C10's Range of ADSL Filter / Splitters

C10 Communications is a pioneer in the design and manufacture of ADSL filter/splitters to the highest standard in Australia. C10 is today an established supplier of ADSL filter/splitters to Telstra and other telecommunication carriers, ISPs, ADSL modem vendors and distributors within Australasia. All our filters/splitters support the requirement of ADSL, ADSL2 and ADSL2+ services.

C10 is the first Australian manufacturer of ADSL filter/splitter to not only meet Telstra's RCIT.0004 specification, but also the first to comply to both RCIT.0004 and AS/ACIF S041:2005 standards

C10 is committed to meeting its customers' needs by supplying a complete range of ADSL filter/splitters. This includes housing options for the Australian market with models C10245M, C10345M, C10645M, and C10100E.

C10 ADSL Splitter/Filters Models

Model	Description	Application	
C10245M (Inline)	The C10245M is a noise-free distributed filter/splitter, designed for ADSL/ADSL2/2+ services. Provided with RJ45/RJ12 connectors for line, phone and DSL modem and a RJ12 cord.	Universal for any style of telephone sockets, and line cord. Compact in size, also fits inside Telstra wall phone bracket. Can be attached to any telephone device (phone, fax, V.90 modem, answer machine etc.)	
C10345M (Inline)	The C10345M is a noise-free wall mounted distributed filter/splitter designed for ADSL/ADSL2 /ADSL2+ services. Provided with RJ11 line Plug, RJ45/RJ12 jacks for modem, phone and other phone/fax.	Offers convenient, compact and neat connection for wall phone (direct piggy back between wall plate and wall phone). Additional phone port (filtered) and ADSL modem port (unfiltered) are provided for further convenience.	
C10645M (Inline)	The C10645M is a noise-free distributed filter/splitter designed for ADSL/ADSL2/2+ services. Provided with RJ45/RJ12 jack for modem, and Australian 606 line-plug, 610 socket for direct plug-in phone connection.	Direct connection to Australian conventional 600 series socket without the use of a string of adaptors and cords, offer neat and compact connection, and improve reliability. ADSL modem port (unfiltered) is also provided for DSL connection.	
C10100E (Central)	Central ADSL splitter, designed for ADSL/ADSL2/2+ services. Provided with an IDC terminal block, in a weather proof box, suitable for external and internal installation.	Can be installed at the telephone line entry point to isolate all telephone sockets in the building premises. Requires licensed installer to run separate wiring for DSL modem/router,	

	apart from the existing wiring for telephones.

To help you in selecting the best model for your application, please refer to the product selection guide.

Compliance

C10's filter/splitters: C10245M, C10345M, C10645M, and C10100E are certified and compliant to:

- Telstra's RCIT.0004
- AS/ACIF S041:2005 *
- AS/ACIF S002 Appendix F*
- AS/NZS 60950 (3260) safety and
- AS/NZS 3548:1995 (CISPR22 :1993) Amendment 1+2:1997
- ETSI TS 101952-1-1 (Central splitter)
- ETSI TS 101-952-1-5 (Distributed or In-line, or Micro Filter/Splitter)

** AS/ACIF S041:2005 standard came into effect in October 2006 replacing ACIF standard S002 Appendix F for ADSL filter/splitters in Australia.*

Common Questions:

Q1: Are C10 range of filter/splitters suitable for ADSL2/ADSL2+?

Yes, all C10 distributed filter/splitters **C10245M, C10345M, C10645M** and central splitter **C10100E** are designed for **ADSL/ADSL2/ADSL2+** services

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Q2: What standards do C10's filter/splitters comply with? Are they certified?

C10's filter/splitters are fully certified and comply with:

- Telstra Technical Specification RCIT.0004,
- AS/ACIF S041:2005,
- S002 Amendment 1 +2, Including appendix F,
- AS/NZS 60950 (3260) safety and
- AS/NZS 3548:1995 (CISPR22 :1993) Amendment 1 +2:1997

Q3: What is the purpose of a DSL (ADSL/ADSL2/ADSL2+) filter/splitter?

DSL technology shares a telephone line with standard voice services. A DSL filter/splitter is basically a low pass filter, separating high frequency DSL signals and lower frequency voice signals. The low pass filter allows the low frequency (voice) signals to pass through, blocking the high frequency DSL signals (data) from traveling to the telephone (or CPE in general terms). At the same time it also minimises interference from CPE to the DSL device (ADSL modem) and keeps the DSL service operating at optimal levels.

