







MLM OCCUPANCY SENSING WITH DIFFUSER & LIGHT SWITCHING INTEGRATION

-  AUTOMATICALLY SAVE FAN ENERGY BY CLOSING DIFFUSERS IN UNOCCUPIED ZONES
-  SAVE BY USING THE EXISTING MLM NETWORK TO CONTROL LIGHTING
-  ADD OCCUPANCY SENSORS BY OTHERS AS REQUIRED
-  BUILT ON RICKARD'S TRIED AND TESTED MLM SYSTEM
-  FREE SOFTWARE MANAGEMENT TOOL TO MANAGE, TUNE AND CONTROL THE DIFFUSERS AND LIGHTING
-  INTEGRATES WITH THE BMS



FEATURES

Rickard offers further Energy Savings by shutting down diffusers and switching off lights when a zone is unoccupied. Built in Diffuser and Wall Thermostat Occupancy Sensing integrate directly with the standard MLM Controls. The System saves Fan Energy by closing the diffuser when a zone is not occupied. Since a VAV system is pressure dependent, energy savings are realised as soon as the fan receives a signal to slow down and maintain system pressure. Rickard's modular approach allows a light switching module to be added to the MLM network to switch the zones lights and save further energy when a zone becomes un-occupied.

LIGHT SWITCHING MODULE

The beauty of Rickard's light switching system is that it runs on the existing MLM diffuser network. Only one network of cables is used for both the diffuser and lighting system. This reduces the cost of both systems substantially. Rickard's Light Switching module works in conjunction with Rickard's onboard diffuser or wall thermostat occupancy sensor to switch two channels of lights after two separate time delays. Each delay can be adjusted by the user. A light switching module is designed to switch all of the lights in a zone using any one of the occupancy sensors that are triggered in that zone.

The module is fitted to the back of the diffuser in a sheet metal enclosure and plugs into an open plug on the diffusers existing IDC ribbon cable. The ribbon cable is used for Rickard diffuser peripherals like the heater module, airflow sensor and light switching module. Multiple diffusers can be connected together using the standard MLM inter-diffuser network.

- Each light switching module is fitted with two normally closed solid state relay output channels.
- Each output channel is capable of switching up to 1.5kWatts of lighting at 220VAC. This is equivalent to approximately 10 x double 1200mm fluorescent tubes per channel.
- The current capacity per channel is 6Amps.
- Relay 1 can be programmed to switch open in unoccupied stage 1 (default) or unoccupied stages 1&2 .
- Relay 2 can be programmed to switch open in unoccupied stage 2 (default) or unoccupied stages 1&2.
- Relay 1 & 2 can be manually set to on or off.
- BMS manual operation can override the signal if required.
- Stand alone occupancy sensors can be connected directly to the light switching module if required.

APPLICATION

Rickard's occupancy sensing can be used in applications wherever energy saving is a priority. In a typical building occupancy levels are usually in the order of 70%. By closing the diffusers and turning off the lights in these areas, the building can save energy. Green Building credits are awarded to buildings that use occupancy sensing to switch lights and Green Building innovation credits to buildings that use occupancy sensing to close diffusers when zones are unoccupied.

OPERATION

RICKARD MLM OCCUPANCY SENSOR LOGIC

1. Occupant leaves the room

- a. Diffuser drives to minimum control disc position & turns off the first bank of lights after a preset delay (delay 1 adjustable in seconds, default is set to 900 seconds or 15 minutes).
- b. Diffuser drives to fully closed control disc position & turns off the second bank of lights after a further preset delay (delay 2 adjustable in seconds, default is set to a further 900 seconds or 15 minutes). If the room temperature drifts outside the Back-off band (value is adjustable in °C/F in the 'Back-off band' field), the diffuser(s) will revert to the minimum closed position.

2. Occupant enters the room

- a. Diffuser starts to control temperature normally & turns on the lights as soon as movement is detected.

Note: Backoff band values allow the temperature to deviate above or below setpoint by the Backoff value entered before driving the diffuser to minimum position.

