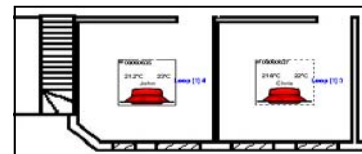
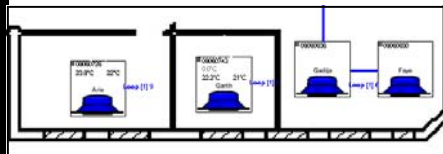


MLM VAV DIFFUSER CONTROLS

THE GREEN HVAC SOLUTION

FEATURE LIST

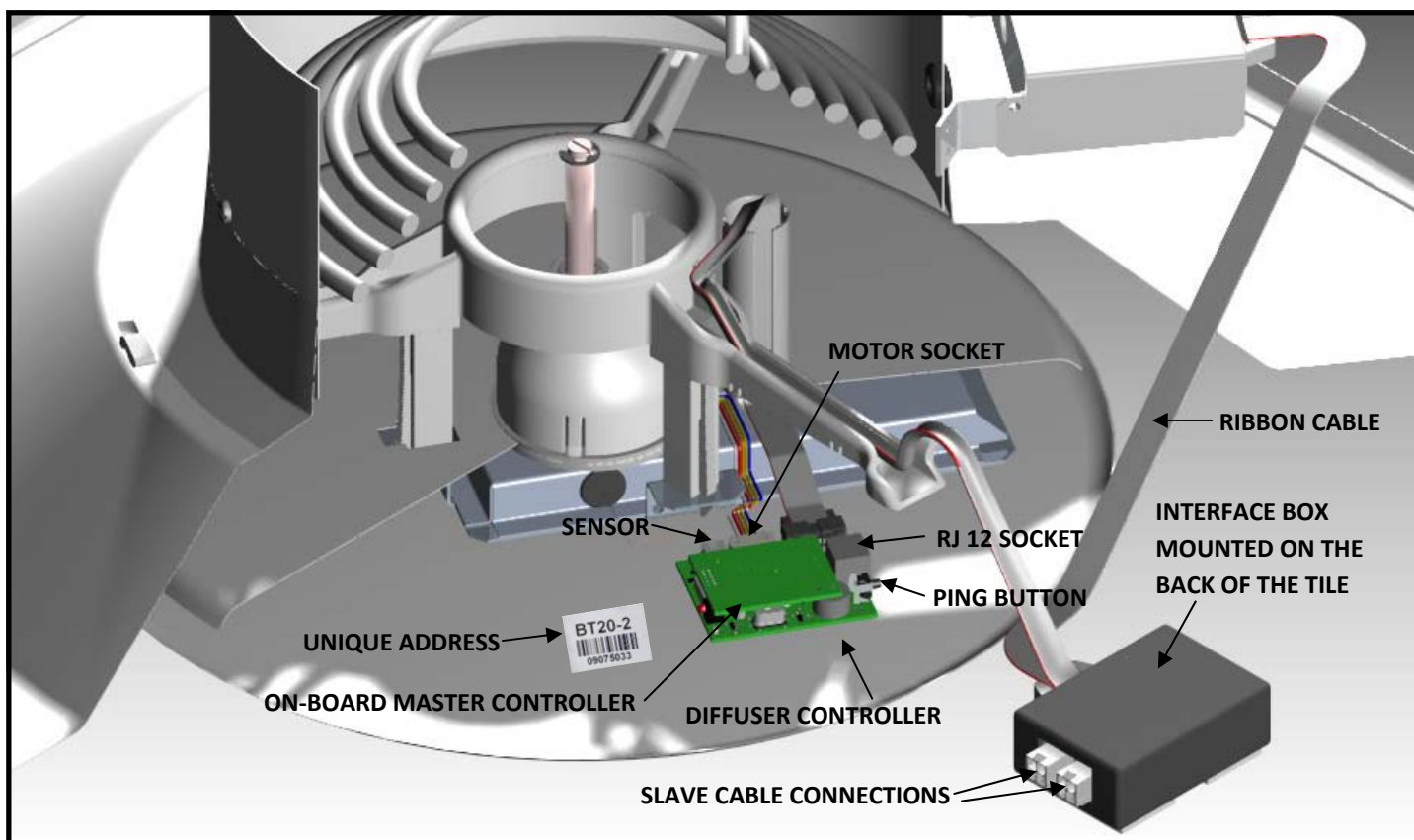


<p>GREEN BUILDING BENEFITS</p>	<ul style="list-style-type: none"> • Management Credits • Indoor Environmental Quality Credits • Energy Efficiency Credits
<p>EASE OF INSTALLATION</p>	<ul style="list-style-type: none"> • Simple daisy chain connections between diffusers • Master and Slave as above • Wrong connections eliminated
<p>EASY COMMISSIONING</p>	<ul style="list-style-type: none"> • Master Slave relationships set via PC or Remote • All Commissioning done from below the ceiling • Save Commissioning Data
<p>LOGGING CAPABILITY</p>	<ul style="list-style-type: none"> • Log commissioning data • Log Diffuser and Room Data • Fault Reporting
<p>SIMPLE DIFFUSER TUNING</p>	<ul style="list-style-type: none"> • PC adjustment of Diffuser MIN stops • PC adjustment of Diffuser MAX stops • PC adjustment of HEATER MAX
<p>EASY LAYOUT CHANGES</p>	<ul style="list-style-type: none"> • Easy conversion from SLAVE to MASTER • MASTER - SLAVE changes are done below the ceiling • PLUG & PLAY
<p>CONDITION MONITORING</p>	<ul style="list-style-type: none"> • PC Monitoring of Room Conditions • Logging of diffuser and Room Data • Queries Resolved Centrally
<p>FAULT MONITORING</p>	<ul style="list-style-type: none"> • Motor Fault Reporting • Motor Over Current Reporting • Room Condition Reporting
<p>MODULAR DESIGN</p>	<ul style="list-style-type: none"> • Save Cost by purchasing a stand alone system initially • Upgrade to Rickard mini BMS • Upgrade further to LONworks or BacNet
<p>NETWORKING CAPABILITY</p>	<ul style="list-style-type: none"> • Cost effective standalone BMS • LonWorks compatible BMS • BACnet compatible BMS
<p>RELIABILITY</p>	<ul style="list-style-type: none"> • Motor has passed life cycle testing the equivalent of 30 years. Basis: 3000 operating hours and 4000 control cycles per year • Automotive grade connectors • 31 years of VAV experience

