Astraphobe™ DSL

USER GUIDE

Please read this user guide carefully before installation to ensure your safety and proper operation of your Astraphobe DSL.

The electronic version of this USER GUIDE may be downloaded from www.astraphobe.com/download

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The Astraphobe DSL hardware that this manual refers to is version AP-DSL-G1.0 as marked on back of unit, with firmware v1.0.

Contents

1. Astraphobe DSL Overview

Thank you for purchasing the Astraphobe DSL ("Astraphobe"). This device is designed to protect your sensitive electronic equipment from damaging high voltage electrical surges that may enter your house via your telecommunications line during the presence of a nearby storm. It does so by being installed in-between your line and your equipment, tracking storms in your vicinity, and disconnecting your line immediately the storm moves too close to you. As long as the storm is too close to you, your line and equipment remains disconnected, and as soon as the storm moves away and it is safe to do so, it reconnects your line.

Please read this manual in its entirety - it won't take you long and will allow you to maximise the benefit you will receive from your Astraphobe unit.

Please follow the installations instruction carefully - again, it won't take you long, and it takes just as much time to install the Astraphobe properly as what it does to do it improperly.

2. A Quick Word On Lightning and Surge Protection.

Lightning is unpredictable and dangerous. Despite great advances in technology, lightning is more of a problem today than what it was 100 years ago (ironically, because of the great advances in technology!).

It is common knowledge not to talk on a corded phone during a storm, neither should one use any electrical appliance, nor bath nor shower. Lightning from a nearby strike can enter your home through any of your wiring or pipes, and of course a direct strike can be devastating if the structure is not protected. The blast from a direct strike is especially damaging, and can blow DB boards and light switches off the wall and physically damage the structure of the house. With that in mind, everyone should ensure their home is adequately protected against lightning.

YOU ARE STRONGLY URGED TO ENSURE YOUR HOUSE IS FULLY PROTECTED AGAINST LIGHTNING. CONSULT A PROFESSIONAL. YOU AND YOUR LOVED ONES SAFETY ARE OF THE UTMOST IMPORTANCE.

So why use the Astraphobe? Very simply, the most common way for lightning damage to occur to electronic equipment in a house is for a high voltage surge to enter the house through the telecommunications line, travel to the modem/router, and from there to whatever other equipment is connected, or in close contact with any of the wiring. Often no visible or easily discernible damage is evident, but the modem is blown, the computer, the media player connected to the TV, the TV itself, the games console, and so on. In some cases equipment may fail only some time after the lightning event. This can happen even when surge protection is placed on the line – see the FAQ on page 16 for a discussion on surge protectors. Most experts agree that the best way to prevent damage is to simply unplug the

telecommunications line and equipment in the presence of a storm. This is inconvenient, extremely dangerous if done during a storm, and of course impossible to do if you are not at home when the storm arrives. This is where the Astraphobe comes in – a simple, easy to use device that disconnects your telecommunications line in the presence of a storm, <u>before</u> the storm gets too close and where damage becomes likely. Even with the minimum safe distance set of 5km, the Astraphobe will disconnect your line and thus protect your equipment from electrical surges that originate within a 78 square kilometre area.
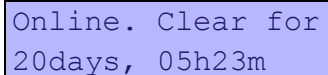
3. Lightning Detection

Lightning is an electrostatic discharge either within a cloud or between clouds, or of course between a cloud and the ground. When lightning strikes, the visible lightning channels carry enormous electrical currents and behave as a giant antenna system transmitting an electromagnetic impulse. This impulse propagates through the atmosphere in a similar way to which television and radio signals are broadcast. The Astraphobe detects lightning by examining the atmosphere for these electromagnetic impulses. There are also many other man-made electromagnetic impulses, so any impulse received by the Astraphobe is first validated to establish whether or not the impulse was created by a lightning strike. If so, additional processing takes place to estimate the distance to the storm. The more strikes received, the more accurate the distance estimation.

4. The Astraphobe DSL – Operating Modes

The Astraphobe has four modes of operation. Each mode has a corresponding display, which will always start with either the word "Online" meaning your line is connected, or the word "Offline", meaning your line has been disconnected. On the display, the ⚡ icon is context sensitive, meaning either storm or a lightning strike.

