



# *Technical Manual & Tool Kit*

*Desktop & 19" Rack Models*

*Version 4.00 Rev04*

TOTAL recall

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## **Introduction**

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This manual is to assist you with your support and servicing of Total Recall units. The manual will be updated from time to time, and will be found on the web site in the reseller area.

[www.totalrecallvr.com](http://www.totalrecallvr.com)

If you find any discrepancy, problems or you have something that you think should be in the manual please Email us and we will include it in the next revision. This is a working document which continue to evolve. It is only with your help and feedback that we will make this a truly helpful tool.

Thanks for your Help

Total Recall Technical Support Team.

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## **1            Warranty**

To speed up the process of fault-finding and repair process detailed information about the faulty Total Recall unit must be obtained from the customer and supplied to Tech Support with your enquiry.

### **1.1    Keeping Records of sold TR Units / Accessory**

As a reseller Arunta Comsec Pty Ltd requires you to keep records of units sold. These records will contain no less than:

- 1:     Date of Installation.
- 2:     Item Sold.
- 2:     Serial Number of the item and serial number of Total Recall if item is a spare part.
- 3:     Channel configuration (if applicable).
- 4:     Updates (software version & channel upgrades).

### **1.2    When you claim Warranty Repair**

When you make a claim for warranty repair or replacement you will be asked to supply information about the faulty product:

- 1:     Date of Installation.
- 2:     Serial Number of the item.
- 3:     Nature of the fault.
- 4:     Software version currently installed.

An RMA (*Return Material Authorization*) will be issued for the faulty product; this will be sent to you by Fax, Email or with the new replacement parts. The faulty parts must be returned with a copy of the RMA form to Arunta, Silverwater office as per the instruction on the bottom of the RMA form.

### **1.3    Before you contact us**

It is always good practice to ensure that a unit has the latest software installed prior to contacting us (except in cases where smoke has identified the fault). Quite often you will find that the new software may have an enhancement that improves the performance of Total Recall. Generally the questions that we will ask will be based on the latest software.

### **1.4    Warranty Statement**

All Total Recall products are covered by a 13-month depot warranty from date of original shipment. Warranty claims must be communicated to Arunta in writing. A Return Merchandise Authority (RMA) form will be sent to you for appropriate completion and return before shipment of warranty

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replacement goods. The RMA form should be enclosed with return of faulty goods. Arunta will process no warranty claim without the prior authorisation of the Technical Services Manager. Dead on Arrival (DOA) units will be replaced immediately following authorization.

Should product become faulty or otherwise malfunction, Arunta will repair or replace the product at its discretion. All component parts will be supplied by Arunta and shipped to the Reseller via courier service.

If a 'part' of the product is replaced under warranty, that 'part' must be retained by the Reseller for a period of 12 months during which time, Arunta may, at its discretion, request the inspection of the faulty part(s) or, in certain circumstances, the return to base of the faulty 'part'. If the Reseller is unable to produce faulty parts for which warranty replacements have been provided, then the Reseller will be required to pay to Arunta the value of the replacement parts, as determined by Arunta.

All Total Recall serial numbers and parts serial numbers will be logged by Arunta, effective the date of shipment.

Further details are available in the Total Recall Product Warranty document.

### **1.5 Returning Faulty Product.**

If product needs to be returned to Arunta at any time, a Return Merchandise Authorisation (RMA) number must first be obtained from Arunta. Returned products will not be processed if an RMA number is not first obtained. The cost of returning any Total Recall product to Arunta is the responsibility of the Reseller.

## **2 Maintenance**

Total Recall needs regular maintenance to ensure its performance is maintained. As with any computing device Total Recall has a fan that provides airflow across the processor to keep it cool and a filter to ensure that the air is clean. Every month the filter will need to be washed in warm soapy water and then rinsed thoroughly and allowed to dry completely prior to being replaced. New filters are available.

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## 3 Opening Total Recall Enclosure

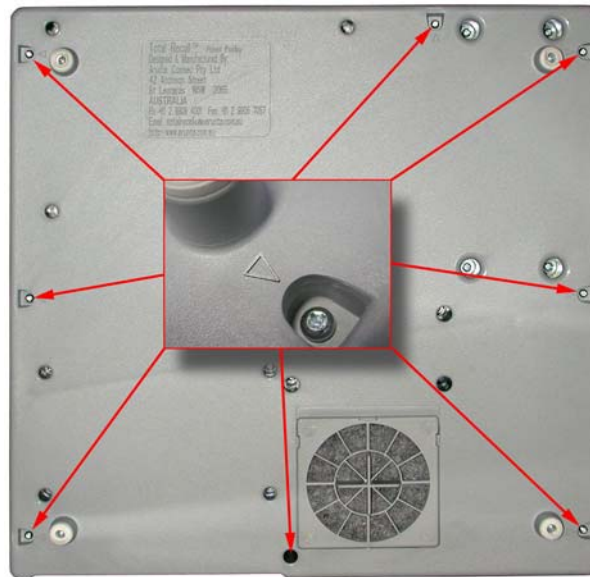
### 3.1 Desktop Model

To open the Total Recall ABS enclosure invert the unit onto a clean and clear flat surface. Take general precautions to prevent damage to the LCD display from objects underneath.

Unscrew the eight (8) M3 x 8mm pan head screws located in the recesses marked with an >.

Holding both halves of the case together return the case to the normal position.

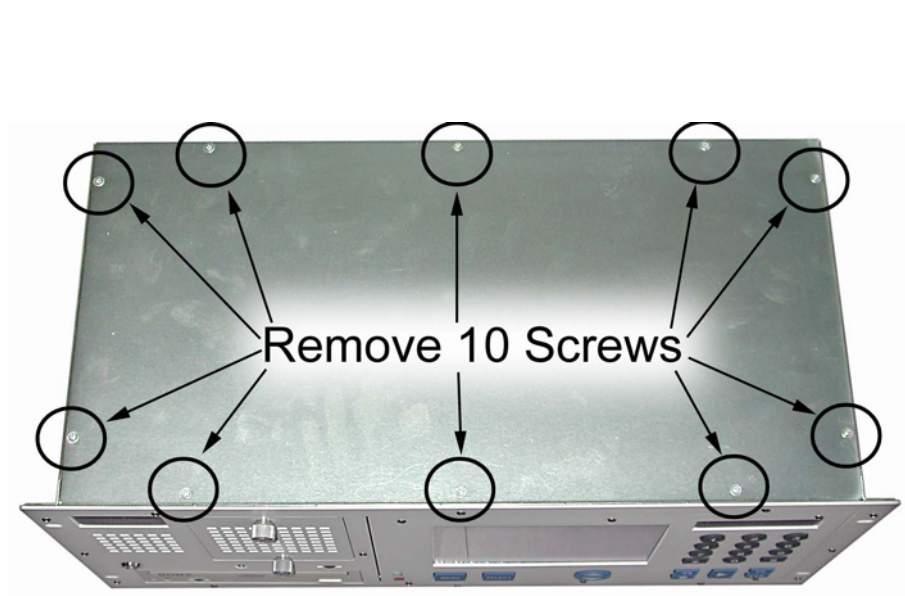
Slowly lift upwards the top half of the **Total Recall** case until the internal studs inside the top case are clear of the lower case. The right hand side can now be rotated 180 degrees to the left so that the inverted top half lies next to the bottom half. Do not attempt to move the top half any further until the interconnecting cables have been disconnected.



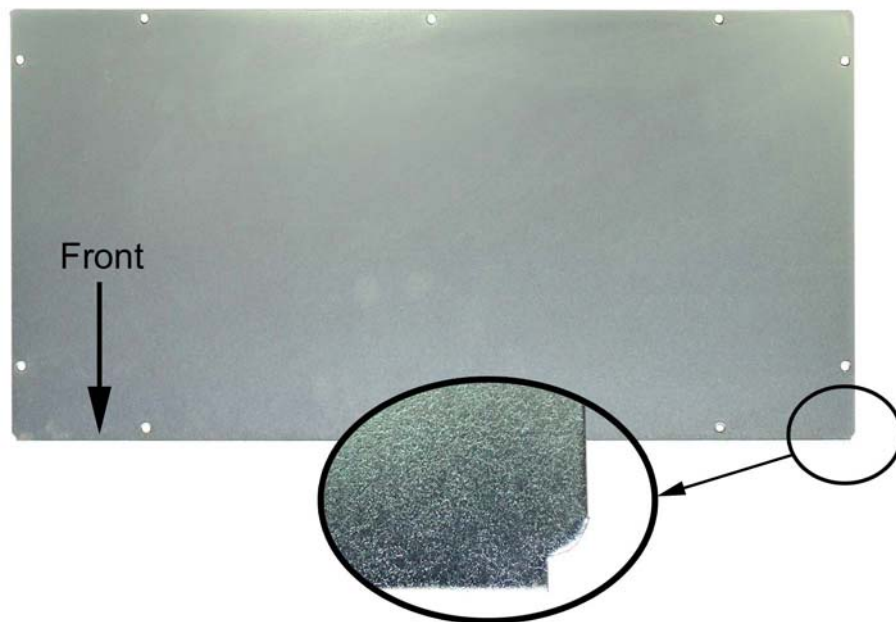
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### 3.2 Rack Model

To open the Total Recall metal enclosure, there are two covers one on the top and one on the bottom. To remove either cover there are ten (10) Phillips head screws that secure these covers as indicated in the diagram below.



When replacing the Top or Bottom Cover Plate ensure that the corners, with the small cut-outs are facing the front of the unit.



