

VRF HUMIDITY CONTROL

Hisense VRF Operation Using a Humidity Setpoint

Control Intent, Application Guidance, and Sequence of Operation

A technical overview for engineers, contractors, commissioning providers, and Hisense sales and support teams.

	PRIMARY CONTROL PRINCIPLE When automatic dehumidification is selected, indoor relative humidity becomes the control target. Room temperature may change as a result of dehumidification, but temperature is not precisely controlled in this operating mode.
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CONTROL VARIABLE	PUBLISHED RANGE	SENSOR LOCATION
Indoor relative humidity	35% to 90% RH	Indoor-unit return air
	DO NOT REPRESENT THIS AS DUAL CONTROL The cited Hisense logic does not control temperature first and then automatically change to humidity control. Automatic dehumidification must be selected; once selected, humidity is the priority and temperature is not the control target.	

Prepared from Hisense humidity-control training material and July-August 2026 technical correspondence.

This overview does not replace the current indoor-unit, controller, installation, service, or engineering documentation.

1. Functional Understanding

What changes when humidity control is selected

In normal cooling or heating operation, temperature is the primary comfort variable. In automatic dehumidification operation, the controller changes the indoor unit control target to measured indoor humidity. The indoor temperature will move as the unit removes moisture, but the sequence is not intended to hold a precise space-temperature setpoint.

Application consequence

Use humidity-setpoint operation where moisture control is the stated priority. If the project requires simultaneous tight temperature and humidity control, confirm the complete system design and sequence with Hisense engineering rather than assuming this mode provides both.

Required elements

- A compatible Hisense VRF indoor unit.
- A humidity sensor at the indoor-unit return-air location. Internal Hisense product material identifies the HCHR-S01E sensor and also identifies sensors as built-in or optional depending on product generation and indoor-unit type.
- A compatible wired controller with automatic dehumidification / humidity-control selection.
- A complete, commissioned refrigeration, airflow, filter, and condensate-drain system.

Documented compatibility references

Category	Internal training reference
Indoor units	High-static ducted 07-54, DC/AC low-height ducted, 4-way cassette, mini 4-way cassette, wall mounted, and MPAHU are listed in the humidity-control presentation.
Controllers	HYXE-S01H, HYXE-VA01A, HYXM-VG01, and HYXE-VC01 are listed in the humidity-control presentation.
Other product material	Later Hisense product presentations describe humidity control as available on ducted and cassette types and identify 35% to 90% RH control.
	Compatibility must be confirmed The internal references are not fully identical across product generations. Confirm the exact indoor-unit model, sensor, controller, firmware, and current North American instruction before specifying or commissioning the function.

2. Sequence of Operation

Definitions

Hi	Actual indoor relative humidity detected by the humidity sensor.
Hs	Relative-humidity setpoint selected at the wired controller.
IDU	Indoor unit.

Operating sequence

1	Function selection ACTION: Operator selects automatic dehumidification / humidity-control mode and enters the desired humidity setpoint, Hs. OUTCOME: Humidity becomes the control target; temperature is not the priority.
2	Humidity measurement ACTION: The return-air humidity sensor measures actual indoor humidity, Hi. OUTCOME: The controller compares Hi with Hs and the restart threshold.
3	Start / restart demand ACTION: When Hi is more than Hs + 10 percentage points, the indoor unit thermos ON for dehumidification. OUTCOME: A moisture-removal demand is established.
4	Modulate for moisture removal ACTION: The indoor fan operates at low level while the compressor is operating. The electronic expansion valve is adjusted in relation to the humidity setting. OUTCOME: Low airflow and refrigerant-flow control support dehumidification.
5	Reach humidity setpoint ACTION: When Hi reaches Hs, the unit ends the active dehumidification demand, subject to the applicable minimum compressor run time. OUTCOME: The unit thermos OFF after minimum-run logic is satisfied.

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Deadband / hold state

ACTION: When $H_s \leq H_i < H_s + 10$ percentage points, the controller maintains the current operating state.

OUTCOME: The 10-point differential prevents immediate toggling between ON and OFF.

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Recheck and repeat

ACTION: After the applicable stop period, humidity is evaluated again. If H_i exceeds $H_s + 10$ percentage points, dehumidification resumes.

OUTCOME: The cycle repeats as required by measured humidity and the operating timers.

3. Continuous and Intermittent Logic

The automatic dehumidification sequence selects continuous or intermittent refrigerant circulation using indoor-unit inlet-air temperature, not whether both temperature and humidity are satisfied.