4.1. Online, Clear mode:

In normal operation, when no storm is nearby, the Astraphobe will display a message similar to the one shown here. In this mode, your line is connected,

```
Online. Clear for
20days, 05h23m
```

the Astraphobe is scanning for storms and will periodically perform internal checks and calibration to ensure reliable operation. The display also shows approximately how long it has been since the last storm was detected. In this example, the Astraphobe has not detected any storm for 20 days, 5 hours and 23 minutes.

4.2.   Online, Storm Mode:

When a storm has been detected some distance away, the Astraphobe will show "Online. Stormy!" on the top line of the display. On the bottom line it

```
Online. Stormy!
ϟ 32km. Last02:45
```

will indicate the estimated distance to the storm, together with a timer counting **up** the time since the last successfully analysed strike. The ϟ icon is used in this context to indicate storm. Appro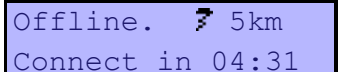ximately fifteen minutes after any detected storm activity ends, the Astraphobe will revert to the normal mode of operation.
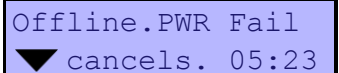
4.3.   Offline, Storm Mode:

If the storm gets too close, the Astraphobe will internally disconnect your line. On the top line the text will indicate "Offline" together with the current

```
Offline.  ϟ 5km
Connect in 04:31
```

distance estimate of the storm and a timer counting **down**. In the example shown, the display indicates the storm is estimated to be 5 kilometres from your location, and the bottom line indicates the line will be reconnected after 4 minutes and 31 seconds provided no further lightning strikes within 5km are detected. Note any further storm activity will result in the timer resetting to the start value.   The *disconnect distance* and the *reconnection timer* are described in chapters 5 and 6 respectively, and may be set via the menu system starting on page 9.

4.4.   Offline, Power Failure Recovery Mode:

The Astraphobe incorporates a special power failure recovery mode.   During a storm when the Astraphobe has disconnected your line, if the power

```
Offline.PWR Fail
▼ cancels. 05:23
```

goes off either momentarily or for an extended period, when it comes back on again the Astraphobe will enter this mode. The example shows what will appear on the LCD display. The first line indicates the Astraphobe is in power failure recovery mode, and the line is disconnected. On the second line the message " ▼ cancels" appears together with a countdown timer. Whilst the timer is active, the Astraphobe is actively seeking out any storm. If any lightning strike is detected at any distance, the Astraphobe will change to the Offline, Storm Mode, keeping your line safely disconnected until further strikes are detected and the range to the storm more accurately estimated.   If no storm is detected by the time the countdown timer reaches zero, then your line will be reconnected. For convenience, for those times when the power has been off for an extended period and the storm has moved on or dissipated, you may cancel the Power Fail mode by pressing the ▼ button. Your line will be immediately reconnected. **N.B. Use with caution**, and do not cancel this mode should there still be any storm nearby.

If you live in an area where power failure is likely, the Astraphobe should be powered by a UPS. If the Astraphobe is powered off, it will not be able to

disconnect your line, leaving you vulnerable. An Astraphobe specific battery backed power supply is under development and will be for sale as an accessory.

5. The Disconnect Distance

You may set the distance that a storm may approach before the Astraphobe will disconnect your line. A setting of 6km means any storm that is further away than 6km will not cause the Astraphobe to disconnect your line, but as soon as it moves closer, to 6km or less, the Astraphobe will immediately disconnect your line and keep it disconnected for as long as the storm is within 6 kilometres. You may choose a disconnect distance of 5km, 6km, 8km, 14km or 20km.

So, what distance to choose? This depends on your particular environment, geography, telecommunications infrastructure, your need to be online at any point in time and your personal risk appetite! It stands to reason that the bigger the distance, the more safety is provided but the longer you will be offline for during a storm. Conversely, if you make the distance a smaller value, then the Astraphobe will allow the storm to approach closer, waiting longer before disconnecting your line, and will reconnect sooner.

Here are some pointers: If you live in a high density urban area with buried cables then a smaller safety zone may be selected, because the high voltage surge in the telecommunications wiring will be more readily dissipated due to the many connections and spread of wiring and will therefore not travel as far. The default setting for a high density urban area with all cables underground is 6km. If you're a farmer or your household has the telecommunication line outside mounted on telegraph poles running off into the distance, then a bigger disconnect distance should be selected, because a lightning strike that induces a damaging high voltage surge in the telecommunications wiring will carry much further. Your experience with previous incidents may guide your selection.

