

STREET ADDRESS:
 2 RIGEL ROAD, LANSDOWNE
 CAPE TOWN
 7808

POSTAL ADDRESS:
 P O BOX 103
 OTTERY
 7808

PHONE: 27 (21) 704 1533
 FAX: 27 (21) 704 1004
 E-MAIL: Info@rickardair.com

CO. Reg No: 1979/005026/07 VAT Reg No: 4630102087

RICKARD MLM+ Series Electronic Swirl Diffusers

This is a generic specification. Please contact your Rickard representative for any specific requirements

GENERAL

1) Product covered

Rickard MLM+ VAV (Variable Air Volume) Swirl diffusers

2) Related Standards

- a. The latest related standards apply.
- b. ASHRAE Standard 55 – Thermal Environmental Conditions for Human Occupancy
- c. ASHRAE Standard 70 – Method of Testing the Performance of Air Outlets and Air Inlets

3) Support

Rickard believes part of its success lies in the way we support our customers.

We understand that our diffusers forms part of a bigger system that needs to work seamlessly with ours.

If you have a product specific query, or general system query, please do not hesitate to contact our experienced Sales or Engineering staff.

4) Quality

- a. Rickard specialize in the manufacturing of VAV diffusers with 47+ years' experience.
- b. 100% testing of product produced by Rickard before shipping
- c. Baked on Powder Coating finish
 - i. Multi -Stage Chemical Treatment process. Mainly consisting of Degreasing, De-oxidizing, Phosphate Coating with clean water rinse in between.
 - ii. Controlled powder Coating Curing Process. Controlled Thermal Curing Cycle. A controlled cycle time at correct curing temperatures prevents thermal yellowing / discolouring
 - iii. Impact Resistance Testing (test for cracking or chipping) for quality control
- d. Rickard warranty covers electronic diffusers to be free from defects in material or workmanship for a period of 24 months from date of shipment.
- e. Full terms and conditions available on request

RICKARD MLM+ PRODUCT SPECIFICATION

1) General overview

- a. Applies to MLM+ series of round and square ceiling mounted, swirl, style diffusers.
- b. Flow pattern 360 degree horizontal.
- c. Pressed steel Tile (back pan) with pressed steel Swirl face plate
- d. Diffusers are fitted with stepper motor driven pressed steel perforated control disc to vary air volume supply at a set neck pressure.
- e. Tile, Swirl plate and Control disc designed to provide superior relationship between Aesthetics, Swirl pattern, and NC values.

DIRECTORS

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B. Rickard	C. Bosch	G. Paris	R. Smith	T. Khambule	M. Rickard	N. Ebrahim

2) Configuration Options

- a. Diffusers are available in the following neck sizes (mm):
 - i. VSW: 150, 200, 250, 300 (Round Swirl pattern pressed into Square face plate fitted to Medium Cone Tile)
 - ii. VRW: 150, 200, 250, 300 (Round Swirl pattern pressed into Round face plate fitted to Medium Cone Tile)
- b. Tiles available in a number dimensional configuration: (See catalogue for details)
 - i. 595 x 595mm (Medium Cone)
 - ii. Round diameter of 580mm
- c. Tile end border options:
 - i. Drop-in
 - ii. Shadow line
 - iii. 4 Point fixing (Square diffuser)
 - iv. T-frame (Square diffuser)
 - v. 3 Point fixing (Round diffuser)
 - vi. T-ring (Round diffuser)
- d. Insulation
 - i. Tile insulation box fitted onto the tile is available for humid climates

3) Selection overview

- a. Ducting is designed with the Required Static Pressure at duct take-off to provide neck Total Pressure between 10 - 70Pa.
- b. Diffuser performance data is related to the neck Total Pressure available.
- c. Use the relevant diffuser catalogue performance data to select the correct diffuser to supply the maximum design air volume at the design neck total pressure.
- d. When less air is required the electronic MLM+ VAV swirl diffuser will automatically close the control disc to reduce the air volume to the new requirement

4) MLM+ Diffuser controls configuration overview

- a. Direct drive Stepper motor for precise position control at every control disc position. Long life, zero maintenance
- b. Auto position initialization when power is applied
- c. Interface controls board on the back of the tile with:
 - i. Two inter diffuser mini-fit connectors
 - ii. Wall thermostat RJ connector
 - iii. Heater control cable connector for connection to:
 1. Rickard heater neck complete with Triac Controller
 2. Rickard hot water coil valve controller
 3. Rickard base board heater controller?
 - iv. Rickard Flow sensor connector
 - v. Supply Air sensor connector
- d. Face mounted diffuser controller with standard:
 - i. On-board sensing.
 1. Sensor is centrally mounted on the Swirl face plate with patented induction system for reduced backend heating/cooling.
 - ii. Occupancy sensing
 - iii. Full access from below the ceiling
- e. Face mounted controller optional functionality:
 - i. Infrared remote setpoint receiver