*Total Recall Top & Bottom Cover Plate*

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## 4 Internal Layout

### 4.1 Desktop Model

#### 4.1.1 Lid Assembly



#### 4.1.2 Base Assembly





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## 4.2 19" Rack Mount Model

### 4.2.1 Top View

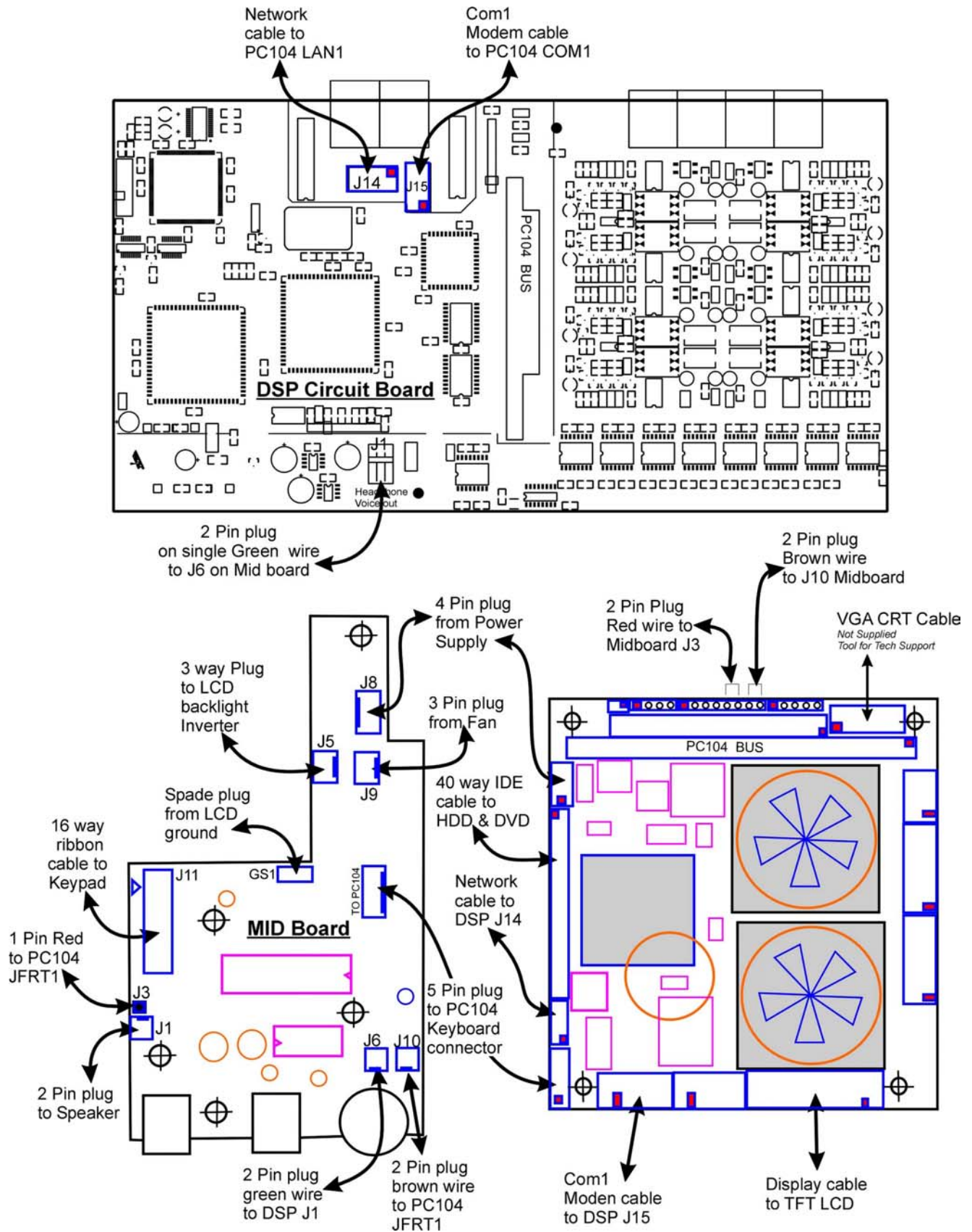


### 4.2.2 Bottom View

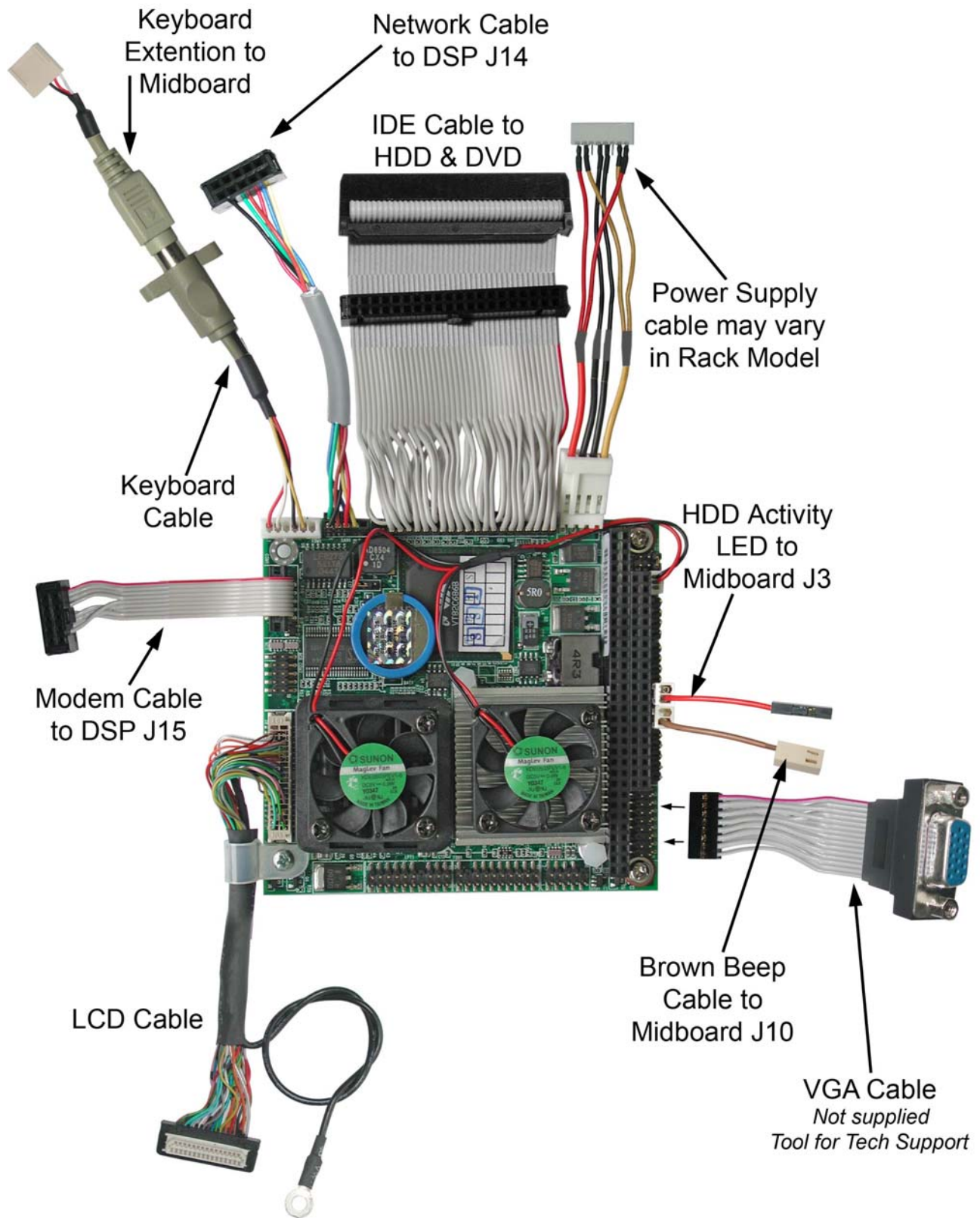




### 4.3 Internal Cable Connection PC104 CM786



#### 4.4 Cable Connection for PC104 CM786



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## 5 Removing Parts (Desktop)

### 5.1 Remove Hard Disk Drive

After opening the TR case (Section 2 above) disconnect the Top shell from the base and stand the base on its left side.



Unscrew 4 screws from **Hard Disk Drive**. see attached diagram. Hold HDD while unscrewing.



Holding the HDD, lay the TR base flat on to the bench and disconnect the IDE ribbon cable and the power plug.

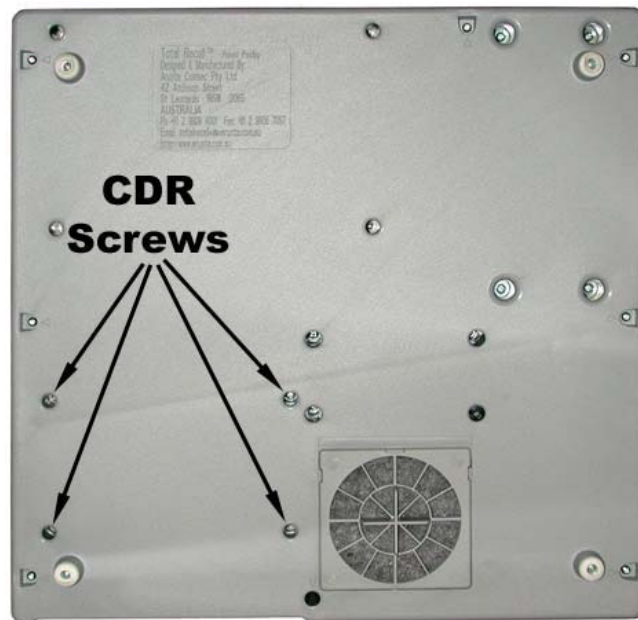
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## 5.2 Remove the CD-R / DVD Drive

After opening the TR case (*Section 3 above*) disconnect the Top shell from the base and stand the base on its left side.