Temperature is a mode-selection safeguard

Inlet-air temperature influences whether refrigerant circulation is continuous or intermittent, but temperature does not become the controlled comfort setpoint in automatic dehumidification mode.

Operating pattern	Temperature selection logic	Minimum compressor timing
Continuous	Selected when inlet air is $\geq 72^{\circ}\text{F}$ (22°C). During falling temperature, continuous operation remains selected through the 72°F to 64°F (22°C to 18°C) band.	Run at least 6 minutes. Stop at least 6 minutes. If H_s is reached before the minimum run time, operation continues to the minimum. If H_s is not reached at the minimum, operation continues until H_s is reached.
Intermittent	Selected when inlet air is $< 64^{\circ}\text{F}$ (18°C). During rising temperature, intermittent operation remains selected through the 64°F to 72°F (18°C to 22°C) band.	Run at least 12 minutes. Stop at least 30 minutes. If H_s is reached before the minimum run time, operation continues to the minimum. If H_s is not reached at the minimum, operation continues until H_s is reached.

Indoor fan sequence

- While the compressor operates, the indoor fan runs continuously at low-level speed.
- When the compressor stops, the cited July 2026 logic states that the fan runs intermittently: 10 minutes ON, then 13 minutes 50 seconds OFF.

Humidity switching logic

Measured condition	Commanded response
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Hi > Hs + 10 percentage points	Thermo ON / resume automatic dehumidification.
Hi < Hs	Thermo OFF after applicable minimum run logic.
Hs ≤ Hi < Hs + 10 percentage points	Maintain the current state.

Example

At a 50% RH setpoint, the documented restart threshold is above 60% RH. Between 50% and 60% RH, the current state is maintained. This example applies the documented 10-percentage-point differential; it is not an additional factory value.

4. Application and Commissioning Guidance

Pre-start verification

- Confirm approved indoor-unit and controller compatibility.
- Confirm the humidity sensor is present, correctly connected, and positioned at the return-air location specified by Hisense.
- Confirm automatic dehumidification can be selected at the controller and that the desired RH setpoint is displayed.
- Verify filters, airflow path, coil, drain pan, trap, condensate pump, and drain piping are complete and serviceable.
- Confirm the project team understands that room temperature is not precisely controlled in humidity-target operation.

Functional test outline

#	Test action	Expected observation
1	Select automatic dehumidification and set Hs.	Controller indicates humidity-control operation and the selected RH target.
2	Compare measured Hi to Hs.	If Hi is more than Hs + 10 points, the unit establishes a dehumidification demand.
3	Observe active operation.	Indoor fan operates at low level; system operates to remove moisture.
4	Observe setpoint satisfaction.	At Hs, active dehumidification ends only after the applicable minimum run logic is satisfied.
5	Observe stop period and restart.	Restart is inhibited for the applicable stop time; operation resumes if the humidity restart condition is met.
6	Inspect drainage.	Condensate drains without leakage or overflow.

Engineering cautions

- Do not describe the sequence as temperature control followed by automatic dehumidification. Hisense technical correspondence explicitly rejects that sequence.
- Do not represent the 10% value as 10% of the setpoint. The source wording and control table show a 10-percentage-point RH differential, such as Hs + 10%.
- Do not override the minimum compressor run and stop periods in a project sequence unless supported by current Hisense documentation for the exact product.
- If tight simultaneous temperature and RH control is required, evaluate the complete HVAC design, ventilation load, sensible-to-latent load relationship, and any supplemental equipment with the engineer of record and Hisense technical support.

Version-control note

An older Hisense humidity-control presentation describes a basic six-minute OFF recheck. July 2026 technical correspondence provides separate continuous and intermittent timing logic. This document uses the later correspondence for the detailed sequence; confirm that it applies to the exact model and firmware.

5. Source Basis and Document Control

Primary technical basis

- Hisense technical email thread, July 29 to August 3, 2026: automatic dehumidification control target, RH switching logic, continuous/intermittent temperature bands, compressor minimum run/stop periods, and fan sequence.
- Internal presentation “Humidity Control Function”: return-air humidity sensor, 35% to 90% control range, control table, low fan operation, EEV response, indoor-unit compatibility, and controller compatibility.
- Hisense VRF product presentation and S5 catalogue: humidity-control availability statements and optional humidity-sensor references.

	Technical status Use this document as a control narrative and training aid. It is not a substitute for a model-specific IOM, submittal, controller manual, engineering manual, or written project approval from Hisense technical support.
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Document	Hisense VRF Operation Using a Humidity Setpoint
Intended use	Engineering discussion, contractor training, sequence review, and commissioning orientation
Revision	Technical overview September 2026