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- f. Inter diffuser Cabling
 - i. Molex Mini-fit automotive style connectors with latch for reliable inter diffuser communication and power.
 - ii. 8-meter standard cable shipped with every diffuser
 - iii. Extender cables are available
 - iv. No distinction between Primary and Secondary diffusers. (Software convertible)

5) MLM+ Control Components overview

- a. Rickard PSU power supply
 - i. Supply power to 15 MLM+ diffusers
 - ii. Multi Frequency, Multi Voltage capability
 - iii. Build-in spike and interference protection for reliable power supply to MLM+ diffusers
 - iv. Reliable capacity designed in for 150m inter diffuser cabling network
 - v. Maximum 20 sections of inter diffuser cabling sections
 - vi. PSU supplied with 2 off Termination Resistors to be installed on the last diffuser in the cable network left and right. (Ensures reliable communication)
- b. BMS Module
 - i. BACnet link for multiple diffusers
 - ii. Rickard diffuser management software (free)
 - iii. iPSU (PSU with Bacnet functionality providing link for 15 diffusers to the BMS)
 - iv. MCU (Device with cable link to 4 PSU's providing link for 60 diffusers to the BMS)
 - v. RJ12 PSU to MCU cable max length 120 meters
 - vi. IPSU and MCU modules link onto the BMS network using IP or MS/TP
- c. Wall thermostat
 - i. Temperature sensing standard
 - ii. Optional CO2 sensor
 - iii. Optional Humidity sensor
 - iv. Optional Occupancy Sensor
- d. Other Temperature Options
 - i. Wireless Access point. (Connect anywhere on diffuser network)
 - ii. Wireless Wall Thermostat
 - iii. Wireless remote Pod Sensor
 - iv. Wired remote POD Sensor
 - v. Infrared Remote Setpoint adjuster
- e. Flow sensor
 - i. Provides pressure and flow readings
 - ii. Fitted and calibrated to the neck of each diffuser
- f. Rickard heaters
 - i. Rickard neck heater and barrel heaters
 - 1. 220V or 110V
 - 2. See heater size limitations and recommendations as per catalogue.
 - 3. Full proportional integral Triac control
 - 4. Electronic and mechanical overheat safeties
 - 5. Optional airflow safety
 - 6. Electrical circuit should be protected with paddle flow sensor from AHU
(NB. This is the Primary Safety)
 - ii. Rickard hot water coil
 - 1. Recommended sizing for each diffuser neck size. (See catalogue for sizing)

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6) MLM+ Controls Functionality

- a. Diffusers with a PSU power supply will work as independent Air volume control devices
- b. Auto Zone Functionality enabled in the factory:
 - i. Every diffuser will control Air volume independently using the on-board room temperature and on-board setpoint out of the box. (Every diffuser operates as a primary diffuser out of the box)
 - ii. When in Auto Zone mode, control setpoint and room temperature will automatically switch over to the wall thermostat when plugged in.
- c. Proportional Integral (PI) control algorithms built-in.
- d. Central plant heating/cooling changeover functionality built-in with programmable switch point and range.
- e. Free MLM software program provided to facilitate parameter settings
 - i. Manual zoning allows the ability to set diffusers as primary or secondary diffusers.
 - ii. Secondary diffusers follow the sensor/setpoint from a primary diffuser to create a single zone in where more diffusers are installed in a single room or location.
 - iii. This also allows for Primary/Secondary diffuser relationships changes when new tenants move in and new diffuser zones are required. (No ductwork or cabling changes required)
 - iv. Programmable Occupancy delays using standard occupancy sensor or sensor on wallstat
 - v. Adjustable software maximum and minimum diffuser open positions
 - vi. Adjustable software back-off band when zone Not Occupied
 - vii. Manual motor drive functionality using free software
- f. Electronically erasable and programmable non-volatile memory store all diffuser zoning and inter diffuser settings
- g. BMS BACnet Output functionality include:
 - i. Temperature setpoint
 - ii. Open to max limit
 - iii. Close to min limit
 - iv. Emergency Activation (Disable heater)
 - v. Emergency Fully Open
 - vi. Emergency Fully close
 - vii. Activate back-off band
 - viii. Occupancy override (occupied/un-occupied)
 - ix. External input occupied/un-occupied.
- h. BMS BACnet Input functionality include
 - i. Space Temperature
 - ii. Current heater output (0 to 100%)
 - iii. Diffuser plate position (0 to 100%)
 - iv. CO Sensor (Supply air temperature) °C or °F
 - v. Diffuser Flow
 - vi. Initializing
 - vii. System idle. (In control temperature band)
 - viii. Heating mode
 - ix. Cooling mode
 - x. Motor in manual drive mode
 - xi. Occupied / unoccupied

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i. Global BMS Points available

Name:	Type:	Instance:
Disk Avg	AI	120
Room Temp Avg	AI	121
Setpoint Global	AO	60
Control override Global	MSO	120
Occupancy override Global	MSO	121

7) Other Options (See catalogue for detail specification)

- a. Pressure relief ring
- b. Pressure control damper system integration
- c. Multizone Fancoil controller controls system integration

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