Unscrew 4 screws (M4 x 8 mm Phillips head) from DVD / CD drive. See attached diagram. Hold DVD / CD drive while unscrewing the screws.



Holding the DVD / CD drive, lay the TR base flat on to the bench and disconnect the IDE ribbon cable and the power plug.



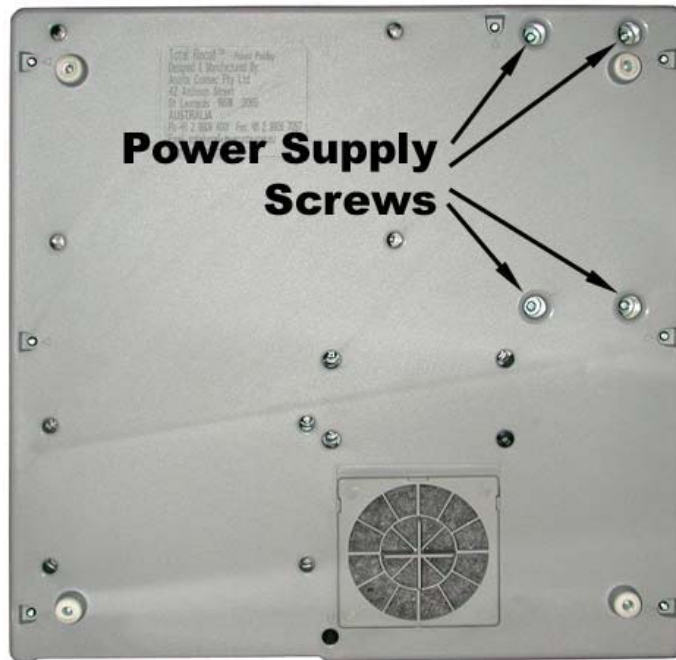
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### 5.3 Remove the Power Supply

After opening the TR case (*Section 3 previously*) disconnect the Top shell from the base and stand the base upside down.



Unscrew 4 screws (M4 x 8 mm Phillips head) from the Power Supply. See attached diagram.



Holding the Power Supply lay the TR base flat on to the bench.  
Disconnect the power plug from the HDD and the CDR.  
Disconnect the power plug from the mid-board J3.  
Disconnect the power plug from the PC104 fly lead.

Remove the Power Supply.

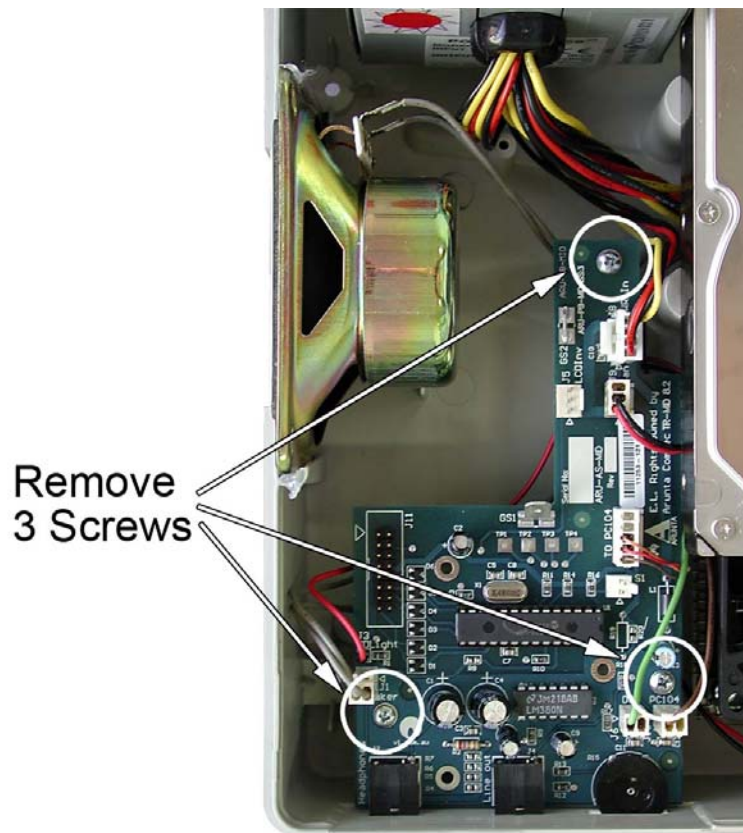
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## 5.4 Remove the Mid-board

To remove the Mid-board first undo the 2 knurled nuts on the front of the TR unit.



Then unscrew the 3 Phillips head screws as shown.

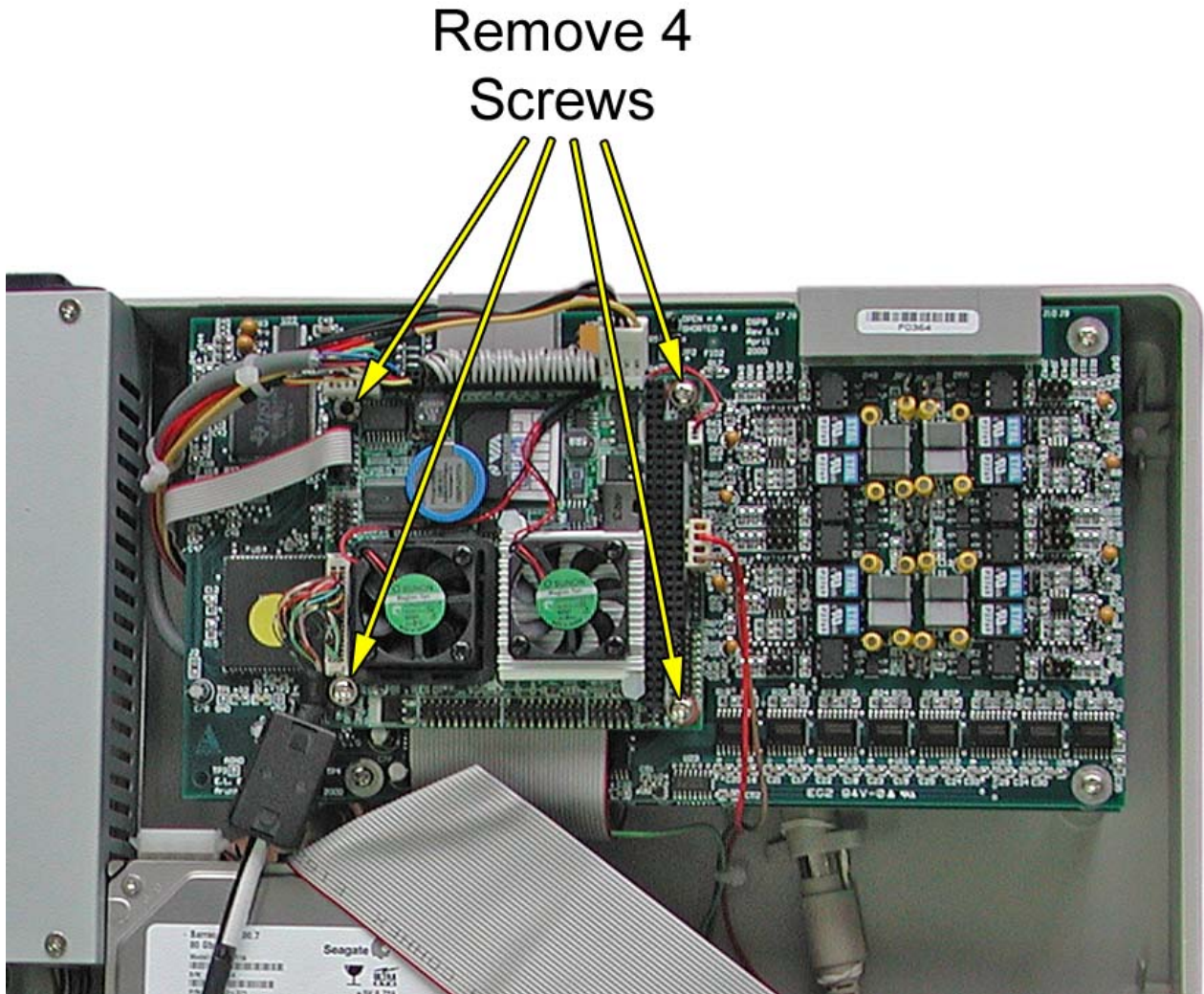


To fit a new Midboard see the cable connection diagram in *Section 4.3*.

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## 5.5 Remove the PC104 Small Computer

The PC104 CM786 small computer board is located on top of the DSP card. To remove first remove the four (4) screws at each corner.



Grip the PC104 card on both sides of the PC104 connector, gently ease the card from front to back until the card releases from the DSP connector.

Then carefully remove the cables.

**Note:** The cable assignment can be found in *Section 4.3 & 4.4*

**Caution:** When reassembling the PC104 do **NOT** lay the IDE ribbon cables across the CPU cooling fans. Run the IDE cable under the PC104 to allow free air circulation.

