

ASHRAE® Guideline 36 Delivered with Tracer® Controls



What is ASHRAE Guideline 36?

Guideline 36 is an ASHRAE guideline which provides High-Performance Sequences of Operation for heating, ventilating, and air-conditioning (HVAC) systems. The purpose of the guideline is to provide uniform sequences of operation for HVAC systems that are intended to maximize system energy efficiency and performance, provide control stability, and allow for real-time fault detection and diagnostics.

The current version of the guideline provides sequences specific to Multiple Zone Variable Air Volume (VAV) systems. VAV boxes and Air Handling Units (AHU) utilizing electric heat are not included in the guideline, however, many of the concepts can still be utilized on these and other systems.

Not a Standard

Guideline 36 is NOT a standard. While the guideline does provide sequences of operation, they are intended to be performance based. The intention of the sequences is to specify the functional result of the programming logic. While all sequences are described using specific programming logic as a way to clearly document the resulting functionality, implementations using alternative logic that result in the same functional performance are acceptable.

Key Sequence Items

Trim and Respond is a method for adjusting setpoints to reduce energy intensity. **Automatic fault detection and diagnostics (AFDD)** is a sophisticated system for detecting and diagnosing air handler faults. The AFDD routines for AHUs continually assess AHU performance by comparing the values of BAS inputs and outputs to a subset of potential fault conditions

Guideline 36 Promotes Clients Goals

Occupant comfort and energy savings

Guideline 36 reduces energy consumption by ensuring that proven, cost-effective strategies, including those required by ASHRAE® standards and building codes, are fully implemented.

The Guideline ensures improved indoor air quality through control sequences that are in compliance with IAQ standards and codes such as ASHRAE Standard 62.1.

Proper guideline implementation results in reduced energy consumption and reduced system downtime. Diagnostics help operators by detecting and diagnosing system faults before they cause performance problems.

Delivering Performance

There is not a certificate or compliance process in place for guideline 36. The guideline is performance based, compliance means providing the same functional result.

Create Trim/Respond - Define Trim

Name Enter Trim/Respond Name

Description

Reset Strategy

- Cooling Discharge Air Temperature Setpoint Reset
- Heating Discharge Air Temperature Setpoint Reset
- Duct Static Pressure Setpoint Reset
- Chilled Water Temperature Reset
- Chilled Water Plant Enable
- Chilled Water Pump Pressure Reset
- Hot Water Temperature Reset
- Hot Water Plant Enable
- Hot Water Pump Pressure Reset
- Custom Reset

Upon creation of a Trim and Respond application, a technician is presented with both pre-engineered selections that align with Guideline 36 rules as well as a custom option.

Trane's Approach

Trane® Tracer systems have been developed to deliver ASHRAE Guideline 36 sequences and performance. Our pre-engineered trim/respond application includes the ASHRAE GL 36 defined rules, allowing flexibility to modify or expand the rules to meet any building or system need.

Create Ruleset - Ruleset Logic

2. **Hide Rule** | Point to Point Percentage | Requests to Generate: 2 | Rule Name: Rule 2

Discharge Air Flow < 70 % of Air Flow Setpoint Active for 0 Minutes Create Condition Delete Rule

And

Point to Value

Air Flow Setpoint Active > 0.00 cfm for 0 Minutes Delete Condition

And

Point to Value

Air Valve Position Command > 95.00 % for 1 Minutes Delete Condition

3. **Hide Rule** | Point to Value Deadband | Requests to Generate: 1 | Rule Name: Rule 3

Air Valve Position Command > 95.00 % until Air Valve Position Command < 85.00 % Create Condition Delete Rule

Create Rule

Rule Summary

If Discharge Air Flow < 50% of Air Flow Setpoint Active for 0 Minutes and if Air Flow Setpoint Active > 0.0 cfm for 0 Minutes and if Air Valve Position Command > 95.0 % for 1 Minutes, generate 3 Requests.

Else If Discharge Air Flow < 70% of Air Flow Setpoint Active for 0 Minutes and if Air Flow Setpoint Active > 0.0 cfm for 0 Minutes and if Air Valve Position Command > 95.0 % for 1 Minutes, generate 2 Requests.

Else While Air Valve Position Command > 95.0 %, generate 1 Requests until the Air Valve Position Command < 85.0 %.

Trane's standard application is both flexible to meet unique project requirements and easy for a technician to implement.

Duct Static Reset

Trim/Respond

Outdoor Conditions 42.7 F — 89

Application | Status | Alarms | Data Logs | Configuration | Members | Support | Details

Status

Log Rules

Name	Value	Control Point Information
Run Mode	Auto	<ul style="list-style-type: none"> The device being controlled is HPS500 CTC. The control point is Duct Static Pressure Setpoint BAS. The current value is 0.750 (inches). The desired value is 0.500 (inches).
Operating Mode	Responding	Prevalence Action: Application attempted to respond 00:19 ago resulting in an output of 0.750 (inches).
System Requests	2.00	System-OK Status: Occupied for 3 minutes: true
Ignored Requests Threshold	2.00	<p>Tran Criteria (In order to stop (leave the setpoint), the number of requests will need to be less than or equal to the number of requests ignored (2) when the application runs in RTU).</p> <p>Response Criteria (In order to respond (take the setpoint), the number of requests will need to be greater than the number of requests ignored (2) when the application runs in RTU).</p>

Requesting Members

The plain text representation on the standard status page allows operators to determine how the system will perform under various conditions.



Trane – by Trane Technologies (NYSE: TT), a global climate innovator – creates comfortable, energy efficient indoor environments through a broad portfolio of heating, ventilating and air conditioning systems and controls, services, parts and supply. For more information, please visit trane.com or tranetechnologies.com.

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