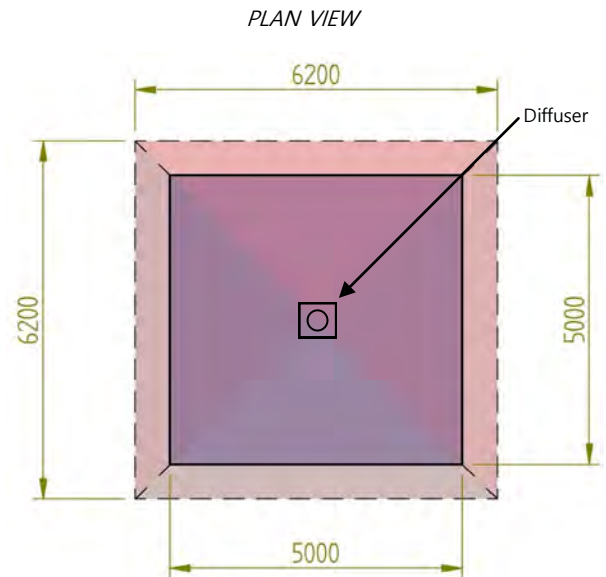
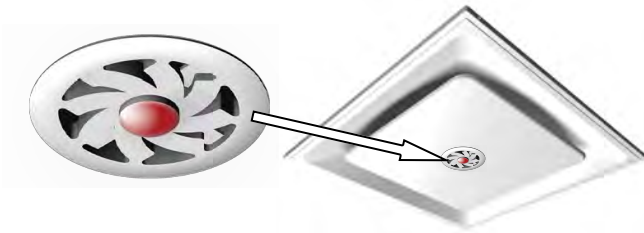
OCCUPANCY SENSOR EXTRAS

1. Ability to Disable the Occupancy Sensor. If necessary, the occupancy sensor can be disabled. This can be achieved by disabling the sensor on the MLM application.
2. MLM Application shows occupancy sensor status i.e. Status (occupied/unoccupied) and a graphic indicating the period the zone has been un-occupied during the 1st or 2nd delay.
3. Occupancy Status variables are available to the BMS. Rickard Occupancy Sensors can not only save HVAC and Lighting energy by intelligently reacting to occupancy but can also allow Building Management System access for further control.

SELECTION

OCCUPANCY SENSOR MOUNTING POSITION

1. In the Diffuser Face Plate (Sensor Cap). By mounting the Occupancy Sensor in the face of the diffuser, it is unlikely that furniture will affect it's coverage. Diffusers are typically mounted in the centre of a room or spaced symmetrically, making it an ideal position for an occupancy sensor.



COVERAGE

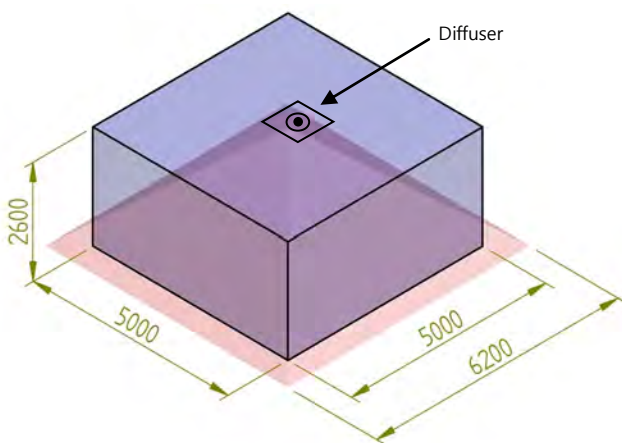
1. Rickard's onboard diffuser occupancy sensors have been specifically designed to sense a zone slightly bigger than a diffusers temperature control zone. For large open plan temperature & lighting control zones, multiple diffuser occupancy sensors can work together to switch that zone. In this case the sensor signals are combined in an 'or' function, i.e. movement picked up by any sensor will switch that zone to an occupied status.
2. Occupancy Sensor mounted in the Diffuser (Sensor Cap)
 - a. Example Room Size 5 x 5 x 2.6m. Coverage is at least 6.2m square at a ceiling height of 2.6m. Coverage larger than the room size or overlap of sensing zones is favourable to ensure good coverage.