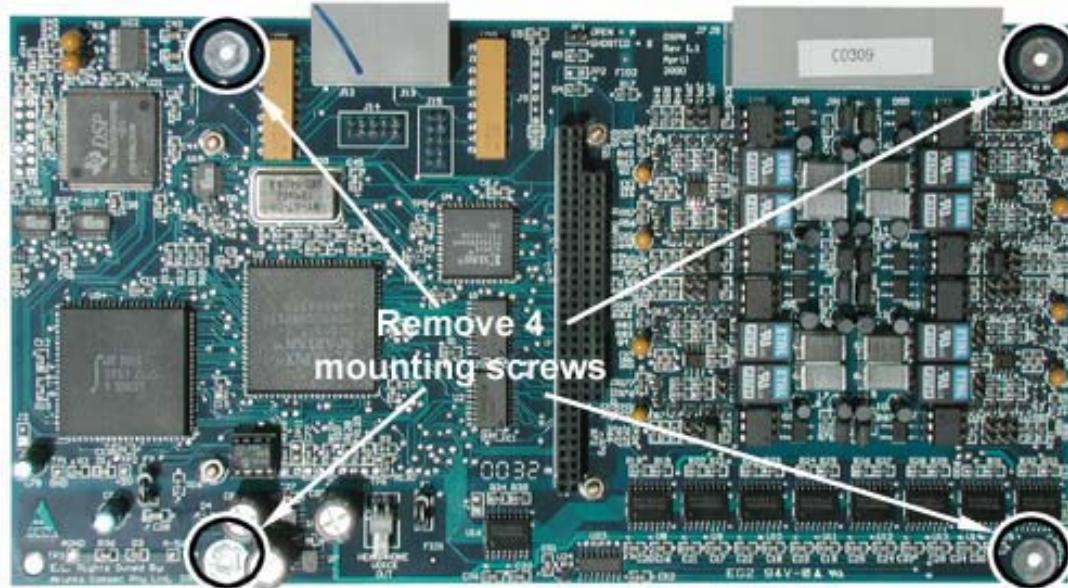


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## 5.6 Remove DSP cards

First the PC104 small computer board must be removed. *See Section 5.5 above.*

To remove the top DSP card (if fitted) unscrew 4 Phillips head screws as shown.



Grip the DSP card on both sides of the PC104 connector, gently ease the card from front to back until the card releases from the PC104 connector.

**Caution:** Protect the PC104 connector pins on the under side of the DSP card.





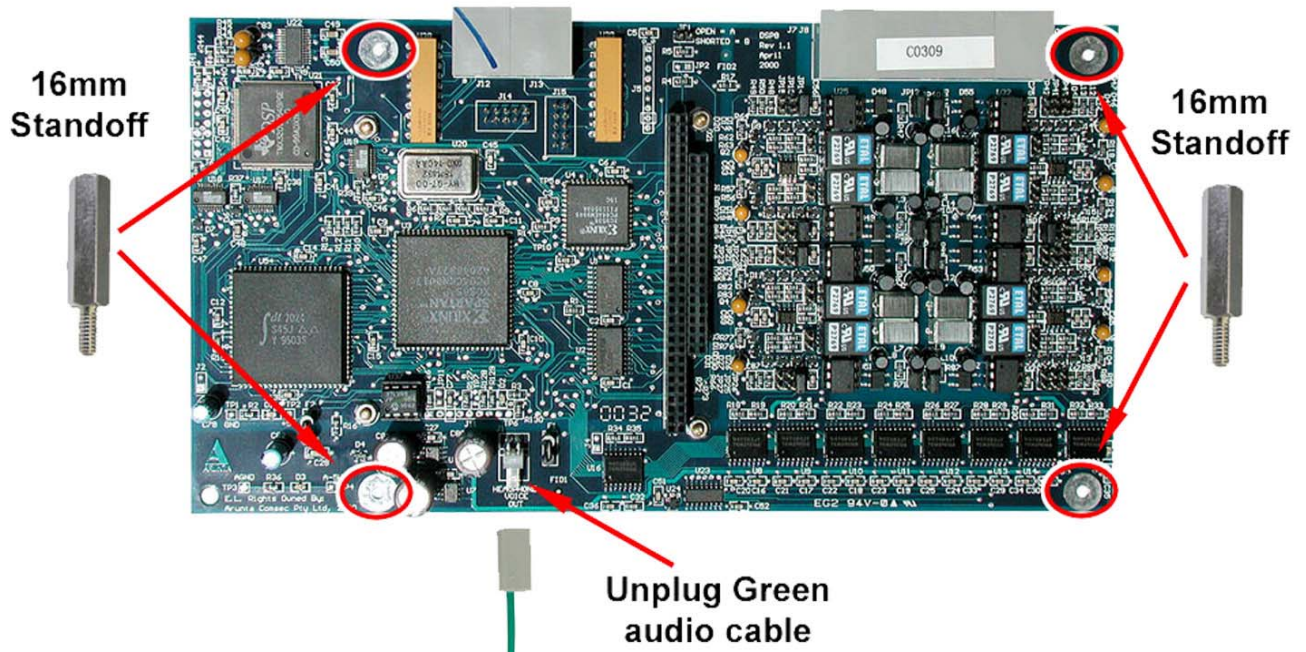
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## 5.7 Remove Lower DSP

First remove the PC104 small computer board from the DSP as per instructions in *Section 5.5*

Remove the top DSP, if fitted as per instructions in *Section 5.6*.

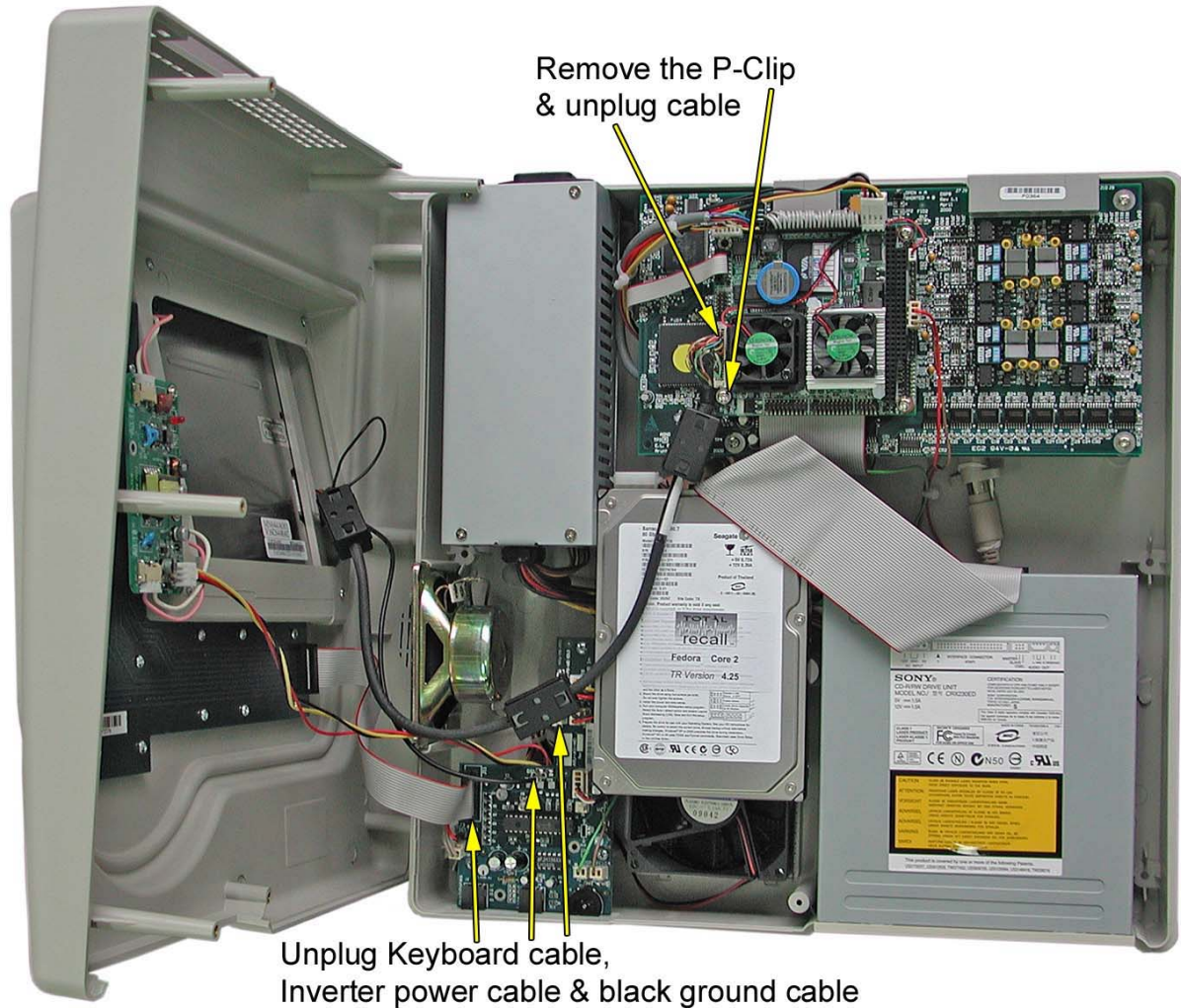
Then unscrew 4 hexagon Standoffs that secure the DSP assembly to the TR base.



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## 5.8 Remove LCD Screen

After opening the enclosure *see Section 3.1* unscrew the P-Clip holding the LCD cable to the PC104, and unplug the cable.



Remove the top enclosure from the base and lay on a flat surface.

