

**TRAVERSE  
TECHNOLOGIES  
AUSTRALIA**

# *Pulsar*

**ADSL PCI MODEM**

**User Manual – Linux**

Revision 1.5

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**WARNING : This product may only be connected to the Telecommunications Network under the following conditions :**

(i) The ADSL modem card can only be installed in a Computer that has a case (cover) fitted that can only be removed with the use of a tool or key. The card should not be installed in a Computer with a "Flip Top" case.

(ii) Do not connect the ADSL modem card to the Telecommunications Network until the Computer case is fitted and screwed or locked in place.

(iii) In the event that the Computer case is to be removed, the ADSL Modem card must be disconnected from the Telecommunications Network before the case is removed, and must not be re-connected until the case is replaced and screwed or locked in place.

# CHAPTER 1: INTRODUCTION

## ***Features***

- PCI PLUG and PLAY. No jumpers or switches.
- Supports BT, Telstra, Nextep and RequestDSL ADSL Lines
- Downstream data rates upto 8Mbps
- Upstream data rates upto 1Mbps
- Supports Bridged Ethernet, PPPoE and PPPoA protocols
- Linux Kernel 2.2 and 2.4 drivers

## ***Packing List***

You should find the following items in your Pulsar ADSL modem kit:

- Pulsar PCI ADSL modem card
- Distribution CD, including drivers and documentation files
- A 2 metre RJ-11 phone cable

Please contact your dealer if any items are damaged or missing.

## ***Trademarks***

Pulsar ADSL is a registered trademark of Traverse Technologies Australia Pty Ltd. All other trademarks and copyrights are the property of their respective holders.

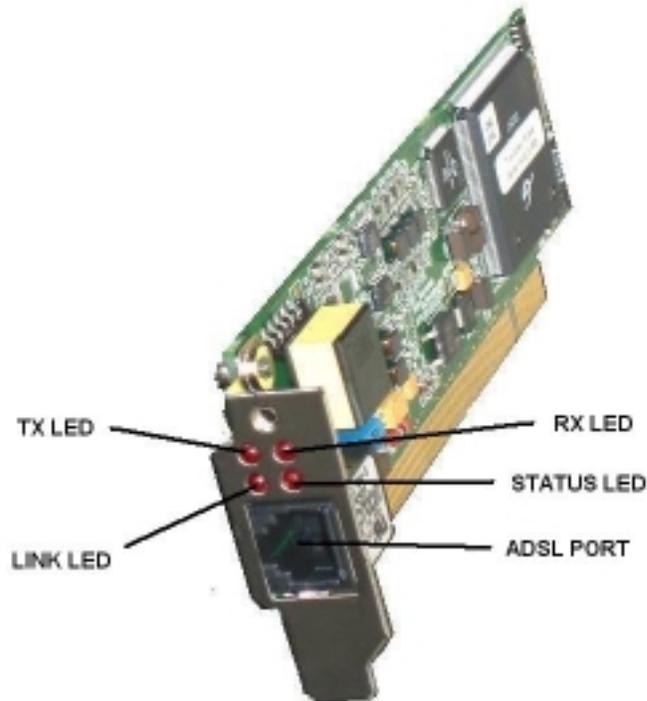
## ***Introduction***

This manual provides step-by-step instructions for installing and setting up the Pulsar ADSL modem to connect to the Internet. Once installed your ADSL modem will give you high speed access to the internet, and this connection can also be shared to allow other users on your network to share the same internet connection.

ADSL provides fast, reliable internet connectivity that is always on, so you don't need to dial up. You can remain connected 24 hours a day and still use your phone line as you normally would.

## CHAPTER 2: HARDWARE INSTALLATION

### 2.1 Connections, switches and LEDs



#### **TX LED**

This indicates transmit data activity

#### **RX LED**

This indicates receive data activity

#### **LINK LED**

This indicates that the Modem has finished training and achieved line synchronisation. During training this LED will flash.

#### **STATUS LED**

This indicates that the Modem has DC power and the driver is correctly loaded.

