RICKARD AIR DIFFUSION (PTY) LTD

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

RICKARD MLM+ Series Electronic Linear Aerofoil 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) Linear Aerofoil 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 40+ 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 / discoloring
      iii. Impact Resistance Testing (test for cracking or chipping) for quality control
   d. Rickard warranty covers electronic linear 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 linear slot diffusers.
   b. Manual Flow direction adjustment:
      i. Pattern A: Sideways airflow direction left and right against the ceiling
      ii. Pattern B: Downward airflow direction
      iii. Pattern C: Sideways airflow direction all slots same direction against the ceiling
   c. Aluminum linear track
   d. Diffusers are fitted with stepper motor driven sliding damper to vary air volume supply at a set neck pressure.

DIRECTORS

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

2) Configuration Options
    a. Slot width options
        i. 19 mm
        ii. 25 mm
    b. Diffusers are available in the following standard lengths (mm) and inlet spigot diameters (mm):
    19mm Slot Width
        i. VLA1 1-Slot: 600(150 spigot), 900(200 spigot),1200(200 spigot), 1500(250 spigot)
        ii. VLA1 2-Slot: 600(150 spigot), 900(200 spigot),1200(250 spigot), 1500(300 spigot)
        iii. VLA1 3-Slot: 600(250 spigot), 900(300 spigot),1200(350 spigot), 1500(2 x 250 spigot)
        iv. VLA1 4-Slot: 600(250 spigot), 900(350 spigot),1200(2 x 250 spigot), 1500(2 x 300 spigot)
    25mm Slot Width
        v. VLA1 1-Slot: 600(150 spigot), 900(200 spigot),1200(200 spigot), 1500(250 spigot)
        vi. VLA1 2-Slot: 600(200 spigot), 900(250 spigot),1200(300 spigot), 1500(350 spigot)
        vii. VLA1 3-Slot: 600(250 spigot), 900(300 spigot),1200(2 x 300 spigot), 1500(2 x 300 spigot)
        viii. VLA1 4-Slot: 600(300 spigot), 900(2 x 250 spigot),1200(2 x 300 spigot), 1500(2 x 350 spigot)
    c. Options:
        i. Drop-in. (To drop into ceiling grid. Access hatch required in the ceiling to reach access panel on the side of the plenum to reach controls and motor)
        ii. Surface Mount. (For plaster ceiling installation or similar. Track can be removed from below for access to controls and motor)
        iii. End border options
            1. Flat end border
            2. Angle end border
        iv. Special lengths
            1. Maximum of 3-meter continuous track
            2. Longer lengths of continuous track will be manufactured in multiple lengths up to 3 meters each with butt-joints for onsite linking.
    d. Insulation
        i. The plenum box can be insulated internally. (3mm standard or 6mm optional)

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 date 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 linear diffuser will automatically close the sliding damper to reduce the air volume to the new requirement

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4) MLM+ Diffuser controls configuration overview
    a. Direct drive Stepper motor for precise position control at every sliding damper position.
    b. Auto position initialization when power is applied
    c. Interface controls board fitted on the plenum box access hatch, (located off-center on the side of the plenum box), 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. Internal mounted diffuser controller with standard:
        i. Secondary diffuser functionality
        ii. Primary diffuser controller fitted. (Sensor and induction box not fitted as standard)
    e. Linear Track mounted optional functionality. (Pending Design)
        i. Infrared remote setpoint receiver
        ii. Occupancy sensor
    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 diffuser controls. (Software convertible) (Sensor and induction box to be fitted to convert to Primary Diffuser.)

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 maximum 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

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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)

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 when primary sensor and induction box is fitted:
    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 occupancy sensor on wall thermostat when fitted
    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

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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

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. Primary diffuser on-board sensing induction box and sensor
   b. Pressure relief ring
   c. Pressure control damper system integration
   d. Multizone Fancoil controller controls system integration

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