Unplug the two LCD backlight cables (pink & white). *See photo below.*

Remove the 4 screws that secure the LCD housing.



Carefully lift the top enclosure from the LCD housing.

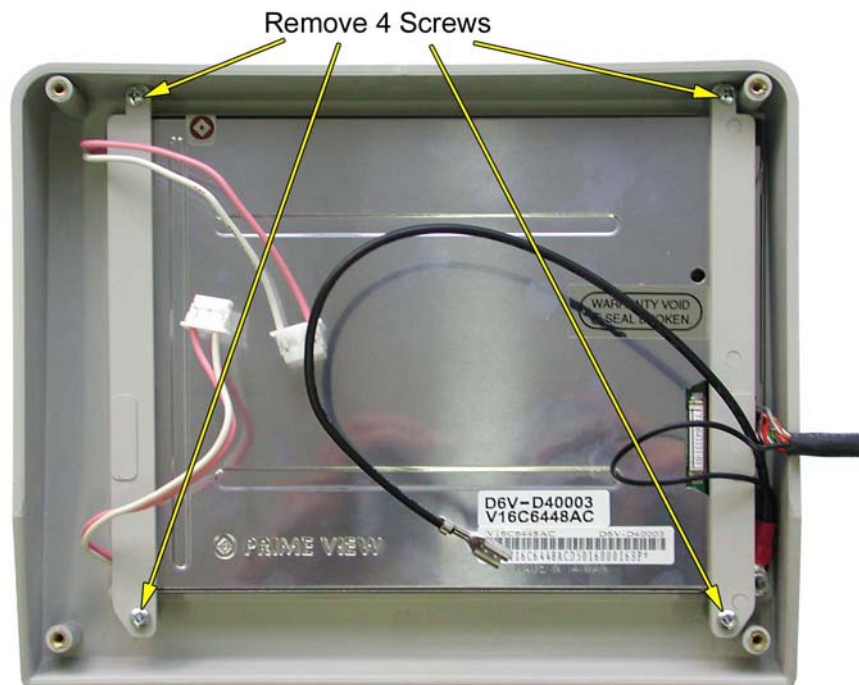
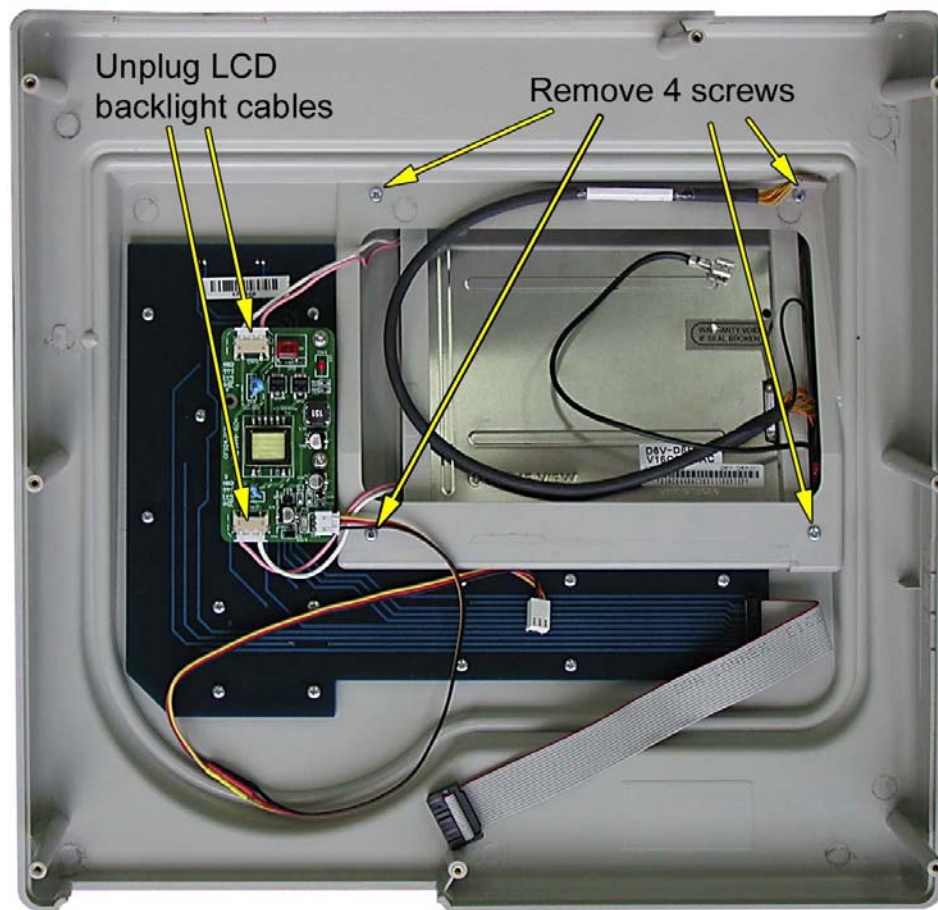
Remove the 4 screws from the LCD mounting straps.



Lift the LCD from the mounting.

**Note:** *When reassembling the LCD ensure the correct screws are used.*





*LCD Housing*

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## 6 Removing Parts ( Rack Mount Unit )

To open the Rack enclosure *see Section 3.2*

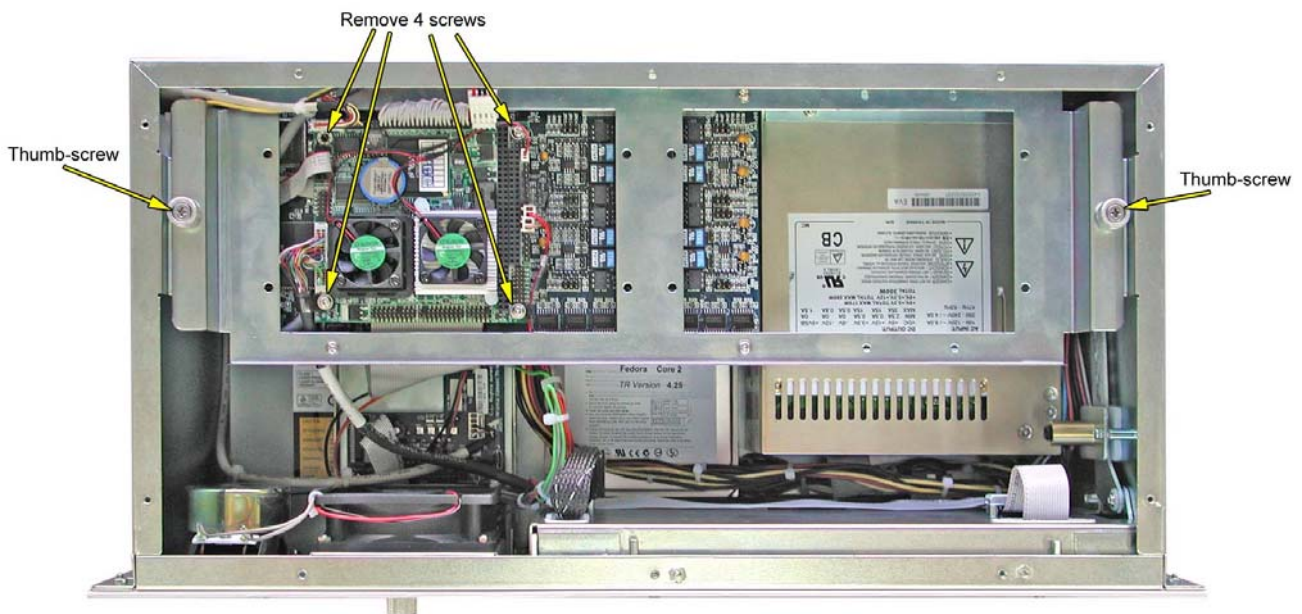
### 6.1 Remove PC104 Small Computer Board

Remove 4 mounting screws from the four corners of the PC104.

Grip the PC104 across the PC104 Bus connector and gently ease it back and forward to release it from the DSP Bus connector.

Carefully unplug all the cables from the PC104 board.

- 1: Grey 40 way IDE cable.
- 2: Power cable 4 way (red, black, black, red).
- 3: Network cable 7 wire multi colour.
- 4: Keyboard Cable 4 wire (red, white, black, yellow).
- 5: Com1 Cable (Modem) 10 way grey ribbon cable.
- 6: LCD cable multi strand multi colour.
- 7: Brown Beep cable.
- 8: Red HDD activity LED cable.



When reconnecting cables *see Section 4.3 & 4.4.*

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## 6.2 Remove or Adding DSP Board

The DSP board are all housed under a suspended carriage which is held in place by a thumb screw on either side. *See photo above.*

Depending of the configuration of the unit 4, 8, 12, 16, 20, 24, 28, 32 channel there may be 1, 2, 3, or 4 DSP cards fitted. If there is only one and it is to be removed the PC104 will need to be removed first.

If there are more than one DSP and another DSP is to be added or removed there is no need to remove the PC104.

To add or remove a DSP first remove the cover plate from the underside of the Rack Mount unit.