Note CPE (Customer Premises Equipment) means telephone sets (including cordless types), answering machines, facsimile (fax) machines, V.90 56kbps dial up modems, automatic dialers and recorders. And DSL device means your ADSL/ADSL2/ADSL2+ modem or router.

ADSL filter means C10 ADSL filter/splitter.

Q4: How to choose the right DSL (ADSL/ADSL2/ADSL2+) filter/splitter?

There are 2 categories of DSL filter/splitters: (a) **Distributed filter** (also called micro filter or in-line filter) and (b) **Central filter** (also called remote filter/splitter).

a. **Distributed filter/splitter**: The distributed filter/splitters are designed for simple self installation. A filter /splitter is needed for each telephone device (CPE) used. Simply disconnect each telephone cord from the wall socket, and insert a filter in between the **wall socket** and the **line cord**. Don't forget the phone/(s) in the garage, basement, or store room. Refer to the distributed filter installation guide.

   Please refer to C10 ADSL filter selection guide to select the best filter for your connections. (For example a C10645M would best suit the Australian old 600 series type of sockets, as it is easy to use, more reliable, avoids using a string of adaptors and cables hanging form the wall, and is also a neat and compact installation).

   Distributed filter/splitter has the advantage of easy installation and provides flexibility for relocation of your DSL modem and computer. However, a filter is needed for each telephone device (CPE) in your home. It is recommended to only parallel a maximum of three (3) filters on one ADSL telephone line (use a central splitter if more than 3 filters are needed).

b. **Central filter / splitter (or Remote filter splitter)**: The Central filter requires a licensed person to do the installation. Only one central splitter is necessary near the Network Boundary Point (NBP) ahead of all telephones and other CPEs (includes cordless telephones, fax, Alarm system with auto dialer etc.). A separate wire pair is to be taken from the NBP (before the splitter) to the jack connecting the DSL modem/router. An installation guide (downloadable) is available for reference.

   The Central filter has the advantage that you need only one filter for all phone devices in the household. However, there is a cost for a licensed technician to do the wiring and installation. As this is a hard wired option it is not flexible during relocation of the ADSL modem/router.

Q5: How is the C10 "M" series distributed filter/splitter different?

A problem may that occur with some ADSL2+ is 'noise on the telephone' when **multiple in-line filiters (distributed filters)** are connected **in parallel** to the same telephone line. This happens because the stronger ADSL2+ signals interact with the **idle filter**(s) (where phone is on-hook) resulting in the generation of audible low frequency noise to the telephone line, which can pass through other filters on the same line as part of the voice signal. The stronger the DSL signal the louder will be the noise. The more the idle filters paralleled on the line the louder will be the noise. C10 'M' series filters are specially designed (International Patent pending) to overcome this problem, and ensure that all filters in parallel are immune to any DSL signal strength. Thus the 'M' series design avoids generation of noise by the filter, giving the user a noise free connection regardless of the DSL signal strength.

Q6: I just upgraded my ADSL service to ADSL2+, and do not experience any problem with my existing "E" series filter(s), do I have to change to "M" series filters?

You ONLY need to change the old "E" series distributed filter(s) to "M" series distributed filter(s) if you experience noise on the phone with ADSL2+ service **when multiple idle filters are installed in parallel**. This kind of noise depends on the DSL signal strength - which varies with the type of modem, line condition, distance to the exchange etc.

If you **do** experience noise on the phone with ADSL2+ service **when there are multiple filters installed on the same line**, we suggest you change all your filters to the"M" series filters, and do not use a mix of both the old and new filters. Please refer to How to diagnose the causes of noise for confirmation prior to purchasing the new filters.

Q7: Why is a C10100M not included in your product range? Is the C10100E good for ADSL2+ services?

The C10100E is a central filter designed differently to the distributed filters. The central splitter/filter does not include the elements needed for paralleling as in the case of distributed filters, and therefore the paralleling noise problem will never happen to the central filter. In addition, the design of C10100E covers all aspects required for ADSL/ADSL2/ADSL2+ and are compliant with Telstra specification RCIT.0004 as well as AS/ACIF S041:2005.

Q8: Can I use a distributed filter/splitter in lieu of a central splitter?

