

DSL Filters & Splitters

A Little Background:

Telephone service via standard copper voice lines is often referred to as POTS or **Plain Old Telephone Service**. The frequencies used for voice transmission and analog data range from around 300 to 3700 Hz. This worked fine for voice transmission and older 56 Kbps analog dial-up modems. However, as Internet use and the demand for faster speeds exploded, dial-up just wasn't cutting it.

ADSL (Asymmetric Digital Subscriber Line) and SDSL (Symmetric Digital Subscriber Line), commonly just referred to as DSL, were introduced. In order to speed up and reduce the costs of deploying DSL it was designed to utilize the existing POTS copper lines. This was accomplished by using higher frequencies of 26 KHz to 1,100 KHz to transmit the DSL data while simultaneously permitting voice communication using the lower frequencies.

So What Is A DSL Filter?

A DSL filter is an electronic device that allows low frequencies to pass while blocking higher frequencies. The effect is that the DSL filter allows the range of voice to pass while filtering the higher DSL data transmission out. All devices attached to the incoming DSL lines with the sole exception of the DSL modem itself need to be filtered. This includes FAX machines, satellite receivers, analog modems, alarm systems, etc. Basically any device connected to a phone jack except the DSL modem must have a filter installed.

What Is The Difference Between A DSL Splitter and a DSL Filter?

DSL FILTER



A common DSL filter is designed to be plugged in between the phone jack and one device as depicted here.

One of these needs to be installed on all devices except the DSL modem.

Just disconnect the device from the phone jack and insert the filter in the jack. Then reconnect your device to the DSL filter.

DSL filters are relatively inexpensive and are readily available from local retail outlets or online from sources such as Amazon. [Amazon DSL Filters](#)

DSL SPLITTER



A DSL Splitter is used to split the line into a filtered and unfiltered branch for connection of the DSL modem.

Only one DSL splitter is used at the location of the modem. All other devices would use a standard DSL filter as shown above.

Just connect the splitter to the phone jack and connect your DSL modem to the DSL jack on the splitter. A phone or other device can be connected to the jack labeled phone.

Note: If the modem is the only device using a phone outlet, and there is no phone or other device sharing the line, then the splitter is not required and the DSL modem can connect directly to the line.

Why Do I Need DSL Filters?

DSL filters prevent high frequency noise on your devices that were not designed to accept frequencies in this range. Lack of proper filtering will cause hissing sounds in your voice communications. Also high frequency noise and interference created by devices such as FAX machines will cause problems with your DSL communications.

Can I Install A Whole House DSL Splitter?



POTS SPLITTER

If you have a direct dedicated line from the location where your telephone provider's lines enter your home, commonly known as the point of demarcation or DEMARC, to your DSL modem then you can install a POTS splitter.

A POTS splitter splits the incoming line at the DEMARC and provides a direct unfiltered connection to your DSL modem and a separate filtered connection for all other phone circuits.

UK Residents

Additional Information for UK Residents - Special Thanks to Richard

In the UK, the DSL filters are known as Micro Filters. Almost invariably they are of the splitter type. The UK phone plug is wider and flatter than the US plug, but the DSL port on the micro filter is the US style socket. This makes it impossible to plug the phone and the modem into the wrong ports on the filter. It also makes it impossible to plug a DSL modem directly into a wall phone socket. The single port filter is not normally used in the UK, and the dual port filter is used with the DSL port left open when just a phone is being connected.



UK Micro Filter

Some UK routers (with integrated modems) support cordless phones as well as the DSL signal off a single connection to the DSL port on a micro filter. These routers not only provide up to four 100 Mbps Ethernet ports plus WiFi, but also provide a normal baseband (POTS) and a VOIP phone on up

to five cordless handsets. They also support a wired phone plugged in to the router with access to both the POTS and VOIP lines. At least one large ISP provided a VOIP phone number as part of the broadband contract, although this type of router and the VOIP line are no longer offered to new subscribers. These routers can be configured to offer a public WiFi hot-spot service using a different SSID in addition to the private wireless network. The public service operates independently of the private network so users of the hot-spot cannot access the private network at all. The public hot-spot can use around 10% of the total bandwidth available through the router. There are over 1 million such hot-spots around the UK, and in exchange for offering the service, the ISP's users can log in on any other such hot-spot when they are away from home as part of their home broadband contract. Being able to park up in a street in a city at the other end of the UK, and access the Internet at no extra charge can be very useful. For users with a different ISP, Internet access is still available through these same public hot-spots; however, these users have to buy access time either by cellular (mobile) phone text message, or by credit card.

With some caller display units a single micro filter is not always sufficient for reliable operation of the CD unit. Cascading two micro filters can prevent the router's DSL signal from interfering with the display.

The Whole House Splitter (POTS Splitter) is not customer installable in the UK although extension phone lines are customer installable, provided they simply plug in to the master socket installed by the ISP. Over the last couple of years, Fibre to Cabinet broadband has started being rolled out in the UK. Powered cabinets are installed in the street with a fibre optic feed from the

local exchange. The POTS still comes out on copper, and in the cabinet, the DSL and POTS signals are combined on to the normal copper lines for the last couple of hundred yards to the house. This allows speeds of up to around 80 Mbps to be achieved without laying fibre or new cables to every house. There is a POTS splitter installed in the house by the ISP with one port for a new superfast modem and one for the normal phone equipment and phone extensions. The modem uses a gigabit Ethernet to connect to a new type of router with one gigabit port and three 100 Mbps ports.

One final point: the old style pulse dial phones with rotary dials can sometimes play havoc with a DSL line. This is because the phone puts a complete short on the line followed by an open circuit for each pulse while it is dialing. These extremes of signal can be too much for the filters to hide from the DSL modem. Tone dial phones are not nearly as extreme in what they do to the phone line.

DOCUMENT SOURCE - <http://isp1.us/article/dsl-filters/>