MLM VAV DIFFUSER CONTROLS

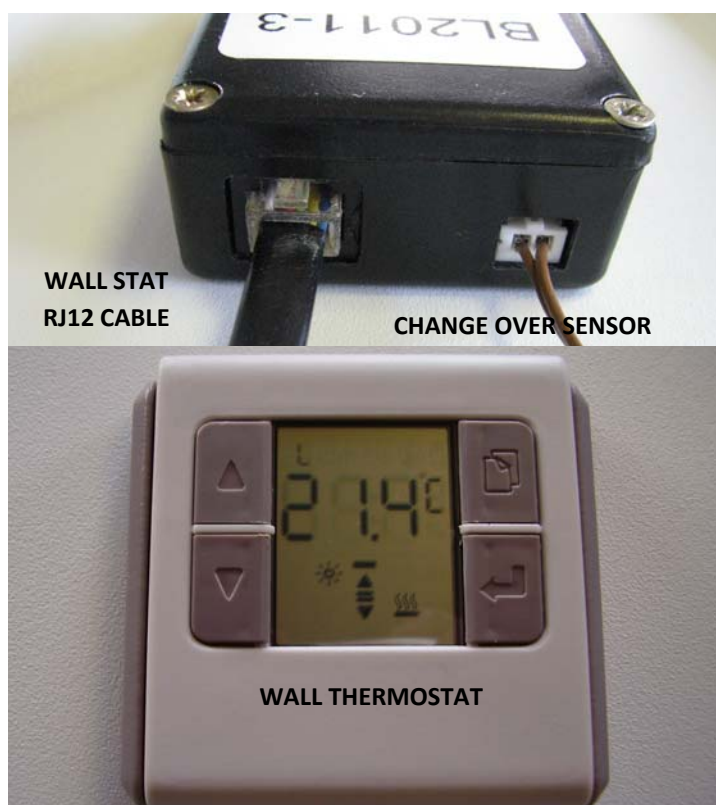
THE GREEN HVAC SOLUTION

SYSTEM ARCHITECTURE



- All Diffusers are fitted with a Diffuser Controller.
- This board is typically fitted inside the trim plate of a diffuser and interfaces with the motor and on-board sensor.
- Every Diffuser Controller is supplied with an unique address. Two labels, one applied to the trim plaque and another that can be removed for placement on a layout diagram are supplied.
- A ping button is fitted on the side of the Diffuser Controller for identifying the diffuser on the MLM software. This button can also be used in conjunction with a set-up module for commissioning.
- A set-up module can be plugged into the RJ12 female socket located on the diffuser controller. It is accessible from within the room on the trim plaque.
- A temperature sensor is fitted inside the sensor cap on the trim plaque of every diffuser. This enables diffuser conversion to a Master diffuser without complicated modifications or going into the ceiling.
- The conversion from Slave to on-board Master simply requires an on-board Master Controller to be plugged into the Diffuser Controller.
- A ribbon cable is provided to link the Diffuser Controller to the 24V Interface Board on the back of the diffuser tile. A Female RJ12 socket is provided on the 24V Interface box for connection of the Wall Thermostats set-point adjuster option.
- A connector is also provided for the Change Over Sensor.

- A 24V Power Pack is provided to supply Power to 15 diffusers.
- The 24V Interface Board is fitted with 2 Female Microfit Sockets.

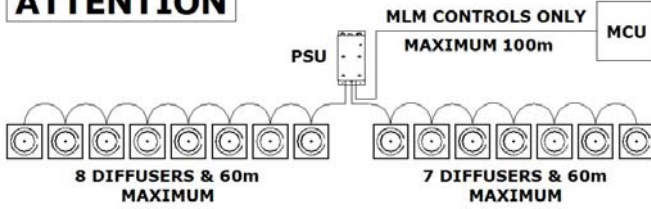


MLM VAV DIFFUSER CONTROLS

THE GREEN HVAC SOLUTION

SYSTEM ARCHITECTURE

ATTENTION

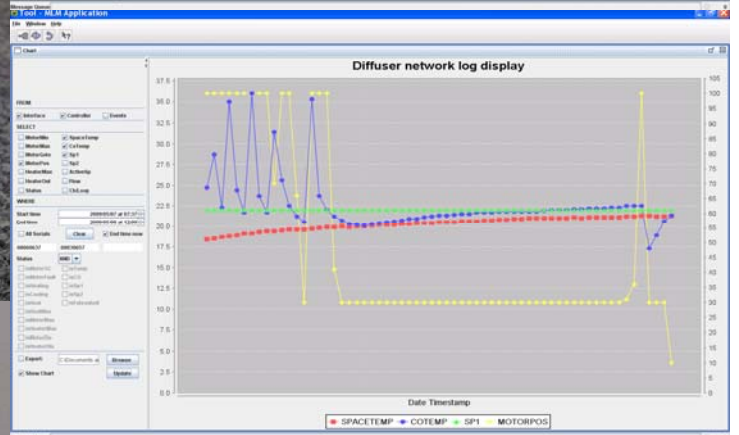
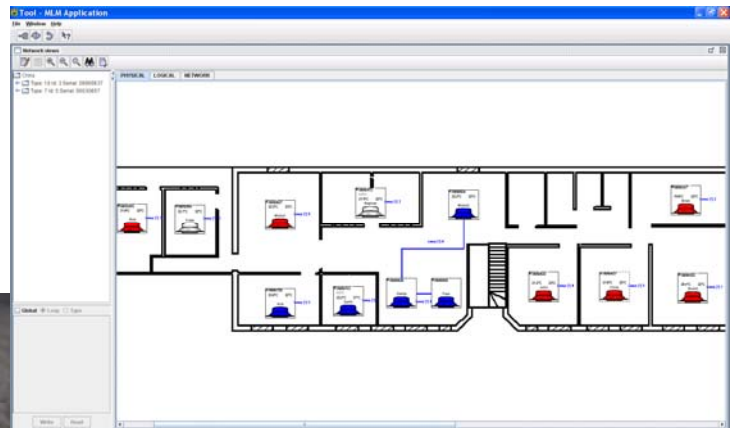


- Two Female Microfit connectors are fitted to one end of the Power Pack for slaving purposes. Same cables are daisy chained as shown above.
- Seven diffusers can be daisy chained from one connector and 8 diffusers from another.
- A third RJ9 connector is for networking to a Master Communications Module, LON or BacNet Module. An USB module can also be connected for commissioning or building Maintenance purposes.



as well as heater MAX.

