that any communications implying that an FDD system has passed tests that comply with Standard 207 shall specify which particular tests were passed. No communications shall imply that an FDD system is in compliance with Standard 207 in its entirety.

The 2025 edition of Standard 207 updates normative references. This standard was prepared under the auspices of ASHRAE. It may be used, in whole or in part, by an association or government agency with due credit to ASHRAE. Adherence is strictly on a voluntary basis and merely in the interests of obtaining uniform guidelines throughout the industry.

Preview

1. PURPOSE

The purpose of this standard is to provide methods for laboratory testing of fault detection and diagnosis (FDD) systems to determine whether they perform as specified.

2. SCOPE

This standard applies to FDD systems that are intended to detect or diagnose faults that affect the performance of air economizers of air-conditioning equipment.

This standard defines laboratory tests for faults in four categories of economizer function: sensor communication, actuator communication, damper and actuator responsiveness, and damper position.

This standard only applies to those FDD systems designed to detect or diagnose faults by evaluating instantaneous or short-term conditions and parameters.

3. DEFINITIONS

actuator: device, either electrically, pneumatically, or hydraulically operated, that acts as a motor to change the position of movable devices such as valves or dampers.

air economizer: duct-and-dampers arrangement with an automatic control system that together allow a cooling system to supply outdoor air to reduce or eliminate the need for mechanical cooling during mild or cold weather.

air-handling unit: assembly consisting of sections containing a fan or fans and other necessary equipment to perform one or more of the following functions: circulating, filtration, heating, cooling, heat recovery, humidifying, dehumidifying, and mixing of air. It is usually connected to an air distribution system.

alarm: signal, either audible or visual, or both, that alerts an operator to an off-normal condition that requires some form of corrective action.