6. The Reconnection Timer

The Astraphobe features a programmable timer, which is used when your line has been disconnected due to a storm. Each time the Astraphobe processes a strike that is within the disconnect distance (in other words, too close to you), it resets the reconnection timer to its original value, restarting the countdown timer. Once the storm starts moving away, strikes detected outside of your disconnection distance do not reset the reconnection timer, so when the timer reaches zero, the Astraphobe will reconnect your line. If the storm dissipates whilst still overhead, the frequency of the strikes will reduce and stop, the timer will count down to zero, and your line will automatically be reconnected. As with the disconnection distance, this reconnection timer is a compromise between convenience and safety. The smaller the timer value, the less you will be inconvenienced by being offline but the safety margin will be reduced. Conversely, a longer timer setting means you are offline for

longer periods but the safety margin is increased. The settings that may be chosen are 5, 7, 10 or 15 minutes. The default is 7 minutes. The reconnection timer value is also used as the countdown timer value for the power failure recovery mode discussed in section 4.4 above.

7.   The Audible Alarm

The Astraphobe incorporates a piezo buzzer which emits a "beep" and which may be programmed according to your needs. You may choose a silent mode, or for the Astraphobe to beep only when it is disconnecting or reconnecting, or for successful strike detection and so on. The various menu options regarding audible feedback are detailed in the Audible Alerts Menu section in section 10.1.

8.   Startup and Periodic Health Check

On start up, and periodically thereafter, the Astraphobe performs a self test of its internal circuitry as well as regularly calibrating itself. In the unlikely event of a component malfunction, the Astraphobe will emit a 5 second beep, disconnect your DSL / telephone line, display an error and suspend operation. Should any problem persist your Astraphobe may need service.

9.   Interference

The Astraphobe detects storms based on the electromagnetic impulses transmitted by lightning strikes. It is therefore sensitive to unwanted electrical interference. This may be caused by LCD and CRT monitors, television sets, electrically noisy air conditioners, refrigerators and other similar equipment.

NB. When choosing a location to install the Astraphobe, please take care to locate the unit away from potential sources of interference.

Should there be some nearby device that radiates a strong, constant interference the Astraphobe will display **"Persistent EMI, Refer to manual"** and beep for 5 seconds. Remove the source of interference or relocate the Astraphobe as it cannot operate. Please note however that the Astraphobe is designed to cope with occasional electrical interference. Should you see the occasional message **"Random EMI Pulse, Refer to manual"** do not be alarmed, the Astraphobe will operate normally. However, should this be incessant then again the Astraphobe should be relocated or the offending equipment moved. If you have not turned it off, you will also see **"Random EMI Pulse, Refer to manual"** during a storm. This is normal. There are many lightning strikes during a storm that the Astraphobe can detect, but not classify as a strike due to the strike properties. After installation, the menu may be set such that any occasional EMI messages are suppressed, see section 11 and also the Installation Guide.

10. General Menu Operation

Your Astraphobe is configurable via a simple menu system. You may define what audible feedback you desire, how close the storm may approach before the line is disconnected, how long to remain offline for, and various other settings.

There are 2 buttons used to control and configure the Astraphobe. The top button furthest from you marked with the ▲ symbol is the MENU button, and is used to cycle through the different menus. The bottom button marked with the ▼ symbol is the SELECT button and is used to cycle through the different options that may be set for that menu item. So to bring up the menu or to advance to the next menu item, press the top ▲ MENU button. Once the correct menu item is displayed, press the bottom ▼ SELECT button to cycle through the various options available.

If you have made changes and wish to save them, press the top ▲ MENU button until the "Save Settings" menu item is displayed, then press the bottom ▼ SELECT button to save your changes. If you do not do this, changes will not be saved.

Note that if a menu is active, but no further button is pressed within 20 seconds the menu mode will end and the normal screen will be displayed. Any changes made will NOT be saved. This allows you to safely explore all the menus and the options without changing anything, providing you not save afterward.

