Solwise PL200AV – 200Mbps HomePlug Ethernet Adaptor Review
By Neo on RouterTech.Org

Introduction

The idea of HomePlug is simple:

Say you want to link up some computers, games consoles, set-top boxes or anything else that might need to be on your network or need a Net connection.

And say you don't want to lay cables all over the place (under floorboards, in wall cavities etc). You could go for a WIFI network, but perhaps the walls are too thick or the reception is generally poor – what do you do?

HomePlug is the answer. The HomePlug standard squirts all your data through your power line – effectively bringing a handy network connection to wherever there is a power socket. No more tripping over dangling cables and no more dodgy wireless reception and poor speeds. And since most rooms in a house, apartment etc will have at least one power socket, the possibilities are endless. The range is quoted at 100m or more (of power cabling I presume). If your garden shed is hooked up to the power grid then chances are you can do some Net surfing from the comfort of your garden!

I feel the need, the need for speed

Several speeds of HomePlug are available: 14Mbps, 85Mbps (Turbo) and the new 200Mbps (AV).

Note that the speeds are quoted in Mbps – Megabits per second - that is the same unit wireless speeds are quoted in. To get the number of Megabytes per second, divide the speeds by 8. Also, be aware like with all the figures that manufacturers give, these are maximum speeds. In practice the actual speeds will be slower and will vary depending on the quality of your electrical wiring and what other equipment is connected to your mains supply.

- **14Mbps** is suitable for file transfers, data and VoIP but it's not fast enough for anything else.
- **85Mbps** is usually suitable for streaming video, IPTV as well as everything 14Mbps can deal with.
- **200Mbps** is able to deal with more intensive bandwidth hungry stuff like HD streams and just about anything you care to throw at it.

85Mbps is backwards compatible with 14Mbps, so you can have 85Mbps and 14Mbps on the same ring all talking together.

200Mbps is not backwards compatible with either 85Mbps or 14Mbps since the 200Mps uses a different newer technology to get the data to travel quicker. However the 200Mbps devices shouldn't interfere with the slower devices, so they will happily sit on the same ring, even if they can't see each other.

Opening Up

Having had experience with the 85Mbps technology I was eager to try the new 200Mbps standard. My 85Mbps adaptors worked well when connected on the same floor, but the speed seemed to drop dramatically when trying to form a connection between floors. I was hoping that the 200Mps speed may make inter-floor connections more practical.