#### **ADSL Port**

Connect this port to your ADSL line

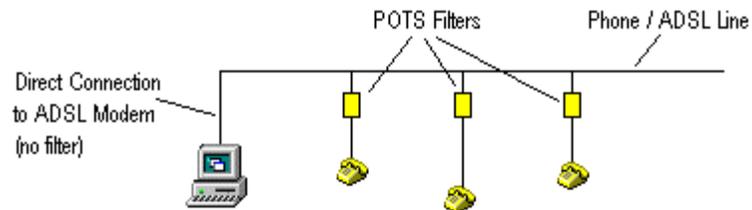
## **2.2 Installation**

- (i) Power OFF your computer system.
- (ii) Remove screws and case.
- (iii) Locate a free PCI slot.
- (iv) Unscrew/remove slot rear panel.
- (v) Place the ADSL Modem card over the PCI slot. Press the Modem card down firmly with both hands into the slot. Check to be sure that the Modem card is seated properly in the PCI slot.
- (vi) Screw/secure rear panel of ADSL Modem card.
- (vii) Refit case and screws.
- (viii) Plug one end of the RJ11 cable that came with your ADSL modem into the socket on the modem and plug the other end into your ADSL line socket.

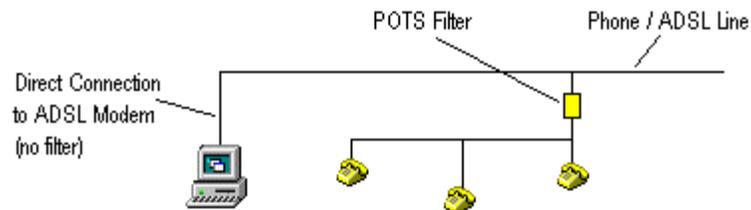
## 2.3 Filter Connections

If your ADSL connection is also used by POTS (Plain Old Telephone System) devices such as phones, fax machines and answering machines, they must be filtered to prevent them from interfering with your ADSL connection.

The diagram below shows how POTS filters can be connected



It is also possible for several POTS devices to share the same filter



**Important : DO NOT place a POTS filter in line between your ADSL modem and the Phone / ADSL line.**

## 3. Bridged Ethernet Setup (RFC 1483)

### 3.1 Install Driver

(i) Firstly load the driver from your Pulsar distribution CD or from the Traverse website. The linux drivers are located under the /linux subdirectory on the CD. There are several subdirectories for a range of Linux kernels. For example the subdirectory

**/linux/drivers/3.2.1/redhat7.3**

Contains the RedHat 7.3 driver tarball called pulsar.tgz for version 3.2.1 of the driver. Copy this onto your hard drive.

**Alternatively you can compile a driver for any 2.4 kernel by using the driver engine at...**

<http://adsl4linux.no-ip.org>

(ii) Untar the module from the tarball

**tar -xvzf pulsar.tgz**

(iii) move the driver to /lib/modules

**mv pulsar.o /lib/modules**

### 3.2 Load Driver

Load the module with the appropriate Vpi / Vci values

**insmod /lib/modules/pulsar.o Rfc1483Mode=0 Rfc1483Vpi=8 Rfc1483Vci=35 GtiTrellis=0**

**Important : for a list of Vpi/Vci values for different providers (ISPs) refer to Appendix A**

**Hint : if you can't find a driver for your kernel, try the following ...**

(a) Use the closest match and add the -f option when loading the module (2.2 kernels only)...

**insmod -f /lib/modules/pulsar.o Rfc1483Mode=0 Rfc1483Vpi=8 Rfc1483Vci=35 GtiTrellis=0**

(b) Use the Driver Engine at <http://adsl4linux.no-ip.org> to compile a driver for your kernel (2.4 kernels only)

Once the driver has been loaded, line sync should be obtained within about 30 seconds. The Line Sync LED on the rear panel indicates the current state of the line.

### **3.3 IP Addressing and Interface Up**

(i) When your ADSL line is provisioned your ISP should provide you with an IP address (normally public) and a gateway address. Once your driver is loaded you can bring up the interface

```
ifconfig 203.22.33.44 eth1 up
```

The above example shows a Public IP address of **203.22.33.44**

**Note : The Pulsar will be eth1 if you already have an ethernet card installed. Otherwise it will be eth0. You can double check this in /var/log/messages**

```
Oct 7 12:17:51 firewall kernel: pulsar0: GSI ADSL, eth1, ttyG/cug, 00:0A:FA:02:80:14  
IRQ:10 Address:0xE8800000
```

(ii) Now add a route to your ISPs gateway

```
router add default gw 203.22.33.1 eth1
```