There is also a separate statistics display function accessed only from the normal display, by pressing the bottom ▼ SELECT button. Please see page 12.

10.1.   Audible Alerts menu

This menu function is used to control audible feedback from the Astraphobe. The Astraphobe incorporates a small Piezo buzzer that emits an audible "Beep". The volume is not adjustable. Press the top ▲MENU button until the top line of the display reads "**Audible alerts**". Press the bottom ▼ SELECT button to cycle through the options.

What you see on LCD screen	What it means
Audible alerts: none (Silent)	The unit is silent. Any error will still result in a beeping noise, to alert the user that there is a problem
Audible alerts: connects only	The unit will only beep when the line is being either disconnected or reconnected.
Audible alerts: connects & strikes	The unit will beep when a lightning strike is detected as well as when your line is being either disconnected or reconnected.
Audible alerts: everything	The unit will beep when any activity is detected. Note this includes lightning strikes, disconnections, reconnections as well as random EMI that is detected.

10.2.   Disconnect Distance menu

This menu function is used to set the distance whereby the Astraphobe will disconnect your line.   Press the top ▲MENU button until the display reads "**Disconnect distance**" Press the bottom ▼ SELECT button to cycle through the options.

What you see on LCD screen	What it means
Disconnect distance 5km	Your line will be disconnected when the storm is within 5km or less from you
Disconnect distance 6km	Your line will be disconnected when the storm is within 6km or less from you (default)
Disconnect distance 8km	Your line will be disconnected when the storm is within 8km or less from you
Disconnect distance 14km	Your line will be disconnected when the storm is within 14km or less from you
Disconnect distance 20km	Your line will be disconnected when the storm is within 20km or less from you

10.3.   Reconnection Timer menu

This menu function is used to set how long the Astraphobe will keep your line disconnected, after the last strike is detected inside of the current disconnect distance.   It provides a balance of safety versus convenience for your particular environment. Press the top ▲MENU button until the top line of the display reads "**Reconnect in:**" Press the bottom ▼ SELECT button to cycle through the options.

What you see on LCD screen	What it means
Reconnect in: 5 minutes	Your line will remain disconnected for 5 minutes after the last strike within the disconnect distance
Reconnect in: 7 minutes	Your line will remain disconnected for 7 minutes after the last strike within the disconnect distance (default)
Reconnect in: 10 minutes	Your line will remain disconnected for 10 minutes after the last strike within the disconnect distance
Reconnect in: 15 minutes	Your line will remain disconnected for 15 minutes after the last strike within the disconnect distance

10.4.   Sensitivity menu

This menu function is used to set the receivers sensitivity. Press the top ▲MENU button until the top line of the display reads " **Sensitivity**:". Press the bottom ▼

SELECT button to cycle through the options.   If this is wrongly set, distance estimation will be incorrect.

What you see on LCD screen	What it means
Sensitivity: Low	This should only be selected if the Astraphobe is mounted outdoors with clear sky view, with no or few obstructions between it and the outside world.
Sensitivity : High (default)	The normal indoor setting (default)

10.5.   Suppress EMI menu

This menu function is used to stop the Astraphobe reporting all spurious electromagnetic interference. Press the top ▲MENU button until the top line of the display reads "**Suppress EMI**:". Press the bottom ▼ SELECT button to cycle through the options.

What you see on LCD screen	What it means
Suppress EMI: Yes	Normal setting – spurious isolated noise events are suppressed
Suppress EMI: No	Installation setting. It is safe to use this setting to monitor EMI on an ongoing basis, but if also set to Beep for "everything", the beeping is an annoyance. See note under Installation

10.6.   False Alarm Control menu

This menu function is used to suppress false positive detection of strikes and storms. Note that noisy electrical equipment can generate electromagnetic interference and impulses that look very much like lightning, causing the Astraphobe to falsely detect a strike, and thus a nearby storm.   A time based rejection of false positives is implemented. Press the top ▲MENU button until the display reads "**False Alarm Control:**". Press the bottom ▼ SELECT button to cycle through the options.

What you see on LCD screen	What it means
False Alarm Control: None	No additional processing is performed to suppress false detection.
False Alarm Control: Low	Minimal suppression of false lightning detection. (default setting)
False Alarm Control: High	More active suppression of false lightning detection. Note in this setting a storm may approach slightly closer before being detected.

