

# Blind faith

Motorised blinds are fast becoming commonplace in homes. In addition to sun protection they offer convenience, privacy and can contribute to a smaller carbon footprint. **Harry Simidis** explains the science behind motorised blinds.

**T**he family of motorised window treatments includes window louvres, skylights such as Velux, roofing louvres such as Vergola and many more.

When such products are integrated into a broader home automation control system, the benefits speak for themselves. This article looks at two broad categories of motorised blinds and louvres: mains-rated four-wire blinds and two-wire DC voltage louvres such as breezway.

A common and simple motorised window treatment is the 240V AC mains blind. Such units typically have four wires, which are usually labelled 'up', 'down', 'neutral' and 'earth' and colour coded accordingly.

Applying mains power to the 'up' wire retracts the blind, and power on the 'down' wire extends it. The motors typically reside in the tube core, around which the blind material is wound.

It's very important to note that these units

incorporate internal limit switches, which are usually set by the vendor and/or installer. The switches tell the motor to stop when the blind has reached its extremities. Otherwise the motor would continue turning, potentially damaging the material and its pelmet or housing.

Manufacturers such as Somfy provide complete control solutions for blind motors – such as sun, rain and wind weather stations (eg: the Eolis and Soliris range).

These units can work out whether it is too sunny, too windy or too wet. If too sunny, the blinds can be driven down for shade, which also serves to minimise the burden on air-conditioning systems. If too windy, an awning can be retracted to avoid damage, or extended if it's raining and the occupants are entertaining outdoors.

Motorised blinds are often controlled through broader home automation control systems such as Dynalite and C-Bus.

The most important thing is not to apply

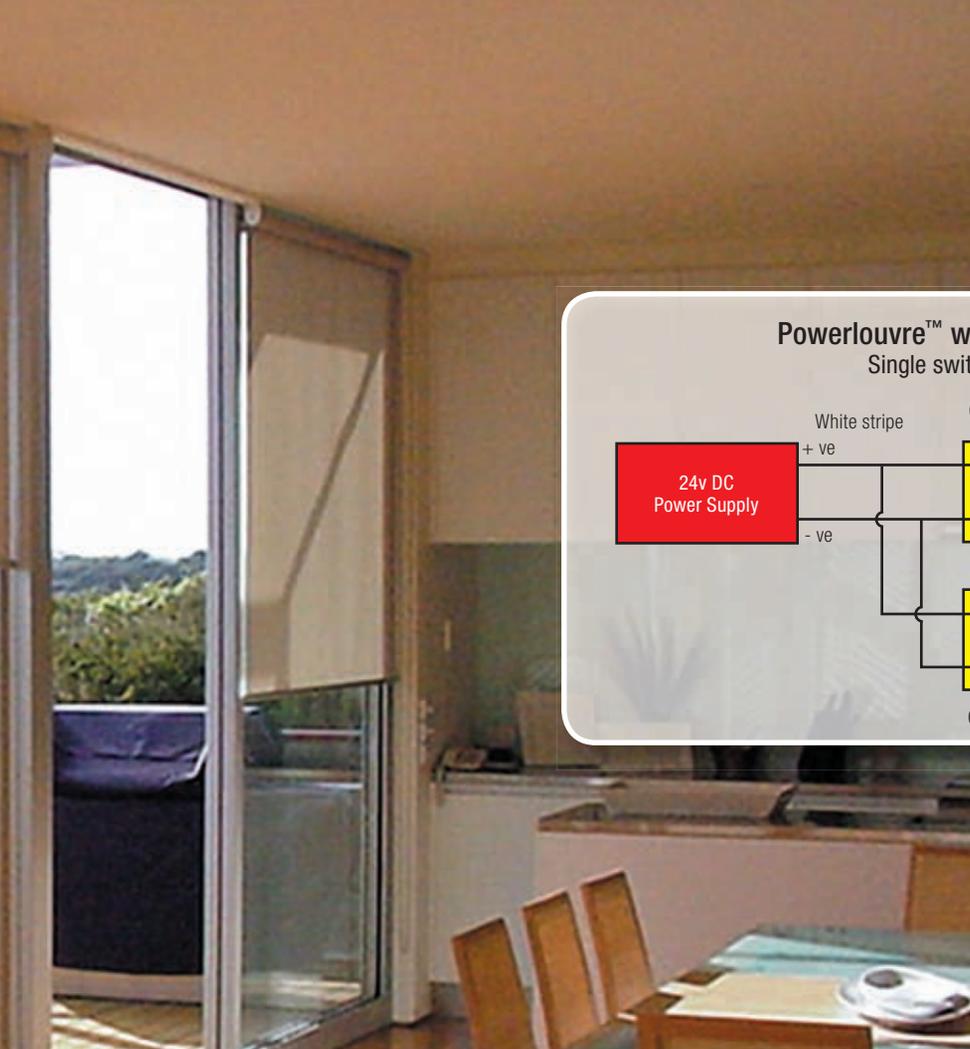
power to the 'up' and 'down' wires at the same time, as this can damage the motor and void the manufacturer's warranty. When connecting blinds to system controllers the installer must be mindful that, in the event of a power reset, the controller will never put power on both wires.