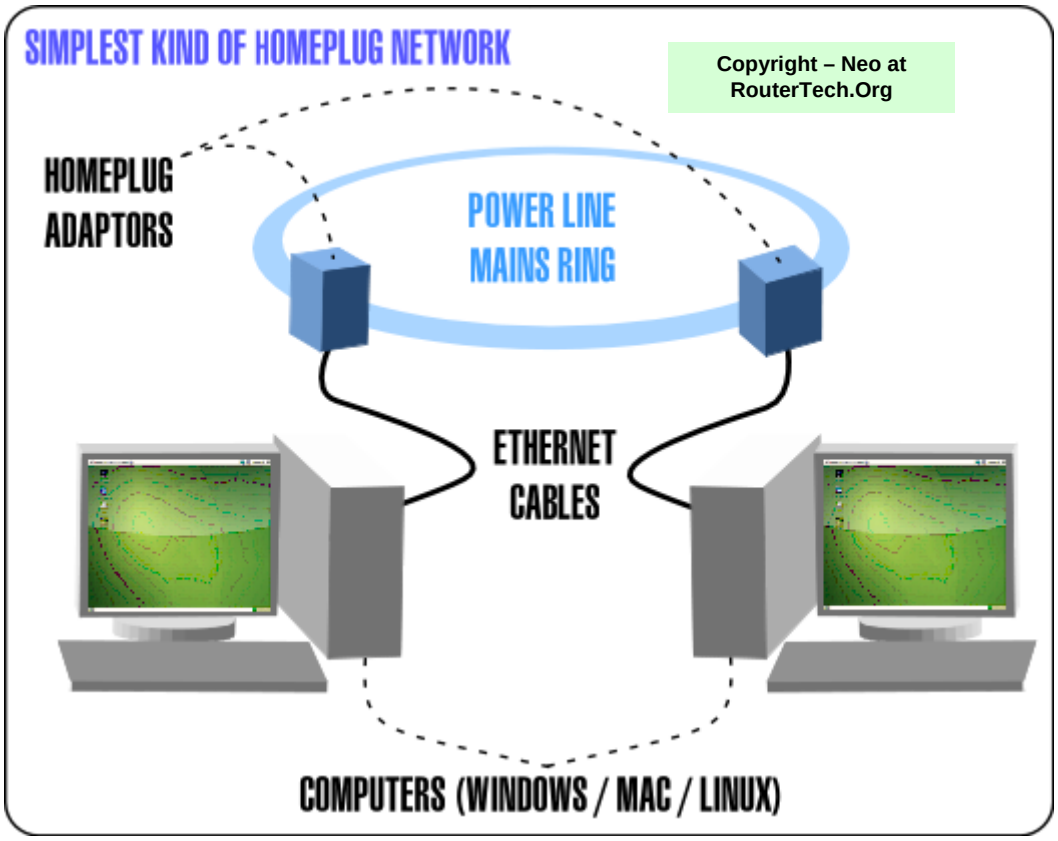
Solwise were extremely punctual with their delivery after I asked for some to review – in fact they turned up the next day. I have to say Solwise has always impressed me with their promptness.

Opening the courier's plastic bag I found two white non-descript cardboard boxes. Most of Solwise's kit comes in these rather unassuming, utilitarian cartons – to think how much is wasted by manufacturers on packaging alone, it's actually quite refreshing. I think there is a definite effort to be greener and the recycled cardboard insert inside confirm this.

Inside each box I found:

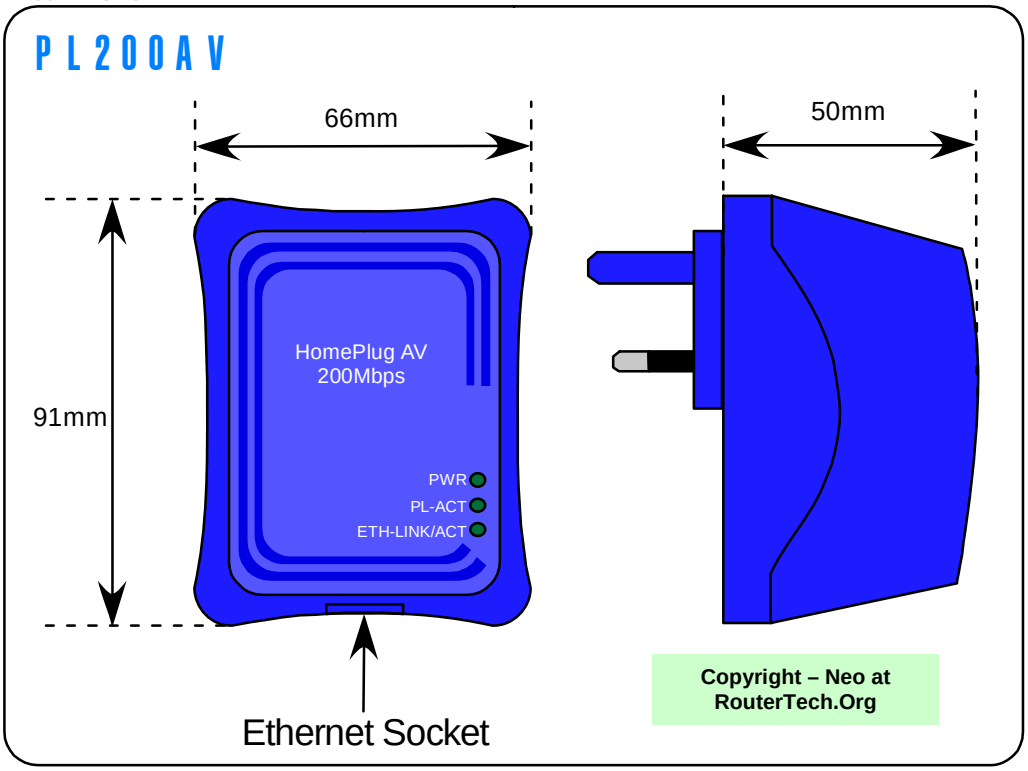
- The navy-blue adaptor – looking like most large PSUs or wallwarts but with a bit more style.
- A 4 x twisted-pair Ethernet patch cable approx 1.8m in length
- The installation CD version 1.1 with the Solwise utility and documentation
- A small A6 Easy Start Guide booklet, version 1.0