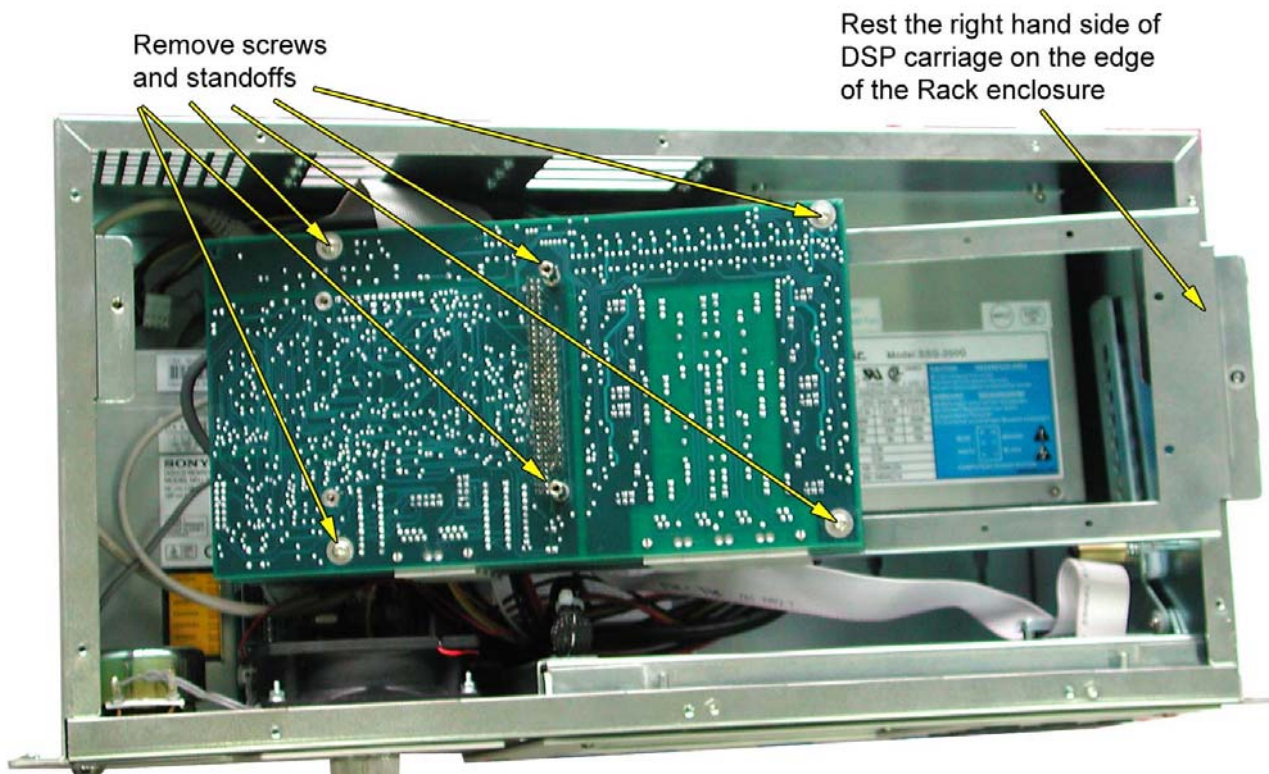
Then unplug the IDE cable from the DVD drive and the HDD.

Then unscrew the two thumb-screws that hold the DSP carriage.

Gently lift the carriage assembly and rotate it towards you to expose the underside of the DSP boards. Using some soft foam or bubble wrap under the carriage assembly to protect the PC104 lay it down into the enclosure resting the right hand side of the carriage on the edge of the Rack enclosure.

Now DSPs can be added or removed.

Remove screws and standoffs grip the DSP on either side of the PC104 Bus connector and gently ease it back and forward to release it from the other PC104 Bus connector.





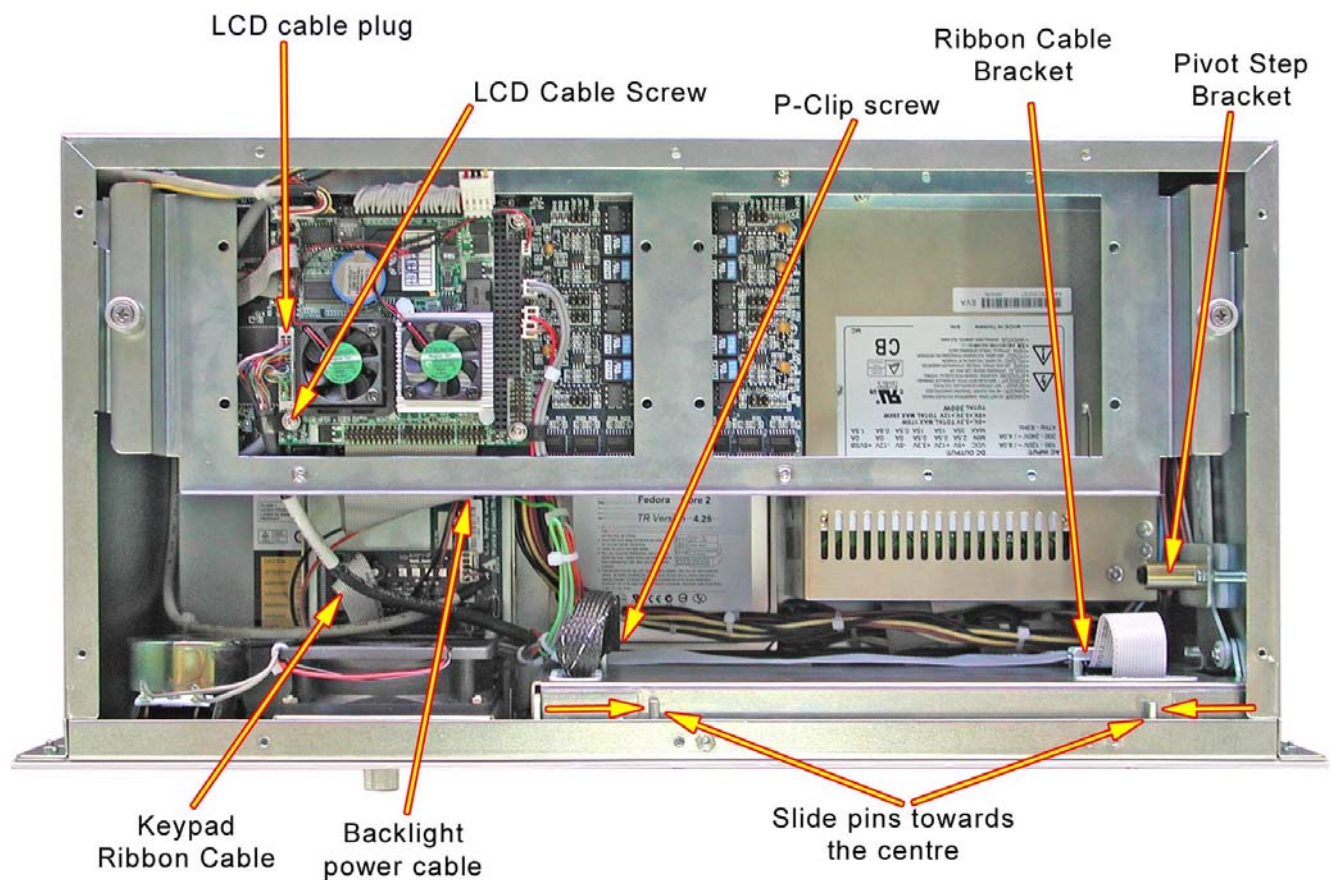
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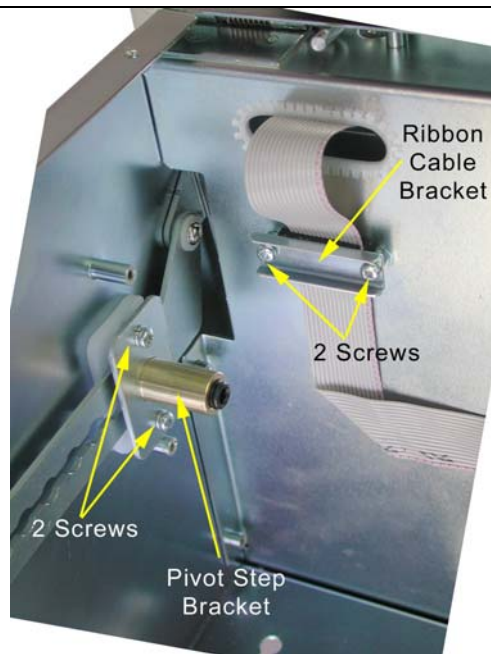
## 6.3 Remove TFT LCD & Keypad Housing

To open the Rack enclosure *see Section 3.2*

To remove the LCD and Keypad Housing:

- 1: Remove LCD cable retaining screw and unplug cable plug from the PC104.
- 2: Unplug LCD Backlight power cable and the Keypad ribbon cable from the Midboard.
- 3: Remove the P-Clip screw and the Ribbon cable bracket.
- 4: Remove the Pivot Step Bracket by removing the two screws.
- 5: Pivot open the LCD housing a small amount and then slide the two Pins towards the centre about 10mm until the LCD housing releases from the Rack enclosure.