10.7.   Save Settings menu

This menu function is used to save any changes to memory, and to reprogram the Astraphobe with the new settings.   New settings are implemented immediately. Press the top ▲MENU button until the top line of the display reads "**Save Settings:**". Press the bottom ▼ SELECT button to implement the new settings and to save the new settings to non-volatile memory. Note that if changes are not saved, after 20 seconds the menu will disappear, no changes will be implemented neither will any changes be saved.

What you see on LCD screen	What it means
Save Settings? Press ▼ to save	Pressing the bottom ▼ SELECT button causes the new settings to be implemented and saved.

11. Statistics Display Function

The Astraphobe incorporates a statistics display function. This menu is accessed from the normal display by pressing the bottom ▼ SELECT button. The same bottom ▼ SELECT button is then used to cycle through the different information displays. The following information is available:

What you see on LCD screen	What it means
▼Odo. (▼ Resets) 123	This is a user resettable counter, showing the number of successfully analysed strikes since last reset. Only about 20% of all strikes present in a storm are used for analysis, so to get an approximation of actual lightning strikes, multiply this number by 5! A 2 second press on the bottom ▼ SELECT button resets this counter to 0, whilst a normal short press cycles to the next option.
Strikes	The total number of successfully evaluated lightning strikes detected to date.
Storms	The total number of storms monitored by the Astraphobe.
Disconnects	The total number of times the Astraphobe has disconnected your line.
EMI jams	The number of times your Astraphobe received strong, steady interference and was unable to operate.
EMI pulses	The number of times your Astraphobe received isolated random electromagnetic interference.

The statistics are incremented in real time and saved to non-volatile memory every time the Astraphobe disconnects your line, as well as once each day.

12.Installation Guide

The Astraphobe must be installed between your incoming telephone / ADSL line and your connected equipment (telephones, fax machines, ADSL router etc). With the Astraphobe logo facing you and the LCD screen on top, the LIVE end that is to be connected to the incoming line is on your RIGHT hand side, and the SAFE end that your equipment and the power supply connects to is on the LEFT hand side. These are also marked on the back, and these connections MUST be adhered to.

The Astraphobe uses electromagnetic waves to detect storms, so needs a relatively quiet electrical environment to function. It should not be mounted adjacent to any other equipment that may generate electrical interference. It should be mounted at least 2m from any of the following equipment: LCD screen or CRT display, refrigerators, air conditioners, distribution boards, fluorescent lights etc. In addition, the Astraphobe needs to be able to receive the impulses generated and transmitted by lightning, so should not be installed underground in a basement, or in some other location closed up or blocked by concrete or metal walls. The normal and desired location is indoors, in a typical study/office/living room/passage/bedroom where the telephone or ADSL line enters the house and terminates with the normal telecommunications plug. The unit is not waterproof, but if required may be mounted outside in a dry, shaded location, for example a covered patio. For those living in colder climes, it is better to install the unit indoors.

It is strongly recommended to perform an installation test prior to final installation. This is easy to do: simply select your location and power up the Astraphobe by plugging it into power, using the wall mount power supply. The default menu setting is not to suppress any electromagnetic interference (EMI). This may be easily checked via the menu, ensure "Suppress EMI" is set to NO, and "Audible alerts" is set to "everything". Observe the Astraphobe for a few minutes, if any random interference is detected it will show on the screen for a few seconds as "Random EMI Detected". A few of these every few minutes is acceptable, but if the message appears often, indicating frequent interference then another location should be considered. If the unit displays the message "Noise Detected" then something in your environment is swamping the unit with electrical noise and the Astraphobe will NOT function - another location will have to be found, or potentially some electrical equipment in your house may be faulty and need repair.

Assuming the unit performed in the desired location with no problems, the unit may be powered off and installed.

The Astraphobe is designed to be mounted on a wall above the skirting, secured to the wall with either double sided tape or via 2 screws.

The screw holes are 170mm apart, and for mounting flush against the skirting they should be placed 150mm above the skirting.

- NB. Be careful not to confuse the LIVE end and the SAFE end, otherwise a lightning induced surge may damage the Astraphobe itself and your equipment. Your equipment must be plugged into the SAFE end, and the LIVE end is plugged into the telecommunications jack on your wall.