Functionally yes, providing you have taken into consideration the following:

A. A distributed filter/splitter is normally not weather proof and hence not suitable for external installation.
B. A distributed filter/splitter is provided with modular RJ45/RJ12 jacks and is not suitable for fixed wire termination such as IDC or screw terminal.
C. When using as a central filter / splitter, you need a licensed installer to run a new pair of wire for the DSL modem/router besides the existing wiring for telephones.

Q9: Are the C10245M, C10345M and C10645M compatible with mode-3 wiring (4 wire)

Yes, all the above models are Mode-3 compatible. 4-wire configuration between ports:

C10245M: "WALL SOCKET" and "LOCAL PHONE"
C10345M: "WALL SOCKET" and "LOCAL PHONE" and "OTHER PHONE"
C10645M: "606 Plug" and "610 Socket"

Q10: I used to plug my telephone, a fax machine and a recoding machine through a triple adaptor (or 2 double adaptors) to a wall socket before I signed up for the broad band service, how many distributed filters do I have to use for all these?

You can just insert **one** distributed filter between your wall socket and the triple adaptor (or the first double adaptor) without altering the connection of these telephone devices. The important fact is that the filter must be ahead of all these telephone devices as a group, nothing should be connected directly to the line, except for ADSL modem.

Q11: What is the jack marked as "ADSL Modem" for? Can I leave this jack open unconnected? (I can see 'ADSL Modem' jack on all of your distributed filters models C10245M, C10345M, and C10645M)

If the filter/splitter is only used for telephone devices you can leave this "ADSL modem" jack open (unconnected).

The "ADSL modem" port is provided for convenience of connecting ADSL modem/router without the need of getting a double adaptor, if the wall socket has been already occupied by a telephone with filter. You can move the modem and connected it to the "ADSL modem" port of any distributed filter in the house.

Q12: My old wall phone is hard wired to the wall, can I leave it without a filter?

No, unfiltered phone device can cause noise to the line it shares with other phones. This is because the unfiltered phone device may interact with DSL signals and convert the DSL signals into audible low frequency noise to the line, and pass through filters on the other phones as part of the voice signal. It may degrade your DSL service quality too. Therefore we recommend that you should have your old wall phone connector changed, or get an authorized technician to install a central filter for all your phones, and run a separate wire pair for your DSL modem/router.

Q13: Understanding the causes of noise

When my DSL modem/router is turned on, there is noise in the telephone. What is happening and how to fix it?

The noise problem can have several root causes as explained below:

1. Unfiltered phone devices can cause noise on the line it shares with other phones. This is because the unfiltered phone device may interact with DSL signals and convert the DSL signals into audible low frequency noise on the line that passes through filters on the other phones as part of the voice signal. It may degrade your DSL service quality too. Therefore we recommend that all telephone devices must have filters
2. A faulty filter or a bad quality filter that does not adequately filter out the DSL signals

2. A faulty filter or a bad quality filter that does not adequately filter out the DSL signals which may get through to the telephone, causing noise on the phone devices.
3. Noise occurs when multiple in-line filters are installed on the same line in parallel. Depending on the DSL signal strength, idle filters (where phone is on-hook) may interact with DSL signals and converts the DSL signals into audible low frequency noise to the line. This audible low frequency noise can pass through filter into the phone in use as part of the voice signal. The more idle filters of this kind in parallel, the louder will be the audible noise. **The C10 "M" series in line filter/splitters are specially designed to overcome this kind of paralleling noise problem, guarantee to work always at any DSL signal strength.**
4. Incorrect wiring within the house, bad quality/leaky telephone line, or oxidised wire contacts, or any protection devices installed on the line, which might exhibit characteristics that can cause noise when ADSL2+ service is deployed.
5. Bad quality or leaky telephone line (anywhere between exchange and the customer premises), or oxidised/corrosive join contacts, or any forgotten protection device or remote line test module installed on the telephone line, which might exhibit characteristics that can exhibit noise problem when ADSL2+ service is deployed with higher signal strength.

Q14: How to diagnose the cause of the noise

It is important to know exactly where the root cause is, and fix it properly. To determine the root cause of the noise, the following Diagnostic Qualification (DQ) may be used for identifying the problem area and its possible fix:

DQ1. How many filters or splitters on the same line?

A. Only one (1) filter or splitter is on the line -> go to DQ5
B. Two (2) or more filters/splitters -> go to Next DQ2

Multiple filters/splitters parallel on the same line

DQ2. Is the noise occurring on all telephones on the line or only on a particular telephone?