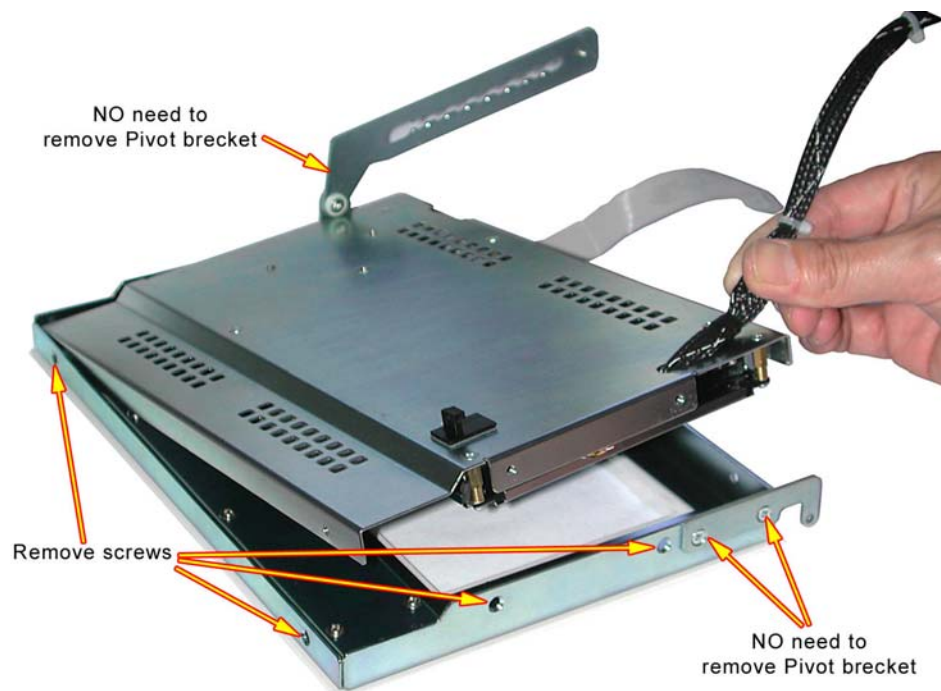


- 6: Gently ease the LCD cables and ribbon cables through the apertures and lay the LCD housing face down onto a soft nonabrasive surface.



**Note:** *There is NO need to remove the Face Plate or the two pivot brackets to get access to the LCD or the Keypad.*

- 7: Remove 9 Countersunk Screws from the edge of the LCD Housing, 3 on the top edge and two on the other three edges.
- 8: Holding the LCD cable gently ease the back plate up away from the Keypad plate.



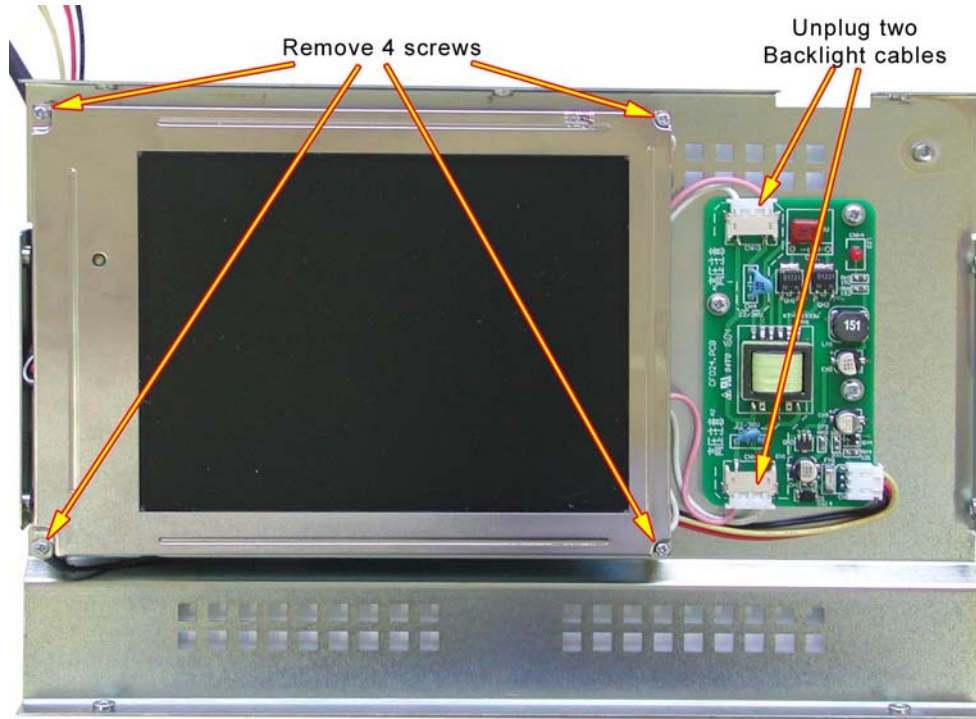
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### 6.3.1 Removing TFT LCD

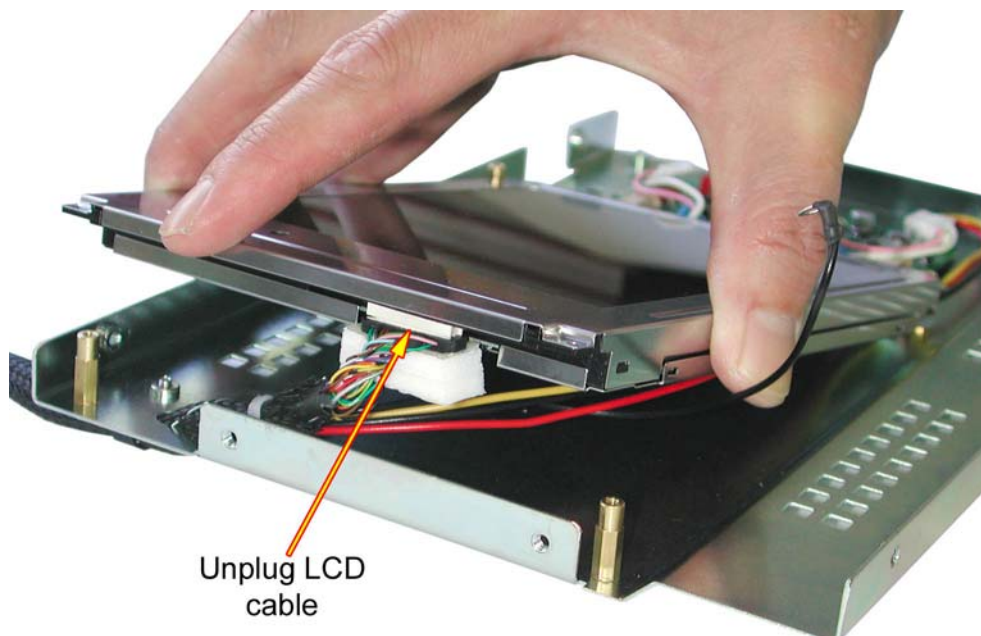
Lay LCD / Keypad back plate on a flat surface with the LCD face up.

Unplug two (2) LCD backlight cable plugs from the Inverter.

Remove four (4) 2mm screws from each corner of the LCD.



Lift LCD so you can get access to the LCD cable plug, and gently ease the plug from the socket.





---

### 6.3.2 Refitting TFT LCD

When refitting the LCD care must be taken to ensure that the fine wires of the LCD cable near the plug are kept well inside the metal rim of the housing, to prevent damage to the wires.

Fit the Earth lug under the retaining screw and on top of the LCD bezel.



### 6.4 Remove Fan & Speaker Mounting

First remove the Top cover plate of the Rack enclosure *see Section 3.2*

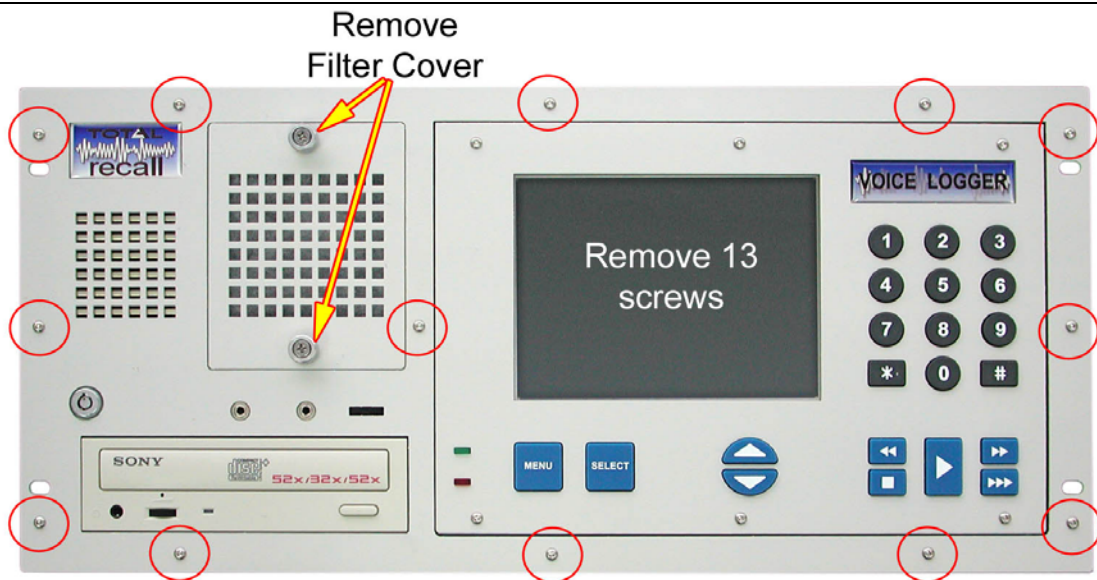
Lay the TR Rack Enclosure on it back. & Remove the front face plate by;

Using a Hexagon (Alan Head) drive remove 13 screws from the face panel.