- NB. A key consideration is not to allow the LIVE and SAFE end wires to cross. Care must be taken such that the LIVE end cables do not physically come into contact with any other cables or equipment. If this is allowed to happen, a lightning induced surge may arc through the telephone wire and its insulation, damaging any other equipment that is in close proximity. Note that this applies whether using the Astraphobe or not, always keep wires tidy.

Figure 1

Figure 1 shows the connections. Any ADSL modems, telephones, fax machines are plugged into the LEFT side of the Astraphobe. The telecommunications line is plugged into the RIGHT side of the unit. Not shown is the power supply, also plugged into the left side of the unit.

An additional telephone cable is provided in the box. For existing installations, simply unplug the line where all your equipment is plugged into the incoming line, and plug it into the SAFE / LEFT side of the Astraphobe. Use the supplied cable to plug the Astraphobe LIVE / RIGHT side into the telecoms jack. Finally switch the Astraphobe on and configure your unit using the menu.

12.1. Tips For Neat Installation.

No two installations are alike! There are many options available to keep things tidy and safe. The key to any neat electrical installation is having the correct length cables. The telephone type cables are cheap, freely available and available with multiple female outlets, should you wish to neatly plug in a modem and a telephone. Keep cables lengths as short as possible. If required, purchase additional,

appropriate length cables. Slimline self-adhesive plastic trunking is available to hide wires, and may be painted. Another common option is to hot glue the cables into the corner formed by the skirting and the wall. Normally one may hide clutter by having the wiring behind a table or desk. Please ensure the cable connecting the LIVE end is isolated, and is not bundled or crossing any other wiring. This will prevent any high voltage surges from arcing through the cable to other equipment.

13. Installation Photograph

This picture shows the Astraphobe wall mounted, with modem and cordless telephone base on cabinet. Power cables are coiled and hidden behind the cabinet. Note the tidy installation with a short cable connecting to the line (LIVE end) on right hand side.

14. Errors

The Astraphobe performs a self test when powered on, and periodically thereafter. To ensure you do not falsely rely on the Astraphobe to disconnect your line when the

unit is faulty, if an error occurs the Astraphobe will display the message "UNIT DEFECTIVE" together with an error number, and your line will be disconnected. Remove the Astraphobe from service. There are no user-serviceable components inside, so should a fault develop the Astraphobe will need to be sent in for repair or replaced, please see the warranty section.

Error Code	Meaning	Error Code	Meaning
0	Sensor defective	7&8	Calibration error
2 & 3	Sensor circuit defective	9	Memory error
4 & 5 & 6	Tuning error	10	Undefined

15. Frequently Asked Questions

I get the message "Random EMI Pulse, Refer to manual", what does it mean?

Providing there is no storm nearby, some device in your house is generating electromagnetic interference. This could simply be from turning on and off the lights, or perhaps a compressor turning on or off (air conditioner, refrigerator). If this message appears constantly or very often, it may interfere with the ability to detect a storm. The odd message every few minutes will not interfere with the functioning of the Astraphobe. Please see Interference on page 9.

If desired, you can turn off this display using the menu by setting "Suppress EMI:" to "Yes".

If you do not suppress the message, you will see the message often during a storm. This is normal and no cause for concern, as the Astraphobe is detecting the impulse generated by the lightning strike, but rejecting the particular strike for analysis. See below for more information.

Is every lightning strike generated by a storm detected by the Astraphobe DSL?

No. This is not a defect, but part of the design. The Astraphobe is designed to home in only on certain types of strikes for identification and further analysis. Others are rejected.

Most often we concern ourselves with the cloud to ground lightning, but there is also cloud to cloud lightning and lightning within a cloud. This is easily seen at night, with the clouds lighting up from the flashes inside. Each of these three main types of lightning have particular signatures. In addition, each main type of lightning can also have multiple forms. Consider simple observation of cloud to ground strikes, we have all see a simple strike of short duration, and others that

seem to go on forever, some that come straight to the ground and yet again others that fork or travel sideways.

There can also be multiple simultaneous strikes, or other atmospheric noise that distorts the electromagnetic signature, leading the Astraphobe DSL to reject the pulse for analysis. However, this will not affect the operation of your Astraphobe as each storm generates many strikes of all the different types – there are a lot to go around! In one random storm encountered during testing, various test units successfully analysed over 1000 strikes.