NOTE

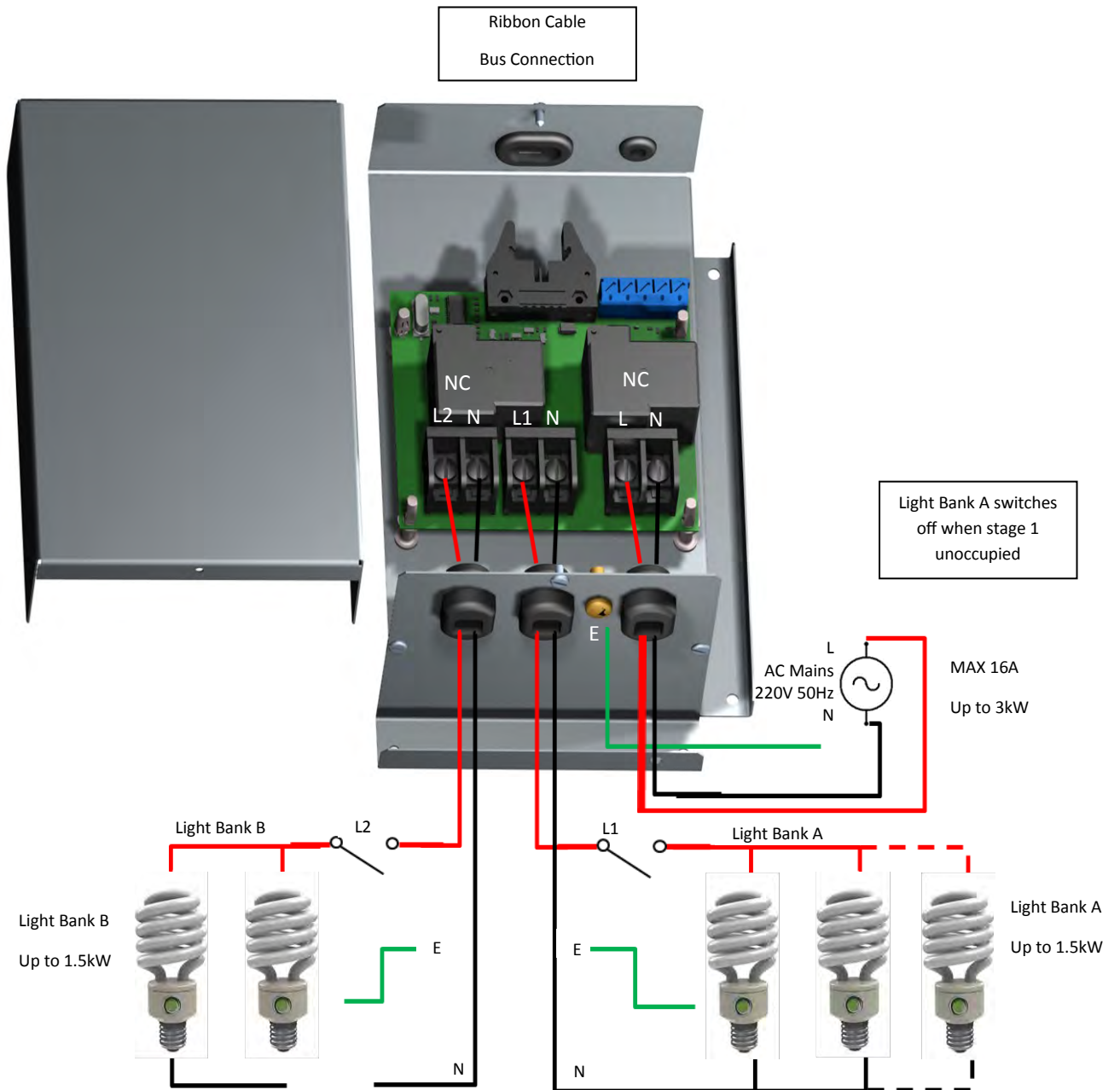
- a. Occupancy Sensors detect movement and infer that an area is occupied. If there is no movement then the sensor cannot trigger.
- b. Occupancy Sensors detect movement in direct line of sight. Objects that block the view of the occupancy sensor reduce it's detection of movement and therefore it's ability to sense movement behind that object.
- c. Occupancy Sensing coverage is square pyramid shaped. Positioning can therefore effect performance. Position the sensor to optimize coverage. (

DIFFUSER OCCUPANCY SENSING COVERAGE (MOUNTED CENTRALLY)

ISOMETRIC VIEW



Typical Mounting Position: Back corner of diffuser



Note: Wiring suggestion only.
 Electrical wiring by qualified electrician only.
 Use 16Amp electrical wiring only.
 1.5kW Load per channel Max