- Ease Building Management using PC.
- Central Set-point over-ride by building administrator.
- Project Selector system allows for easy navigation between floors and sections.
- Logging of a wide range of room conditions with graphic capabilities.
- Logging of faults and changes in the system.



MLM SOFTWARE APPLICATION

- The MLM software is supplied for free when you purchase MLM Controls
- The Software incorporates a comprehensive help file.
- Commissioning of Controls and Diffusers made easy with back-up facility.
- Master –Slave relationship changes.
- Fine-tuning of building by adjusting diffuser MAX or MIN air

MLM VAV DIFFUSER CONTROLS

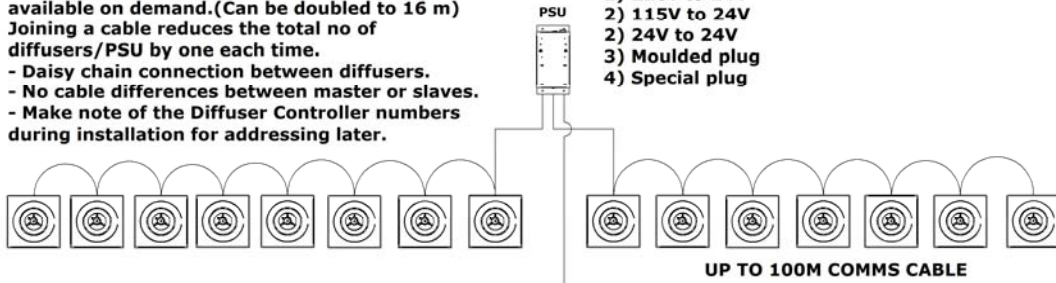
THE GREEN HVAC SOLUTION

SYSTEM ARCHITECTURE

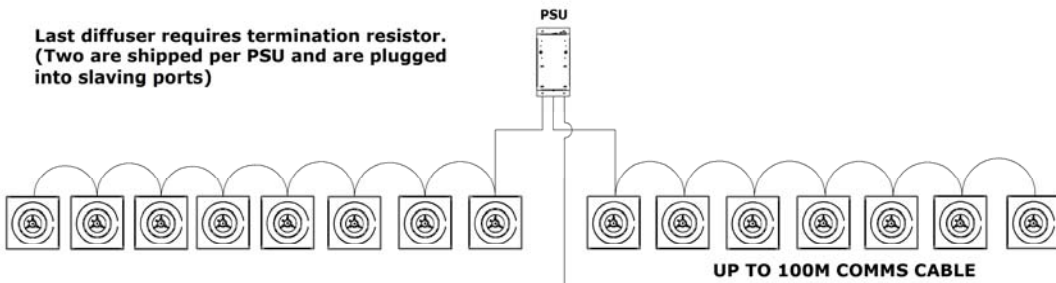
1 PSU Supplies a max of 15 Diffusers. Two ports. Max 8 on one port, 7 on the other.
 - Max cable length 60 meters total per side. (Std 6 meters/diffuser but can be extended to 12 meters by joining two cables. 8 meter cables are available on demand. (Can be doubled to 16 m) Joining a cable reduces the total no of diffusers/PSU by one each time.
 - Daisy chain connection between diffusers.
 - No cable differences between master or slaves.
 - Make note of the Diffuser Controller numbers during installation for addressing later.