Are cloud to cloud and cloud to ground strikes detected?

Yes – a typical thunderstorm generates far more intra-cloud and cloud to cloud strikes than cloud to ground. The Astraphobe will detect all kinds. Did you know, even a cloud to cloud strike up in the sky can damage electronic equipment on the ground, by inducing a voltage in wires strung along the ground, such as high tension and telephone wires that are strung on poles or pylons.

Can the Astraphobe falsely detect electromagnetic impulses as a lightning strike?

Yes. Certain events may occur in a home or business environment that gives rise to electromagnetic impulses that closely resemble the signature of a lightning strike. For example, low voltage halogen lights often each have a transformer to convert 230V or 120V to 12V and use a relatively high current to operate, when these lights are switched on or off sometimes a strong electromagnetic impulse is emitted as the electromagnetic force in the coils of the transformer collapses. A similar effect may sometimes be observed by compressors turning on or off, such as those found in refrigerators or air conditioners. The Astraphobe is designed to cope with these events however, please see the False Alarm Control menu on page 11.

I have a DSL Modem, fax machine and telephone I wish to have protected, but the Astraphobe only has one outlet. How do I install all three?

The Astraphobe DSL only has one outlet in order to keep the wiring around the unit neat, and to lessen the chances of cables crossing over the LIVE cable. Cables are available from normal retail outlets that have a male plug on one end to plug into the Astraphobe, and two, three and five sockets on the other end in which to plug in your modem, telephone etc.

Will the Astraphobe protect my television and other electronics?

Not directly, but in many cases yes, when a high voltage surge enters your property via your telephone line. Further explanation is required: In many households, a lightning induced surge enters your premises via the telephone line, passes through your modem and out via existing cabling such as Ethernet to any other devices. It is common these days for television sets to be connected to the Internet, media players, games consoles and other devices, all of which may also be connected to your network and the Internet. In this way, lightning can enter your house via your telecommunications line, pass through your network wiring and damage many other connected devices, including your television. The Astraphobe will prevent this from happening. It will not prevent damage that may originate from lightning that enters your house via some other means, such as utility or cable wiring. Please ensure you have adequate surge protection on utility power, and any other equipment or infrastructure that may introduce damaging lightning into your house.

I do not want to be offline when a storm is present, is there anything I can do?

Yes. Businesses that need to be online 24/7 routinely make use of standby telecommunications for when the primary line fails. This concept is generally also available to consumers, using fairly standard products. For example, if you have an appropriately configured wireless modem, you could enjoy high speed cheap data and voice via your fixed ADSL line when no storm is present, and allow the system to switch to a wireless connection whenever a storm is overhead and the Astraphobe has disconnected your line. Regardless, it is best not to use any corded electronic equipment during a storm, for personal safety reasons.

How does the Astraphobe differ from a surge suppressor?

Most surge protectors use metal oxide varistors (MOVs) to divert high voltages to ground. There are a few issues with this. The MOVs themselves wear out, possibly after only days or weeks and most often with no indication, leaving you unprotected (without you knowing!). There is also a time delay while the voltage rises on the line before it is clamped to ground, this time delay can allow high voltages to pass through momentarily to your equipment. A further concern is that if the grounding present at the location of the surge protector does not terminate in a proper earth connection, the surges diverted to the common ground may find an easier path to ground via other equipment.

The Astraphobe differs from surge protectors as it is designed to physically disconnect the line <u>before</u> a high voltage may present itself.

How did the Astraphobe come about?

A staff member working for the company behind the Astraphobe lives near Pretoria in South Africa, one of the lightning capitals of the world, in a modern "connected" house with high speed Internet, wired Ethernet, media players, network storage, personal cloud, 2 games consoles (teenagers!) and of course the typical desktop and notebook computers. Despite spending large sums of money on professionally installed surge protectors, lightning would enter the house via the ADSL line, pass through the modem/router to the Ethernet switch, and along the wiring to other devices, destroying them all. The only cure (found unfortunately, the hard way!) was to unplug the telecommunications line when a storm was present, and to plug back in when the storm passed.

My incoming line is on the wrong side of the Astraphobe and I want a tidy installation?