The above example shows a gateway address of **203.22.33.1**

You should now be able to ping the gateway address, and addresses by number on the internet

```
ping 198.182.196.56
```

(iii) Now configure your DNS settings. Add your ISPs DNS settings to the /etc/resolv.conf file

```
nameserver 203.22.5.2  
nameserver 203.22.5.3
```

The above example shows a primary DNS of 203.22.5.2 and a secondary DNS of 203.22.5.3

You should now be able to ping addresses by name on the internet

```
ping www.linux.org
```

## 4. PPPoE Setup (RFC 1483)

### 4.1 Install Driver

(i) Firstly load the driver from your Pulsar distribution CD or from the Traverse website. The linux drivers are located under the /linux subdirectory on the CD. There are several subdirectories for a range of Linux kernels. For example ...

#### **/linux/drivers/3.2.1/redhat7.3**

Contains the RedHat 7.3 driver tarball called pulsar.tgz for version 3.2.1 of the driver. Copy this onto your hard drive.

**Alternatively you can compile a driver for any 2.4 kernel by using the driver engine at...**

<http://adsl4linux.no-ip.org>

(ii) Untar the module from the tarball

```
tar -xvzf pulsar.tgz
```

(iii) move the driver to /lib/modules

```
mv pulsar.o /lib/modules
```

### 4.2 Load Driver

Load the module with the appropriate Vpi / Vci values

```
insmod /lib/modules/pulsar.o Rfc1483Mode=0 Rfc1483Vpi=8 Rfc1483Vci=35 GtiTrellis=0
```

**Important : for a list of Vpi/Vci values for different providers (ISPs) refer to Appendix A**

**Hint : if you can't find a driver for your kernel, try the following ...**

(a) Use the closest match and add the -f option when loading the module (2.2 kernels only)...

```
insmod -f /lib/modules/pulsar.o Rfc1483Mode=0 Rfc1483Vpi=8 Rfc1483Vci=35 GtiTrellis=0
```

(b) Use the Driver Engine at <http://adsl4linux.no-ip.org> to compile a driver for your kernel (2.4 kernels only)

Once the driver has been loaded, line sync should be obtained within about 30 seconds. The Line Sync LED on the rear panel indicates the current state of the line.

## 4.3 Install PPPoE

There are two popular methods for running PPPoE under Linux

- Use the PPPoE support in the kernel
- Use the Roaring Penguin PPPoE client

Roaring Penguin is the easiest method so it is described here. However experienced users will want to use the PPPoE support in the kernel. In this case refer to the Linux DSL howto at ...

<http://www.tldp.org/HOWTO/DSL-HOWTO/index.html>

***Important : Problems have been reported with Roaring Penguin V3.5-1 and Debian Distributions. Debian users should use pppoeconf instead.***

- (i) Download Roaring Penguin PPPoE (RP-PPPoE)

Firstly download a copy of RP-PPPoE from

<http://www.roaringpenguin.com/pppoe/#download>

***Important : Your distribution may already include RP-PPPoE, however if it is earlier than V3.5-1 you should upgrade it***

- (ii) Install RP-PPPoE

```
rpm -i rp-pppoe-3.5-1.i386.rpm
```

If your distribution doesn't support RPMs then perform a source install

```
tar xvfz rp-pppoe-3.5.tar.gz
cd rp-pppoe-3.5
./go
```

## 4.4 Configure PPPoE

Now run the RP-PPPoE configuration utility

```
adsl-setup
```

Answer all questions as prompted.

***Note : The Pulsar will be eth1 if you already have an ethernet card installed. Otherwise it will be eth0. You can double check this in /var/log/messages***

```
Oct 7 12:17:51 firewall kernel: pulsar0: GSI ADSL, eth1, ttyG/cug, 00:0A:FA:02:80:14
IRQ:10 Address:0xE8800000
```

## ***4.5 Interface Up***

When your driver is loaded you can bring up the interface

```
ifconfig eth1 up
```

## ***4.6 PPPoE Connect***

Now start RP-PPPoE

```
adsl-start
```

After a few seconds you should see the connected message. If this doesn't occur, and RP-PPPoE times out, refer to Appendix B Troubleshooting.