PSU Options:
 (40VA power)
 1) 220v to 24V
 2) 115V to 24V
 3) Moulded plug
 4) Special plug

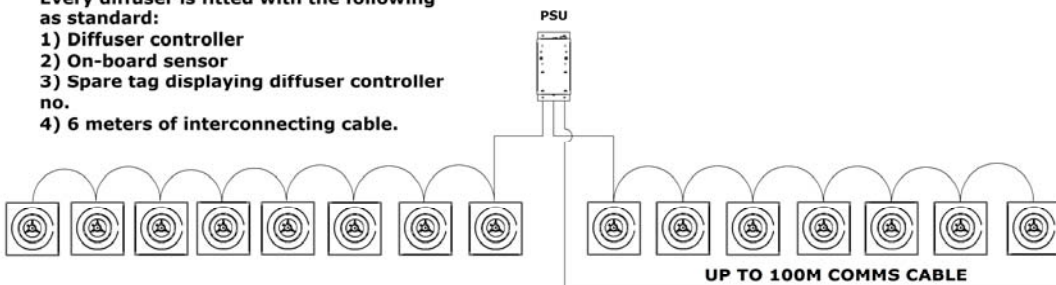
- 1 Master Communication Unit (MCU) max 4 Power Supplies (PSU).
 - RJ9 communications cable to each PSU (20 to 100 meters long Max). 220V/5A Power requirement. BMS network must be grounded to Rickard specification. (MCU ONLY REQUIRED WHEN BMS CONTROL REQUIRED!!)



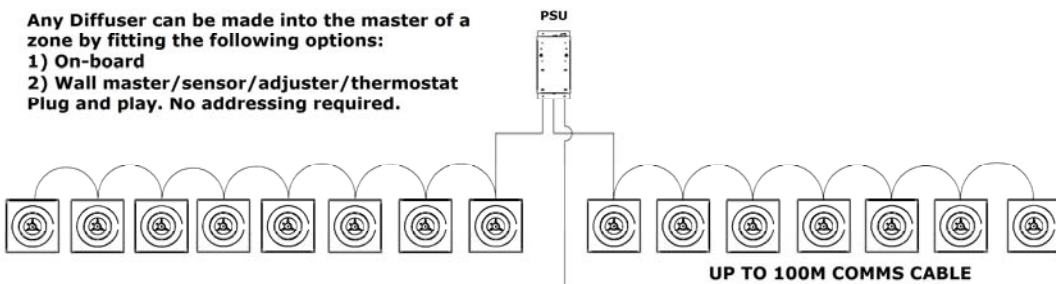
Last diffuser requires termination resistor. (Two are shipped per PSU and are plugged into slaving ports)



Every diffuser is fitted with the following as standard:
 1) Diffuser controller
 2) On-board sensor
 3) Spare tag displaying diffuser controller no.
 4) 6 meters of interconnecting cable.



Any Diffuser can be made into the master of a zone by fitting the following options:
 1) On-board
 2) Wall master/sensor/adjuster/thermostat Plug and play. No addressing required.



PC Front End Options:
 1) Rickard application
 2) BACNet
 3) LON

MCU Options:
 1) Rickard using TCP/IP network
 2) BacNet using TCP/IP network
 3) BacNet using MS/TP network
 4) LON with twisted pair network

USB module:
 (Can be used in the place of an MCU for linking to a diffuser network for commissioning or maintenance)
 Plug into:
 1) PSU
 2) Diffuser controller
 1 USB Suggested per site

WARRANTY

Rickard Air Diffusion (Pty) Ltd. warrants that its VSD/VCD1 electronic diffusers, including options or accessories shall be free from defects in material or workmanship for a period of two years from the date of shipment and agrees to repair or replace, at its option, any parts that fail during said period due to any such defects which would not have occurred had reasonable care been taken, provided that such parts have been inspected by Rickard and found defective and provided the diffusers have been given normal and proper usage and all parts and controls remain unaltered.

Rickard makes no warranty of merchantability of products or of their fitness for any other express or implied warranty which

extends beyond the limited warranty above. Rickard's liability for any and all losses and damages resulting from defects shall in no event exceed the cost of repair or replacement of parts found defective upon examination by Rickard. In no event shall Rickard be liable for incidental, indirect or consequential damages or damages or injury to persons or property. Rickard shall not be responsible for freight to or from its premises in connection with the inspection repair or replacement or parts under the terms of this limited warranty nor for the cost of removal or installation.

This warranty excludes any non standard options or accessories installed in the field or factory.