These blinds don't usually like being wired in parallel with other blinds.

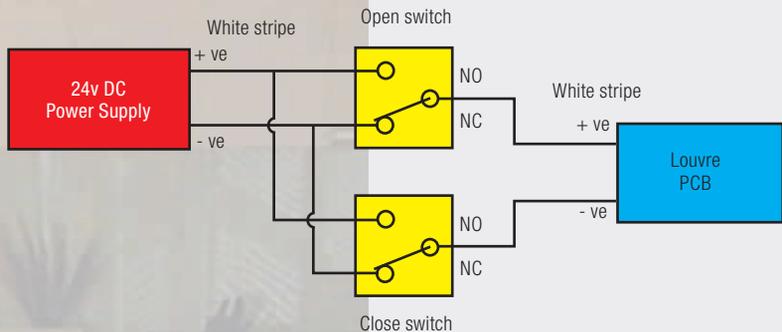
There have been many instances of blinds being wired in parallel in the hope of minimising control system hardware and overall cost. As a result, the blinds travel up and down normally but never seem to find their limit and perpetually 'hunt' for this position.

This is usually caused by current flowing through the limit switch circuitry due to parallel wiring. Each motor should be controlled with a dedicated pair of changeover (or double throw) relays.

Alternatively, manufacturers such as Somfy provide motor controllers that can control



### Powerlouvre™ window wiring details Single switch panel wiring



multiple blinds through one pair of control system relays, as if controlling one blind only.

The benefit is that a manufacturer-preferred and purpose-built piece of equipment is being used, ensuring safe operation. The disadvantage is that it adds cost and introduces more hardware to be installed, therefore more potential points of failure.

The Dynalite DDRC810DT is ideal for such applications, as it employs eight 10A changeover relays and can be used to control up to four motorised blinds independently.

The C-Bus L5504RVFC has four changeover relays, and the more recent L5501RBCP controller is cleverly designed for remote individual blind or curtain control.

Another important consideration is to allow adequate time for the blind motor to change direction from 'up' to 'down'. However, this is a programming consideration and should be implemented sensibly and in such a way that is transparent to the occupant.

Changing the direction with little or no delay in between places much stress on the motor and has been known to reduce lifespan and cause overheating.

The DC voltage type motorised louvre is

controlled in a similar way to that described above. The difference is that the polarity of the voltage must be reversed in order for the motor to travel in the opposite direction.

In the case of motorised window louvres such as the Powerlouvre from breezway, the manufacturer recommends the use of two normally open bell press switches for manual control.

In the normal state the positive terminal of the motor is connected to the negative of the supply, and the motor's negative is connected to the negative of the supply also. In this state there is ultimately zero voltage across the motor, so it doesn't open or close the louvres.

Pressing either button imposes a voltage across the motor's terminals, making it move in the opening or closing direction.

Using a control system with such motors is very simple and similar to the case for mains-rated motors. All the same considerations apply with reference to time delays and limit switches.

Although two changeover relays could be used to implement control, it is more elegantly achieved with three as shown in the

accompanying diagram (albeit at additional cost). The use of a third relay allows complete isolation of power to the motor.

Although beyond the scope of this article, there are many other types of motorised blinds, louvres, windows and curtains.

Some manufacturers take care of the power manipulation required for actuating the device. Such blinds and louvres are usually driven by a dry contact closure or pulse.

A good example is the Vergola system. Although it has its own native controller, it also allows control from a home automation system through a specified sequence of dry contact pulses on input terminals labelled 'select', 'auto', 'close' and 'open'.

The range of motorised blinds, louvres and windows is varied as the control options for them. The installer is no longer confronted with the occasional motorised window around the home. These days, homes that have these devices usually have them throughout.

The challenge for the installer is to provide simple, uncluttered and easily used controls that will truly benefit the occupant and enhance their lifestyle ■