## 5. PPPoA Setup (RFC 2364)

### 5.1 Install Driver

(i) Firstly load the driver from your Pulsar distribution CD or from the Traverse website. The linux drivers are located under the /linux subdirectory on the CD. There are several subdirectories for a range of Linux kernels. For example ...

#### **/linux/drivers/3.2.1/redhat7.3**

Contains the RedHat 7.3 driver tarball called pulsar.tgz for version 3.2.1 of the driver. Copy this onto your hard drive.

**Alternatively you can compile a driver for any 2.4 kernel by using the driver engine at...**

<http://adsl4linux.no-ip.org>

(ii) Untar the module from the tarball

```
tar -xvzf pulsar.tgz
```

(iii) move the driver to /lib/modules

```
mv pulsar.o /lib/modules
```

### 5.2 Create devices

The Pulsar driver provides a tty interface for PPPoA. You need to create the following devices for PPPoA

```
mknod /dev/ttyG0 c 43 0  
chown root.nobody /dev/ttyG0  
chmod 0660 /dev/ttyG0
```

```
mknod /dev/cug0 c 44 0  
chown root.nobody /dev/cug0  
chmod 0660 /dev/cug0
```

### 5.3 Load Driver

Load the module with the appropriate Vpi / Vci values

```
insmod /lib/modules/pulsar.o Rfc2364Mode=0 Rfc2364Vpi=0 Rfc2364Vci=38 GtiTrellis=0
```

**Important : for a list of Vpi/Vci values for different providers (ISPs) refer to Appendix A**

**Hint : if you can't find a driver for your kernel, try the following ...**

(a) Use the closest match and add the -f option when loading the module (2.2 kernels only)...

```
insmod /lib/modules/pulsar.o Rfc2364Mode=0 Rfc2364Vpi=0 Rfc2364Vci=38 GtiTrellis=0
```

(b) Use the Driver Engine at <http://adsl4linux.no-ip.org> to compile a driver for your kernel (2.4 kernels only)

Once the driver has been loaded, line sync should be obtained within about 30 seconds. The Line Sync LED on the rear panel indicates the current state of the line.

### 5.4 PPP Passwords

Passwords for ppp dialup connections are stored in the following files

**/etc/ppp/chap-secrets**

**/etc/ppp/pap-secrets**

If you are unsure which protocol your ISP requires, set up both files the same. Shown below is an example of a secrets file...

```
# client      server secret  
fred         *          flintstone
```

This example shows the following user account:

Username: fred            Password: flintstone

**Note that the server entry should always be a wildcard “\*”.**

## 5.5 PPPoA Dialup Profile

Next Create a ppp dialup profile. Create a file called `/etc/ppp/peers/adsl` containing the following options

```
user "fred"  
ttyG0  
sync  
persist
```

## 5.6 PPPoA Connect

The following command invokes pppd using the adsl profile created above

```
pppd call adsl
```

Now run a tail on `/var/log/messages` and hopefully you will see something like the following

```
tail -f /var/log/messages
```

```
Oct 15 10:21:13 rh73 pppd[1442]: pppd 2.4.1 started by root, uid 0  
Oct 15 10:21:13 rh73 pppd[1442]: Using interface ppp0  
Oct 15 10:21:13 rh73 pppd[1442]: Connect: ppp0 <--> /dev/ttyG0  
Oct 15 10:21:13 rh73 /etc/hotplug/net.agent: assuming ppp0 is already up  
Oct 15 10:21:13 rh73 pppd[1442]: local IP address 192.168.1.2  
Oct 15 10:21:13 rh73 pppd[1442]: remote IP address 192.168.1.1
```

## APPENDIX A – ISP Atm Parameters (Vpi / Vci)

Country	Provider	ATM Protocol	VPI	VCI
.au	Telstra	PPPoE or Bridged Eth.	8	35
.au	Nextep	Bridged Eth.	1	32
Austria	AON	PPPoA	8	48
.be	Belgacom	PPPoE or Bridged Eth.	8	35
.bh	Batelco	PPPoA	8	35
.ch	Sunrise and Bluewin	PPPoE	8	35
.fr	Wannadoo	PPPoA or PPPoE	8	35
.nl		PPPoA	8	48
.nz	NZ Telecom***	PPPoA	0	100
.pt	Portugal Telecom	PPPoE or Bridged Eth.	0	35
.uk	British Telecom	PPPoA	0	38
USA	----	PPPoA	8	35

\*\*\*NOTE : 0/100 is also the default LAN PVC so to use a WAN (PPPoA) PVC or 0/100 you must move the LAN PVC elsewhere. eg.

```
insmod /lib/modules/pulsar.o Rfc2364Mode=0 Rfc2364Vpi=0 Rfc2364Vci=100 Rfc1483Vpi=1
GtiTrellis=0
```

This sets the LAN VPI to 1/100 and the WAN VPI to 0/100.

