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### The Difference Between Good and Bad Wiring (5/10/2011)



By Will Hopkins, Your Smart Home

As smart home technology starts to become more commonplace in the UK, the demand from consumers to integrate even more appliances continues to grow. Whilst many of the new domestic offerings come in a wireless form, there is still no beating a wired system when it comes to speed, reliability and fault-finding. With home automation now spanning every aspect of living however, even the simplest of automation jobs can be far from straightforward.

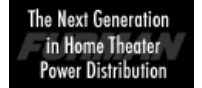
Many manufacturers have already taken steps to help the situation - gone are the days of driving systems using a plethora of proprietary cables. This new generation of solutions generally only requires a simple bus cable, such as CAT5, for communication, installed using a star-wired or daisy-chained topology.

Some manufacturers, such as Niko with its new Home Control system, have gone a step further with modules that directly link to each other, eliminating the need to spend hours patching between the units. Measures like this go some way to minimising issues with wiring, but given the sheer size of most jobs, it is important to properly plan out your cable management.

As an experienced and trusted company, we frequently get called out to rectify jobs carried out by people who do our industry no justice. We recently visited a multi-million pound house that used to belong to a big rock star. The photographs in this article are taken from there.



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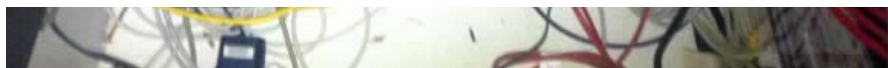


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*The wiring tangle left by the previous installer.*

It's clear to see that the installer responsible for this 'bad' wiring, had no idea about cable planning and management. So to help your wiring fall into the 'good' side of the divide, below are a few simple rules.

**Rule One: measure twice**

The old saying of 'Measure twice, cut once' is something that is as applicable to home automation as it was to traditional crafts. Getting the planning right in the first phase can save both time and money. After completing your specification it is important to work out exactly where every cable should go to, and where it should come from. Not only does this provide you with an index of cable locations, but it can also help you to calculate cable length for your estimates. If possible, you should seek to produce a cable map, detailing the route of each cable, so when, two years down the line, the client requires a new 20A mains feed, you can ensure it isn't laid parallel to your unshielded audio cable!

**Rule Two: watch your neighbours**

If you were moving house, you wouldn't pick a site next to a drilling works, and the same should be true about how and where we site our cables. AV should be kept separate from any power sources and should not run parallel to them in close proximity. Where cables have to cross over, this should be done at a 90-degree angle to minimise cross-talk. The argument of whether shielded cable should be installed is one for you to decide on a case by case basis, but following this simple rule will mean that whatever cable you use, it will have the best chance of not receiving interference.

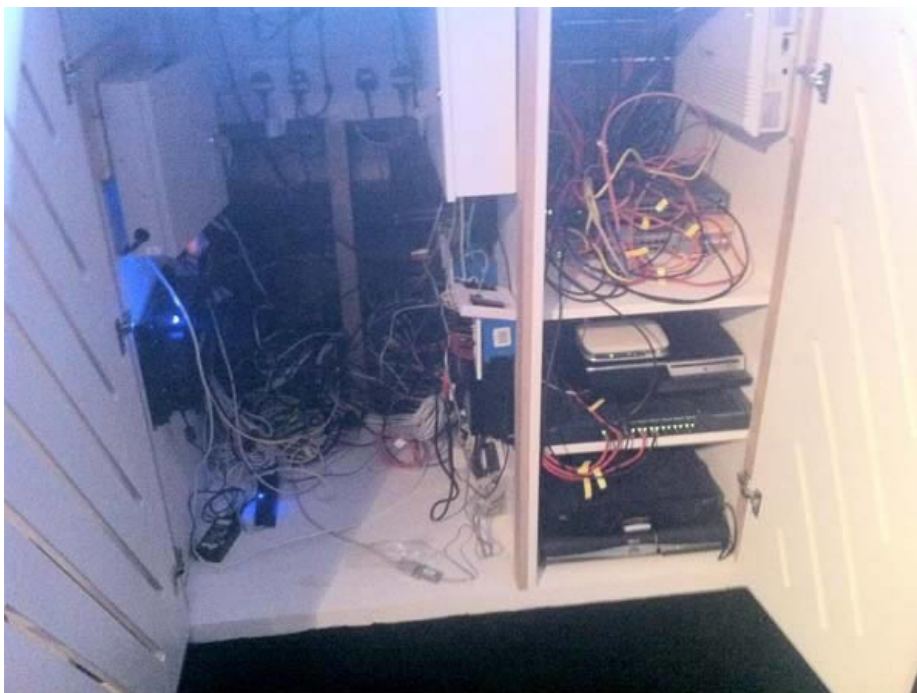
Also be careful with your cables. Don't bend them too sharply, don't twist them and don't pull them too hard. All of these things run the risk of damaging the copper cores inside. As a good measure, bends in cables should roughly follow the curvature of a Coke can.

