xDSL Inline Filters and Splitters

How we access the Internet in our homes and business is changing. However even with the adoption of new technologies, our existing phone lines are still used for the connection and the need to filter out signal noise on these lines to achieve the best performance remains.
Introduction

Over the last 15 years, Digital Subscriber Line (DSL) technology has been used to deliver high speed Internet to homes and businesses around Australia. To meet the increasing demand for bandwidth, new network topologies are being rolled out to bring the next generation of Internet speeds to Australians.

These network topologies include:
- Fibre-To-The-Home/Premises (FTTH/FTTP)
- Hybrid Fibre Coaxial (HFC)
- Fixed Wireless (Regional Australia only)
- Satellite (Regional Australia only)
- Fibre-To-The-Building (FTTB)
- Fibre-To-The-Node (FTTN)
- Fibre To The Distribution point (FTTdp)

Up to now, the most common method for delivering broadband Internet connections to homes and businesses has been ADSL2+ technology, using the copper phone lines installed from the local telephone exchange.

ADSL2+ operates at frequencies between 26kHz and 2.2MHz, which requires an ADSL Inline Filter/Splitter or Central Splitter to ensure that the low frequency voice signal on the telephone line doesn’t cause interference with the performance of the ADSL2+ service. If no filter/splitter is installed, your connection will be unreliable and result in reduced Internet performance.

Areas within the early stages of the NBN rollout have been deployed with Fibre-To-The-Home/Premises (FTTH/FTTP). These areas no longer require filters/splitters as the home or business is connected back to the local telephone exchange by optic fibre cable.

The current NBN network rollout follows the government’s multiple technology mix strategy, which means your connection to the NBN can be delivered by hybrid network topologies referred to as either Fibre-To-The-Building/ Basement (FTTB), Fibre-To-The-Node (FTTN) or Fibre-To-The-distribution point (FTTdp). In these deployments, optic fibre connects the basement of the building, cabinet or pit in the street, back to the local telephone exchange. The existing copper phone lines provide the connection from the basement, cabinet or pit to the home or business. The additional speed offered by NBN is achieved through the adoption of VDSL2 technology over the copper phone lines. VDSL2 provides a significant performance increase over traditional ADSL2+ through the use of signal frequencies ranging up to 30MHz. This additional performance can only be achieved over short distances from the node or distribution point.

Due to the higher frequency range employed by VDSL2, these services are more susceptible to noise or signal interference than previously deployed ADSL2+ services and therefore all ADSL inline filter/splitters and ADSL central splitters will need to be replaced with a new VDSL filter/splitter or central filter, which is backwards compatible with both ADSL2+ and ADSL.

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Copper based

Fibre based

Hybrid
Wiring in your premises

The quality of the wiring in your premises can affect the performance of your VDSL service due to its greater sensitivity to signal noise. Traditionally, noise on the line was generated by devices such as telephones, fax machines and back-to-base alarm systems, but under new network topologies, VoIP services are used to connect these devices. Home wiring is still a source of noise and the noise on the line can be affected by the number of phone jacks and the method of their connection within the premises.

Line noise is often not apparent, as it is not audible on voice calls, but it is a frequent cause of poor signal on xDSL connections. To avoid line noise it is recommended to install a central splitter.

VDSL2 Inline filter/splitters

VDSL2 Inline filters are installed on each wall socket in the premises where a handset is connected. No more than 3 inline filters/splitters should be used in the premises. The more filters that are used on a line, the greater the service is degraded. This is because the filters are operating in parallel on a single line and can cause issues like poor voice quality due to poor matching of impedance.

Central Splitters

Central splitters are the optimum solution for a premises. With a central splitter installed, the VDSL2 service is isolated at the main point of entry to the premises from the remainder of the internal telephone wiring. The split wiring layout allows the VDSL2 service to reach maximum performance while allowing existing telephone services and back to base alarms to function normally.

When your home or business is about to be connected to the NBN via FTTN, FTTB or FTTP, ask your ISP to install a NetComm Wireless VDSL2/ADSL2+ Central Filter (EM1660/1670) to ensure maximum NBN performance.

Alternatively, in advance of NBN being deployed in your area, contact a licensed electrician to undertake the installation of a VDSL2/ADSL2+ central splitter as it can also benefit the performance of existing ADSL2+ services.
Central Splitter - Indoor Use VDSL2
EM1660

**KEY FEATURES**

- Designed to get the best from your VDSL2 internet connection
- Perfect for any Fibre-to-the-Node (FTTN) or Fibre-to-the-Basement (FTTB) NBN customers who will have the high speed Internet delivered into their homes via VDSL
- Supports vectored VDSL
- Separates data and phone signal so there is no interruption between the two
  - Eliminates any broadband drop outs due to phone calls or faxes being sent on the same line
  - Minimises voice band interference to ensure quality phone calls
- Designed for central installation that will work to filter all connected equipment throughout a premises
- Conforms to local safety and Telstra standards
- Also suitable for alarm systems

**SPECIFICATIONS**

**PHYSICAL**

- Material: Plastic high impact ABS
- Dimensions: 38 (w) x 57 (h) x 57 (d) mm

**COMPLIANCE**

- Telstra RCIT.0004
- Compliant to AS/CA S041:2015
- S002-App. F
- T5021, T5002 and AS/NZS60950.3 safety
- G.dmt, G.Lite, ADSL2, ADSL2+, VDSL2, VDSL2+ compatible

Inline VDSL2 Filter/ Splitter
EM1650

**KEY FEATURES**

- Designed to get the best from your VDSL2 internet connection
- Perfect for any Fibre-to-the-Node (FTTN) or Fibre-to-the-Basement (FTTB) NBN customers who will have the high speed Internet delivered into their homes via VDSL
- Supports vectored VDSL
- Separates data and phone signal so there is no interruption between the two
  - Eliminates any broadband drop outs due to phone calls or faxes being sent on the same line
  - Minimises voice band interference to ensure quality phone calls
- Designed to connect multiple filters in parallel, without deteriorating the voice quality or causing interference on the line
- Conforms to local safety and Telstra standards
- Also suitable for alarm systems

**SPECIFICATIONS**

**PHYSICAL**

- Material: Plastic high impact ABS
- Dimensions: 44 (w) x 26 (h) x 90 (d) mm

**COMPLIANCE**

- Telstra RCIT.0004
- Compliant to AS/CA S041:2015
- S002-App. F
- T5021, T5002 and AS/NZS60950.3 safety
- G.dmt, G.Lite, ADSL2, ADSL2+, VDSL2, VDSL2+ compatible

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