## APPENDIX B – Troubleshooting

### B.1 Loading Modules

If the module loads without error messages, you should see the following in response to the `lsmod` command...

Module	Size	Used by
pulsar	252410	0 (unused)

You will probably also see several other kernel modules loaded.

You should also see the following at the end of the `/var/log/messages` file...

```
Oct 7 12:17:51 firewall kernel: pulsar: Traverse Pulsar ADSL pulsar.o v3.1.2 1-Oct-2002
Oct 7 12:17:51 firewall kernel: pulsar: powered by GlobespanVirata ADSL Firmware
Version: S6118
Oct 7 12:17:51 firewall kernel: GpAdapterInit - StartRFC1483_MODE_BRIDGED_ETH_LLC
Oct 7 12:17:51 firewall kernel: pAdapter->AtmUniHandle c75ed000
Oct 7 12:17:51 firewall kernel: pAdapter c6332000
Oct 7 12:17:51 firewall kernel: pulsar0: GSI ADSL, eth1, ttyG/cug, 00:0A:FA:02:80:14
IRQ:10 Address:0xE8800000
```

If the driver fails to load, use the `cat /proc/pci` command to check to see if your ADSL card has been detected by the bios. In amongst the other PCI devices on you machine you should see...

```
Bus 0, device 14, function 0:
Network controller: Unknown vendor Unknown device (rev 1).
Vendor id=14bc. Device id=d002.
Slow devsel. Fast back-to-back capable. IRQ 10. Master Capable. Latency=32. Min
Gnt=3.Max Lat=200.
Non-prefetchable 32 bit memory at 0xe8800000 [0xe8800000].
```

**Note :** *the addresses, bus number and device number will vary from machine to machine.*

If the ADSL card is not listed, then you should check to see that the card is seated correctly in it's PCI slot. You can also try another slot. Also check the edge connector on the card for signs of dirt, pizza finger prints or contamination. The edge connector can be cleaned by using an abrasive pencil eraser, then wipe it with a clean cloth dipped in Metholated Spirits.

## **B.2 Line Sync**

Once you have loaded the pulsar model, you should obtain line sync within about 30 seconds. Once line sync has been obtained you will see this logged in **/var/log/messages...**

**Oct 7 12:22:59 firewall kernel: pulsar0: Link established (512/128)**

You should also see the Line Sync LED come on. If this doesn't occur check the connection between your ADSL modem and the line socket on the wall. Also try disconnecting all other device such as phones, answering machines and fax machines from the line.

**Hint : If you have other devices sharing your ADSL line they must be connected via a filter or splitter to prevent them from interfering with your ADSL service.**

## **B.3 TX and RX packets**

If you are using Bridged Ethernet or PPPoE you can use the **ifconfig** command to check if packets are being sent and received. If you so that packets are being sent, but none are received check your ATM settings. Do you have the correct VPI and VCI for your provider? See Appendix A.

## **B.4 LCP timeouts (PPPoE and PPPoA only)**

Check **/var/log/messages** for LCP timeouts. These are often caused by incorrect ATM settings. Check your VPI and VCI values against the table in Appendix A.

## **B.5 Authentication Failure (PPPoE and PPPoA only)**

Check your username and password in the following files

**/etc/ppp/chap-secrets**

**/etc/ppp/pap-secrets**

**Note : Some providers require an @provider in the username, eg.**

**mickey@bigpond**

**or**

**minnie@bt**

## APPENDIX C – ATM Encapsulation options

Other ATM encapsulation methods are also supported. The encapsulation method is configured when the driver is loaded. For example

**Rfc1483Mode=0 (Bridged Ethernet)**

or

**Rfc2364Mode=0 (PPPoA with VC Encapsulation)**

A list of all modes is shown below...