It is important not to let the LIVE side and equipment side cables cross, to prevent arcing through the cables. One option is to raise the Astraphobe, connecting the LIVE side with a short cable, and using a longer cable, safely routing the equipment side cable around or under the Astraphobe. You could also mount the Astraphobe on a desk or shelf, bringing it away from the wall and providing more cabling flexibility. Another option may be to relocate the jack.

I wish to install the Astraphobe in a semi basement / next to a refrigerator / under a metal awning / near an appliance etc. Is there any way I can test my environment without using the Astraphobe or having a storm to check whether the Astraphobe will work in this location?

You may get a good indication if you have a portable AM radio. Tune in on a station on the lower end of the AM band, if you can receive stations then the Astraphobe can receive the lightning impulses! An AM radio is also a good way to check for interference, if you hear lots of crackling or other noise when you hold it near some appliance, then that appliance is generating electrical noise, and the Astraphobe should not be placed too close to it.

How reliable is the Astraphobe?

The sensor equipment inside the Astraphobe is produced by a major multinational company and has won numerous awards. The Astraphobe has been designed to give reliable service, for example, the switch mechanism used to disconnect and reconnect the line uses expensive military spec gold plated connectors made in the USA with a design life of 1,000,000 cycles. To resist corrosion in high humidity environments other critical parts are also gold plated. The electronic motor used to drive the switch mechanism is a premium component, manufactured by a company that has led its field for decades. Although designed for indoor use the Astraphobe was tested under more extreme conditions. Despite testing during prototyping, random pre-production units were selected and subjected to accelerated wear tests, surpassing 100,000 disconnect / reconnect cycles with no problems or major wear evident.

16. Astraphobe DSL Menu Quick Reference

If the menu is accessed and no further key is pressed for 20 seconds, the menu operation will time out and revert to normal mode.

Press ▲ to cycle	Press ▼ to cycle
Audible alerts	Audible alerts: none (silent)
	Audible alerts: connects only
	Audible alerts: connects & strikes
	Audible alerts: everything!
Disconnect distance	Disconnect distance 5km
	Disconnect distance 6km (default)
	Disconnect distance 8km
	Disconnect distance 14km
	Disconnect distance 20km
Reconnect in:	Reconnect in: 5 minutes
	Reconnect in: 7 minutes (default)
	Reconnect in: 10 minutes
	Reconnect in: 15 minutes
Sensitivity:	Sensitivity Low
	Sensitivity High (default)
Suppress EMI	Suppress EMI: No (install)
	Suppress EMI: Yes (default)
False Alarm Control	False Alarm Control: None
	False Alarm Control: Low (default)
	False Alarm Control: High
Save Settings:	Press ▼ to save.
	If you do not wish to save simply do nothing and wait 20 seconds

17. User Notes:

18. Warranty.

Jacstech warrants the Astraphobe DSL to be free from defects in components and workmanship under normal domestic use for the duration of the warranty period which is 12 (twelve) months from date of purchase. The original, dated purchase invoice showing model number and serial number is your proof of purchase. You may process a claim for the defective unit through your retailer, or follow the process via www.astraphobe.com/warranty-claim. This warranty covers the costs of service parts and labour required to restore your Astraphobe DSL to full working order. Jacstech will at its option repair or replace any defective parts covered by this warranty with new or factory refurbished parts equal to new products in performance. Any part that is repaired or replaced shall be covered for the remainder of the original warranty period that applies to the original Astraphobe DSL item.

Warranty Exclusions and Disclaimer

This warranty does not extend to any Astraphobe DSL that has been damaged by (1) improper installation, (2) modifications or service other than by Jacstech, (3) failure to use the Astraphobe in accordance to the User Guide, or (4) improper transportation or packing when returning the Astraphobe DSL for warranty repairs.

You are responsible for ensuring your household and equipment is adequately protected against lightning damage, by using quality surge protectors on utility power and correct grounding and earth connections. Due to the unpredictable nature of lightning events, and the destructive power of a lightning strike, Jacstech does not warrant or cover any financial or other loss, caused by lightning damage or any other cause.

Warranty Card

Name:_____Phone:_____

Address:_____

_____

Purchase Date:_____

Problem Description:_____

_____

For more information, please visit **www.astraphobe.com**