

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 Linear 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 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 / 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

CHAIRMAN	MANAGING	FINANCIAL	REGIONAL SALES	REGIONAL SALES	MARKETING	PRODUCTION
B. Rickard	C. Bosch	G. Paris	R. Smith	T. Khambule	M. Rickard	N. Ebrahim

2) Configuration Options

- a. Diffusers are available in the following standard lengths (mm) and inlet spigot diameters (mm):
 - i. VLN1 1-Slot: 600(150 spigot), 900(200 spigot), 1200(250 spigot), 1500(300 spigot)
 - ii. VLN1 2-Slot: 600(150 spigot), 900(200 spigot), 1200(250 spigot), 1500(300 spigot)
 - iii. VLN1 3-Slot: 600(200 spigot), 900(250 spigot), 1200(2 x 200 spigot), 1500(2 x 250 spigot)
 - iv. VLN1 4-Slot: 600(250 spigot), 900(2 x 200 spigot), 1200(2 x 250 spigot), 1500(2 x 300 spigot)
- b. Slot width
 - i. 19 mm
- 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 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 linear diffuser will automatically close the sliding damper 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 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)

DIRECTORS

CHAIRMAN	MANAGING	FINANCIAL	REGIONAL SALES	REGIONAL SALES	MARKETING	PRODUCTION
B. Rickard	C. Bosch	G. Paris	R. Smith	T. Khambule	M. Rickard	N. Ebrahim

- 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 150 meter 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

DIRECTORS

CHAIRMAN	MANAGING	FINANCIAL	REGIONAL SALES	REGIONAL SALES	MARKETING	PRODUCTION
B. Rickard	C. Bosch	G. Paris	R. Smith	T. Khambule	M. Rickard	N. Ebrahim

- 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 wallstat occupancy sensor 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
- 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.

DIRECTORS

CHAIRMAN	MANAGING	FINANCIAL	REGIONAL SALES	REGIONAL SALES	MARKETING	PRODUCTION
B. Rickard	C. Bosch	G. Paris	R. Smith	T. Khambule	M. Rickard	N. Ebrahim

- 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

Multizone Fancoil controller controls system integration

DIRECTORS

CHAIRMAN	MANAGING	FINANCIAL	REGIONAL SALES	REGIONAL SALES	MARKETING	PRODUCTION
B. Rickard	C. Bosch	G. Paris	R. Smith	T. Khambule	M. Rickard	N. Ebrahim