I asked for a pair because having a single HomePlug adaptor is like having a single walkie-talkie: not much use!



The minimum number of (compatible) HomePlug devices you need is two. However, as you add computers, consoles etc to your HomePlug network, you only need one more adaptor per device. It's like having a virtual Ethernet cable between your devices, only better!

I decided against getting a device with the 200Mbps HomePlug built-in because I like to mix and match and have several things with network ports that I wanted to play with. Having separate adaptors means I can make any of them HomePlug-able!



One thing that people will need to aware of is that the suped-up HomePlug adaptors are rather big and chunky – the chances are you won't be able to use an adjacent power socket. The PL200AV is 91mm long, 66mm wide and 50mm deep, bigger than many power supplies and way bigger than a standard plug.

Installation

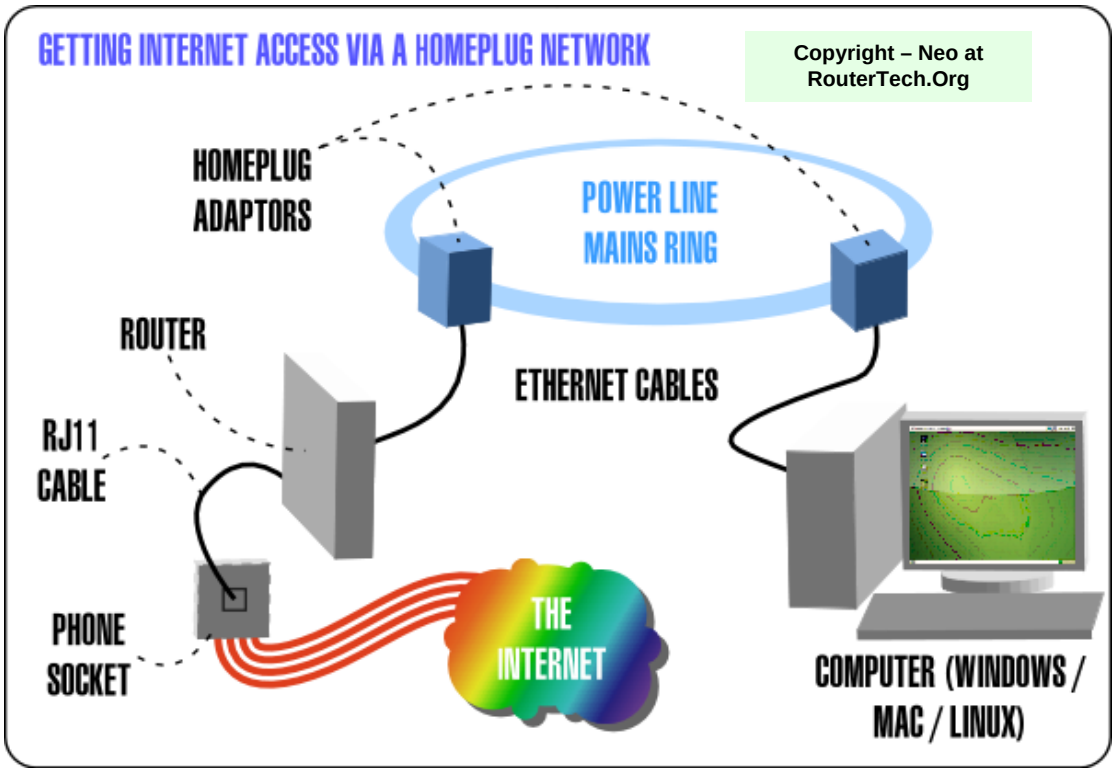
Installing the HomePlug adaptors was a breeze – not much harder than plugging in a normal PSU!