A. The noise is only heard on a particular telephone -> go to DQ9
B. The noise can be heard at any phone that goes off hook -> Please try to keep only one (1) filter with a telephone on it, and disconnect all remaining idle filters and telephones from the line -> go to Next DQ3

DQ3. Is the noise eliminated after disconnecting (removing) the idle filters and telephones from the line?

A. No, The noise is still there even after the removal of all idle Filters & phones -> go to DQ5
B. Yes, the noise was eliminated after the removal of all idle filters & phones -> Please try plug one (1) or more idle filters back to the line (may be with or without phone attached to it) and listen to the noise again -> go to next DQ4

DQ4. Has the noise returned when an "idle" filter is plugged to the line? Does it become louder when more "idle" filters are added?

A. If you are not sure whether the noise come and go with "idle" filter on the line -> Please repeat DQ1-DQ4, re-confirm the symptom in each step, if required note down on a piece of paper to avoid any confusion.
B. If your answer is yes -> The root cause of the noise is most likely due to some or all of the current filters that you are using. **To fix this problem, replace all your current filters with C10245M, or C10345M, or C10645M depending on the wall socket styles.**

Single filter/splitter is on the line

DQ5. Is this single filter/splitter a central splitter? or a distributed filter because only single telephone device is used?

A. This is a distributed filter/splitter, installed by myself because I have only one (1) telephone device in use -> go to DQ8
B. This is a central splitter -> go to Next DQ6

DQ6. Do you have an alarm system with back to base auto dialler at home?

A. No, I do not have an alarm system at home. A central splitter was suggested hoping that might fix the severe noise problem, however there is not much improvement. -> go to DQ7
B. Yes, I have an alarm system installed -> go to Next DQ7

DQ7. In case of central filter, (installed by a licensed installer), if the modem drops out or noise problem persists, the following verification tests may help to locate the possible fault

A. To determine whether the fault is at (1) line side or (2) premises wiring, or (3) a faulty central filter. To do this:
    a. Connect ONLY the exchange line to a known good central filter, without any customer premises wiring attached to the central filter
    b. Connect a DSL modem or router, and a telephone directly to the central filter terminal marked "Modem" and "Phone" respectively.
    c. Verify the fault symptom (modem drop out or phone noises). Check if the fault occurs with or without the customer premises wiring connected to the central filter. This will clearly indicate if the problem is with the customer premises wiring or at the exchange end. -> go to DQ7(B or C).
B. If the problem is eliminated after removal of the premises wiring, premises wiring has the problem, check if the telephone wiring is bridging to the modem wiring (which is unfiltered), the wiring has to be corrected.
C. (C) If the problem persists even after removal of the premises wiring, the exchange end (line side) has the problem, you may need to have assistance from the carrier-company (or service provider).

DQ8. In case of a single distributed filter, if the modem drops-out or noise problem persists, the following verification tests may help to locate the possible fault?

A. Determine whether the fault is at (1) Line side or (2) Premises wiring, or (3) a faulty Filter/Splitter. To do this:
    a. Look for the first socket in the premises (Note, the first socket is the Network Boundary Point, where all other sockets are paralleled from the first socket)
    b. Keep only the "line" wiring to the first socket, and disconnect the wiring to other sockets. Connect to the isolated first socket, an ADSL modem/router and a known good filter/splitter with a telephone.
    c. Verify the fault symptom (modem drop out or phone noises). Check if the fault occurs. This will clearly indicate if the problem is with the customer premises wiring or at the exchange end. -> go to DQ8(B or C).
B. If the problem is eliminated after removal of the rest of house wiring from the first socket, this is an clear indication that the premises wiring has the problem. -> reconnect the house wiring to double check if the problem is associate with it, clean blackening oxidised wire contacts if required, and check that if there is a telephone or protection device hanging on the line and unfiltered (unaware if you are not the first hand owner of the premises), this process may be repeated for the subsequent sockets to determine the problematic location.
C. If the problem persists even after removal of the premises wiring from the first socket, the exchange end (line side) has the problem, you may need to have assistance from the carrier-company (or service provider).

DQ9. If the noise is associate to a particular filter, or telephone, or location (wall socket)

Then try to swap (1) Filters, (2) Telephones, and (3) Locations, and use a piece of paper to note down the combination and result -> **to isolate the fault.**