**Rule Three: label as you go**

It sounds simple, but on many jobs we see, it has either not been done, or it has been done incorrectly. Label your cables at both ends as you pull them! That way there's no confusion and no mix-ups. This can save you a huge amount of time when you come to get your system running. Additionally, when you come to terminate your cables and cut off the excess, remember to re-label; whilst you might know where it is going to now, when you come back in five years to upgrade the system, you don't want to be scratching your head and wasting more precious time.

**Rule Four: trim to size**

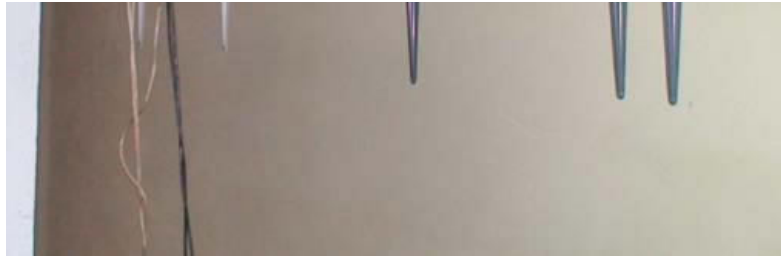
So you've pulled all your cables in, they're all correctly labelled, and now all you've got to do is connect the devices. Again, it all sounds pretty simple but this is the bit that really counts. This is what the client will see. This is the icing on the cake. In the project featured in the pictures, the client didn't care about the functionality that he had gained, because his vision was clouded by the quality of the installation he could see before him.



*An unappealing mess.*

Unlike this featured example, it's important to ensure that all of your units are properly mounted; if you need a rack, buy one! Don't just sit units in a cupboard! For the sake of a few pounds you can transform your installation.





*If you need a rack, buy one!*

Once you've got everything sited, measure how much cable you need and cut to that length - presentation is everything. You might spend hours on cable dressing, but the benefits are worth it. Not only do you end up with a job you can be proud of, but you can also see the system clearly, and therefore see how to expand it and how to fault find in it.



*You might spend hours on cable dressing, but the benefits are worth it.*

**Conclusion**



Having correctly-positioned, neat and labelled wiring can make a huge difference to your set up. Not only are you minimising the risk of any interference, but your ensuring that everything can run at its optimum, with no signal drop in excess cables or damaged threads. Moreover, it makes maintenance a much more straightforward task.




Following these basic rules should help ensure that you don't end up in a mess. What is key is that everything you do has some form of methodology behind it.

If you're a consumer and you don't see your installation company following these steps, it is worth pulling them up on it straight away, as it's likely to end up costing you more money down the line.

Will Hopkins is the Director of Your Smart Home Ltd, provider of smart home consultancy, design and installation services alongside operating one of the UK's leading home automation retail web shops.

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