

SMARTEMP HSC-VS

Helical Vari-Smart™ IAQ VAV Diffuser

smartemp.com













OVERVIEW

AIRAH 2022 Product of the Year WINNER introduces IAQ sensing and AHU optimisation to VAV ceiling swirl diffuser technology.






Features include:

- **Low Profile:** 200 mm minimum side- or top-entry plenum box height
- **Cyclone Swirl Damper:** adjustable design capacity; low pressure loss; variable geometry; full shut-off
- **Wide Pressure Range:** 10 Pa to 80 Pa operating pressure
- **Low Pressure Loss:** 10 Pa to 30 Pa typical design static pressure
- **Scalable Volume Flow:** five-fold design flow flexibility (40 L/s to 220 L/s)
- **Wide VAV Range:** pressure-independent turndown to $\leq 15\%$ across full five-fold design flow range
- **Low Flow Throw Boost:** extended coverage when turned down
- **Multi-Pattern Blow:** horizontal swirl pattern adjustment (360°; 270°, 180°, 2×90°)
- **Silent Swirl:** bio-inspired aero-acoustic noise suppression
- **Vari-Smart Controls™:**
 - **Thermal Demand VAV:** supply temperature- and static pressure-independent room temperature control
 - **Demand Controlled Ventilation:** CO₂/PIR-based
 - **Distributed Controls:** smart standalone, suitable for highly scalable networking and simple third-party BMS programming
 - **Excess Pressure Relief:** diffuser minimum airflow reset
 - **AHU Optimisation:** supply air temperature, pressure, fan speed and economiser optimal control
 - **Onboard Sensors:**
 - **Supply & room air temperature**
 - **Air pressure** (diffuser flow & AHU fan control)
 - **PIR** (occupant detection) - optional
 - **IAQ** (room CO₂+RH or VOC) - optional

PROPERTIES

-  **Location - above** Integrated flush with a closed ceiling or freely suspended. Discharge height 2.4 – 4.5 m.
-  **Mixed flow discharge** Airflow: 6 – 220 L/s (22 – 792 m³/h). Nominal diameter: DN355.
-  **Swirl induction** Suitable for draught-free comfort (ADPI ≥ 90%) from cold-air distribution systems (CADS) with low-temperature supply air ≥8°C, and for heating at ≤+10 K from 2.7 m height.
-  **Adjustable pattern** Radial swirl pattern configurable through diffuser face (4/3/2-way blow).
-  **Constant throw VAV** Variable geometry discharge provides extended coverage even when turned down to 15%.
-  **Vari-Smart (VS) VAV** Electronic VAV diffuser with inbuilt and intelligent Vari-Smart Controls™, which operates: Standalone; or BMS-networked (Modbus RS-485), providing distributed, highly scalable and intelligent diffuser-plant-integrated control.
-  **Electric adjustment** Stepper motor VAV damper adjustment.
-  **Square face shape** Lay-in tile, suitable for ceiling grids with 600 mm centres.
-  **Radial face pattern** Flush face Helical Swirl (HSC) vane pattern that matches SMARTEMP Fixed Helical Swirl and Adjustable Helical Swirl diffusers.
-  **Metal Face** Powder coated galvanised steel.
-  **Plenum** Square, R1 insulated, rigid-foam, side-entry connection box (cushion head) c/w perforated distribution plate.
-  **Integrated sensors & Vari-Smart Controls™** Terminals for 24V power supply.
Terminals suitable for optional comms (Modbus) to controller/BMS (by others).
Diffuser perforated cap, removable from room, houses controls hub with:
 - Sensors: T_{room}; T_{supply}; P_{static}
 - PC board, Bluetooth enabled
 - Stepper motor
 - Plug-in sockets suitable for: PIR; CO₂+RH or VOC

OPTIONS

-  **Mounting frame** Suitable for framing a square ceiling cut-out. Compatible with HSC-VS-S (ie square face) only.
-  **Reduced square face** Lay-in tile, suitable for ceiling grids with 500 mm centres.
-  **Circular face shape** 500 mm face diameter, suitable for vertical, round ducting or a cylindrical connection box.
-  **Plenum** Low profile (≥200 mm); acoustic lining; up to R2 insulation; top-entry or multiple side-entry spigots; metal casing; cylindrical.
-  **Optional sensors & Vari-Smart Controls™ functions**
 - Optional Integrated Sensors (plug-and-play from room):*
 - IAQ: CO₂+RH or VOC
 - Occupancy detection: PIR
 - Remote Options (wired or Bluetooth):*
 - HMI
 - Indoor air quality: CO₂+RH or VOC
 - T_{room}
 - Occupancy: PIR
 - Controls Functions:*
 - Plant (AHU/FCU) fan speed dynamic reset
 - Plant (AHU/FCU) supply temperature dynamic reset
 - Over-pressure relief
 - Supply temperature optimisation to minimise fan energy
 - Supply pressure optimisation to minimise duct pressure
 - System- and zone-level demand-controlled ventilation (DCV)
 - Extended free-cooling optimisation

For additional information, please contact info@smartemp.com

We strive to continually improve SMARTEMP products. Brochures and marketing material are subject to change without notice, and may not reflect the most recent product variants. Please contact us or consult your SMARTEMP sales representative for current specifications or more detailed information. Not all products may be available in all geographic regions.