A key point is not to connect HomePlug adaptors to power surge protectors – it's vital that the flow of electricity between HomePlug adaptors is completely unhindered – each adaptor must be connected directly to the mains.

Like many HomePlug adaptors, the Ethernet cable is inserted in to the base of the PL200AV - if your power sockets sit very low on the skirting board (or the area below the power socket is otherwise blocked) you may have difficulty plugging in the HomePlug adaptor with the Ethernet cable sticking out. While not ideal, you may find you need to use a 2-way or 4-way gang mains extension – just make sure it's not surge protected if you do!

Each adaptor has a label on the back with the Device ID and MAC address. It's a good idea to make of note of these on a bit of paper to help identify them when using the utility.

Most people tend to skip reading any manual or guide, but this can often come back to haunt you. I decided to reign in my enthusiasm to get stuck in and read the guide from cover-to-cover, which was pretty painless.



Since I had already been using an 85Mbps system I just swapped my two 85Mbps adaptors for the two PL200AVs. The PL200AVs don't need any software installed on the computers, so I (initially) skipped installing the utility on the CD. I connected one adaptor to my router (which also has a PC connected directly to it) and the other adaptor to my media PC, both on the same floor. The PCs had already been set to use the DHCP the router provided so that's all there was to it!

Testing

I then performed some speed tests to get some real-world stats, using a collection of files to test small file and large file performance. Often hardware will transfer a group of small files at a slower rate than a few large files because there are more management overheads with the prior.

Another factor in network speeds when transferring files/data is whether a device is pushing (sending the file) or pulling (receiving the file).

Solwise quote a maximum throughput of 120Mbps, and typical throughput between 50 and 70 Mbps. The actual speeds you will see will depend largely on the quality of the mains wiring and what 'electrically noisy' equipment you might have.

Here are the results:

Same floor:

	Push (Mbps)	Pull (Mbps)
Small files	20.6	17.5
Large files	21.6	18.3

Inter-floor

	Push (Mbps)	Pull (Mbps)
Small files	9.6	4.4

If those seem low then one should bear in mind the speeds I got with 85Mps technology:

Same floor:

	Push (Mbps)	Pull (Mbps)
Small files	7.4	6.7

The PL200AV adaptors are on average 2.70 times faster than the 85Mbps Develo adaptors I used previously. That is higher than the 2.35 ratio one would expect (between 85 and 200).
Also, crucially, the inter-floor connection became useable.

All speed tests were performed using ordinary extension sockets – this was not perfect, but there was no option as unused plug sockets are hard to come by around here!