### RFC1483

**RFC1483\_MODE\_BRIDGED\_ETH\_LLC = 0, (default)**  
RFC1483\_MODE\_BRIDGED\_ETH\_VC = 1,  
RFC1483\_MODE\_ROUTED\_IP\_LLC = 2,  
RFC1483\_MODE\_ROUTED\_IP\_VC = 3,  
RFC1483\_MODE\_RFC1577\_ENCAP = 4

### RFC2364

**RFC2364\_MODE\_VC = 0, (default)**  
RFC2364\_MODE\_LLC = 1

## **APPENDIX D – Technical Support and Warranty**

### ***D.1 Technical Support***

If you encounter problems with your Pulsar ADSL Modem, and you cannot locate the problem, firstly contact the dealer where you purchased your modem. If your dealer is unable to help you then contact:

Traverse Technologies Australia Pty Ltd.  
652 Smith St  
Clifton Hill  
Vic 3068  
Internet: <http://www.traverse.com.au>  
[support@traverse.com.au](mailto:support@traverse.com.au)

### ***D.2 Returning a Product***

If Technical Support determines that you need to return the product for warranty repair service, you will be issued a Return Authorisation (RA) number.

Return Authorisation Guidelines:

1. No product will be accepted for return for warranty service unless accompanied by a valid RA number. No RA number will be issued without a valid serial number. Write the RA number clearly on the outside of the package as follows: "RA#Annnn".
2. Keep a record of the RA number and the name of the service representative who issued you the RA number for future reference.
3. Return a copy of the original sales invoice for proof of purchase and verification of warranty.
4. If it is determined that your warranty has expired or that the problem is not covered by the warranty, a method of payment will have to be authorised before an RA number is issued.
5. Write your name, return address and RA number on a small strip of paper and tape it to the ADSL Modem before packing it
6. Write a note describing the problem giving as much detail as possible.
7. Place the modem in the original packaging, then in padded shipping bag. Use protective material, such as bubble wrap or foam to further protect the modem.
8. The RA number that is issued to you is valid for only thirty days after the date of issue.
9. We will not accept packages that are not prepaid for shipping charges. We will not accept COD shipments for shipping costs.

10. The shipping address:  
Traverse Technologies Australia Pty Ltd  
Technical Support  
652 Smith St  
Clifton Hill  
Vic 3068, Australia

If you drop off a product at the above address, it will be processed and returned as a normal RA. Please do not expect to be given a replacement right away, while you wait.

### ***D.3 Warranty Terms you should know***

Warranty Repair: Traverse Technologies Australia Pty Ltd will repair or replace (at our option) free of charge, within the warranty period. We require you to furnish a receipt, or similar bill of sale to determine the date of purchase. If you do not supply an adequate proof of purchase with the product, you will be charged an out-of-warranty repair fee, determined by the value of labor plus materials.

Shipping: For products under warranty, you must pay one way shipping and we will cover the shipping charges when we return the product to you. We cover the return charges within Australia. We do not provide express, or next day shipment of products. You will be required to pay for any next day shipping, or special handling you require. We will ship back to you by the most economical way, eg. Express Post. Replacement goods will not be shipped until the returned unit is received.

### ***D.4 Limited Warranty***

Our company warrants this product against defects in materials and workmanship for a period of one (1) year from the date of purchase. During the warranty period, products determined by us to be defective in form or function will be repaired, or at our option, replaced at no charge. This warranty does not apply if the product has been damaged by accident, abuse, misuse, missing serial number, or force majeure (such as a lightning strike), or as a result of service or modification other than by Traverse Technologies Australia Pty. Ltd.

This warranty applies only to the original purchaser of the Pulsar ADSL Modem, and is non-transferable. The warranty does not cover any parts not installed by Traverse Technologies Australia Pty. Ltd. This warranty is limited to parts and labor only and does not include any incidental that may occur during the course of service including (but not limited to) shipping, delivery, etc. Any incidental charges that may occur are the responsibility of the user.

Traverse Technologies Australia Pty. Ltd. is not responsible for any lost profits, lost savings or other incidental or consequential damages arising out of the use of, or inability to use, this product. This includes damage to property and, to the extent permitted by law, damages for personal injury. This warranty is in lieu of all other warranties including implied warranties of merchant ability and fitness for a particular purpose.

This warranty applies only to this product, and is governed by the laws of Australia.

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