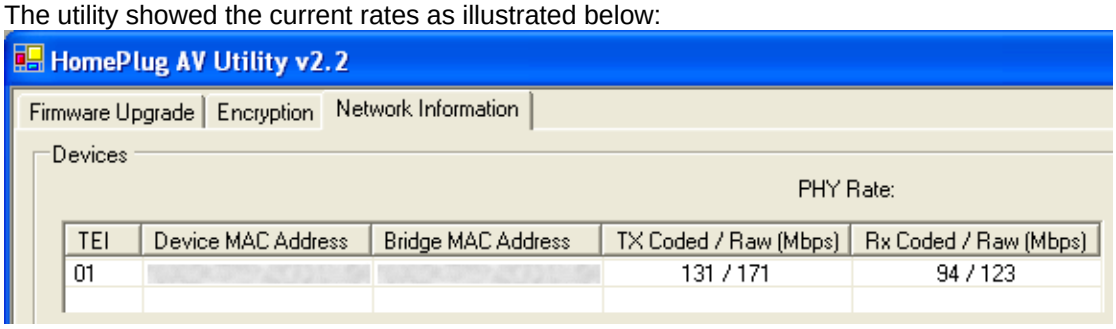
HomePlug Utility

On the CD that accompanies the PL200AV is utility – inserting the CD automatically starts the installation of said utility.

The utility allows you to:

- Upgrade the firmware of your (compatible) HomePlug devices
- Set a 'Private Network Name' which acts as a global password to encrypt the HomePlug data and prevent eavesdropping
- Monitor the current speeds of all the (compatible) HomePlug devices in the network

The utility showed the current rates as illustrated below:



Using encryption could slow down the potential speed, since it forces the adaptors to do more work.

To me, the utility is probably the weak point of the PL200AV package, because it doesn't seem very user friendly. For example, I tried to set the 'Private Network Name' (PNN) of the remote adaptor (following the Easy Start Guide) but I had no confirmation that the change had been applied. I then tried to set the PNN of the local adaptor but I had no idea if the network was really encrypted or if the changes had been successfully applied on both adaptors. It turns out that setting the remote adaptor also sets up the local adaptor, but this is not documented in the guide. The utility really should have some simple indication as to whether the HomePlug network is secure.

In any case, I conducted some further speed tests, under the assumption that the network was now encrypted:

	Push (Mbps)	Pull (Mbps)
Large files	21.1	18.5

As you can see, there was not much difference in performance, so if encryption was enabled then it didn't have much of an impact.

The utility's reported speeds seemed to confirm that encryption was enabled:

TX Coded / Raw (Mbps)	Rx Coded / Raw (Mbps)
84 / 110	82 / 107

As a programmer myself, I would look to improving the utility – if I can find sufficient documentation on how to talk to the adaptors via code, I will try to produce an improved version. However the majority of users will probably never need to use the utility – the chances of someone trying to eavesdrop on your power line are slim.

Conclusion

All in all, I'm very happy with the new found speed on my HomePlug LAN. I can stream video without any stutter in a building with fairly old wiring and on separate mains-rings.

Like most mature technologies there are several devices on the market that have HomePlug built-in: take for example Solwise's HomePlug router (ADSL-SAR-605EH) which has all the advantages of a normal router to boot – very handy when space is a premium and you need an all-in-one solution. Another application that will appeal to the security minded is the 14Mbps NET-PLA-14WCAM from Solwise, allowing you to connect a network camera anywhere in the house.

HomePlug gives you much of the freedom of WIFI without the complications of encryption, patchy reception and interference. With an adaptor, anything that has an Ethernet port can get some of the action. The installation is about as easy as it can be, even complete networking novices should have no problems.

Using HomePlug can be more expensive compared to plain Ethernet cables, but the extra flexibility and not having the need to lay cables is worth the difference in price. Solwise offer 85Mps adaptors for around £30 which are very competitively priced and make it fairly cheap for people to enter the HomePlug world.

The PL200AV adaptors cost £60.56 inc. VAT (at the time or writing) which reflects the higher speeds which average users may not need and the fact that this is the latest technology. The £60-a-pop price is about average across the board for 200Mbps adaptors.

If speed is important and the convenience appeals to you then I would recommend the PL200AV adaptors. Solwise have impressed me once again – their reputation for high-quality kit is well founded.

If you just want to give HomePlug a try, I would suggest something like the 85Mbps NET-PL-85PE from Solwise. Then, if later you find you need more speed I would definitely recommend the PL200AV.

Rating

Value for money – not cheap, but you get what you pay for	**4/5**
Ease of use – couldn't be easier	**5/5**
Performance – exceeded expectations	**5/5**