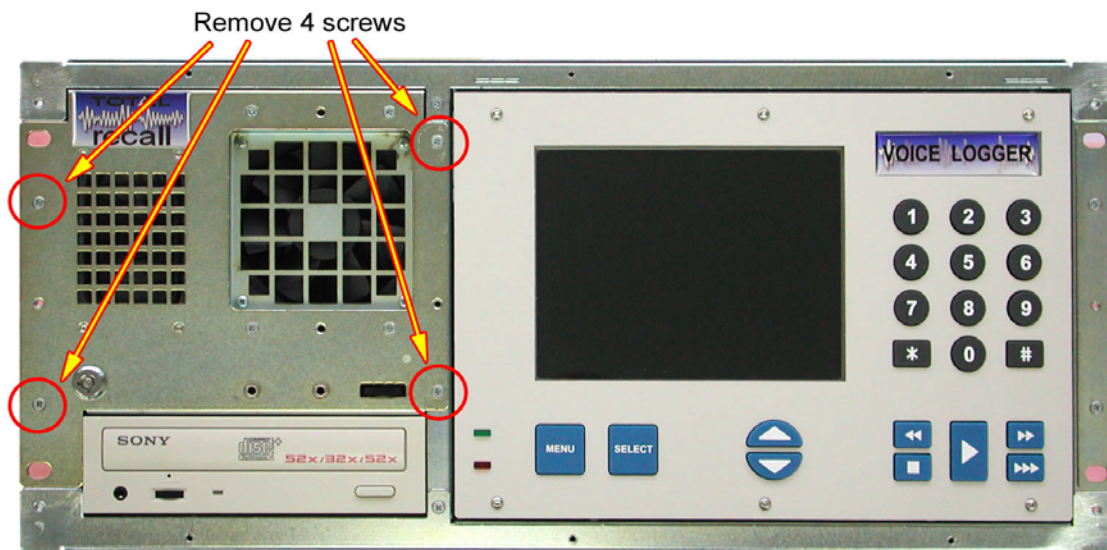


Note: There is no need to remove the six screws from the face plate of the LCD / Keypad Pivot panel.

Remove the Filter Cover.

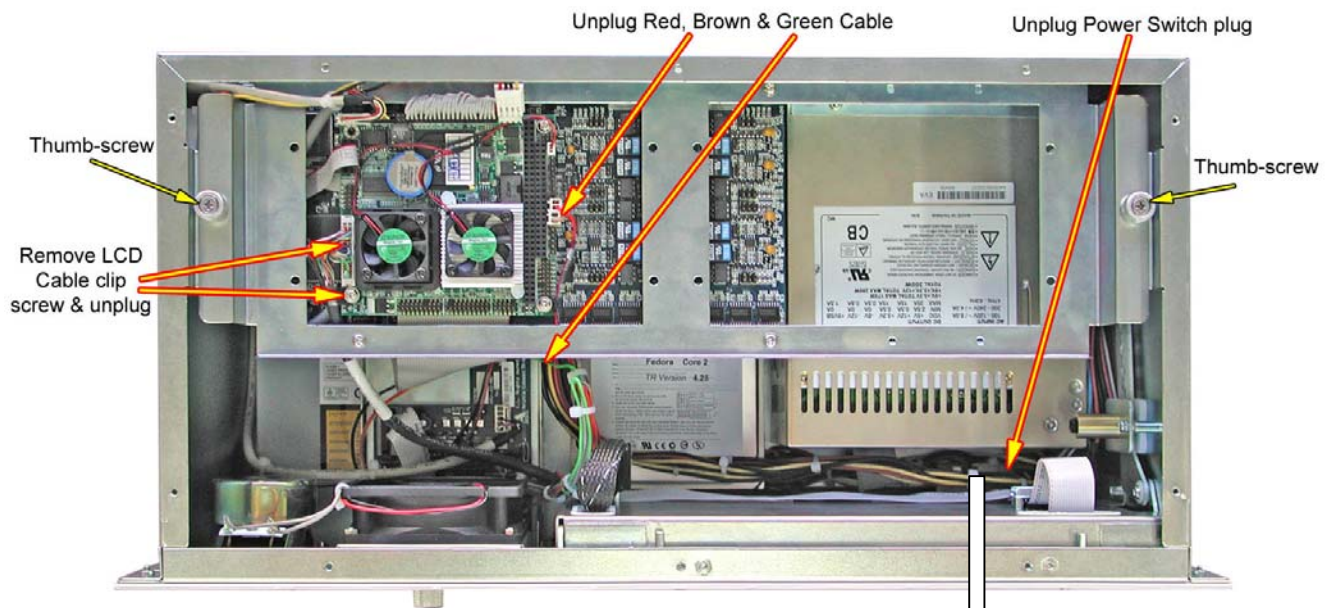


Remove 4 Countersunk screws from the Fan / Speaker Housing.

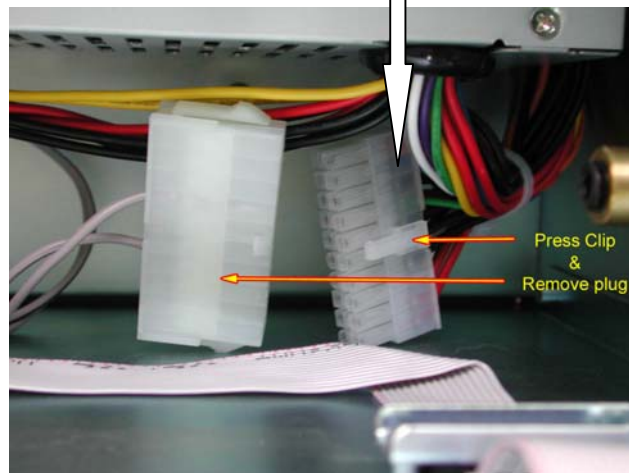


Unplug Red, Brown and Green cables from the PC104.

Remove screw from P-clip holding the LCD cable. Unplug the LCD cable.



Press clip and unplug Power Switch plug.



Unscrew the two Thumb Screws from the PC104 / DSP cradle and tilt the cradle on its side to gain access to the Midboard.

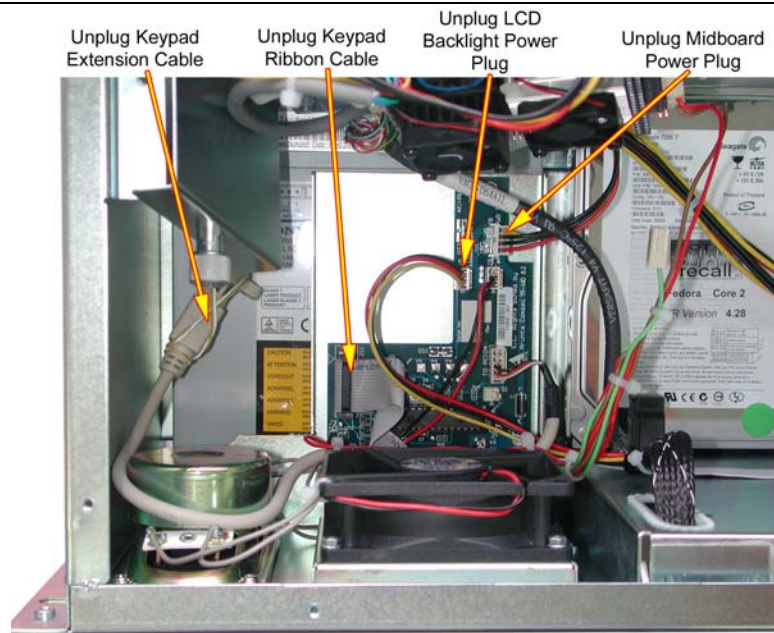
Unplug the Keypad Extension cable plug see photo below..

Unplug the Keypad Ribbon Cable from the Midboard.

Unplug The LCD Backlight Power cable from the Midboard.

Unplug the Midboard Power Cable from the Midboard.





The Fan / Speaker Hosing can now be slid out from the front of the Rack Enclosure.

### **6.5 Remove the Midboard**

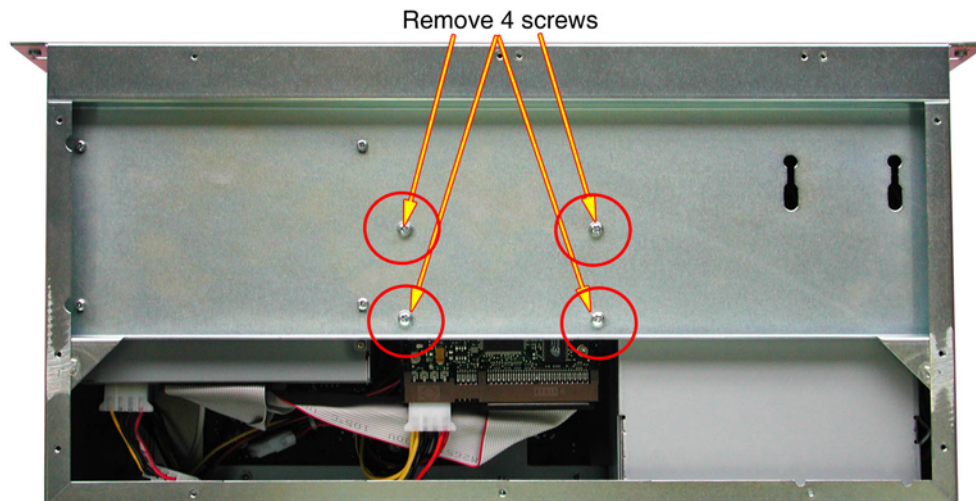
The Midboard is mounted to the Fan / Speaker Housing, to remove the Midboard see Section 6.4 above.

### **6.6 Remove the Hard Disk Drive**

To remove the **Hard Disk Drive** first remove the Top and Bottom enclosure covers, see Section 3.2

Unplug the IDE cable and the Power cable from the HDD.

Stand the Rack Enclosure on one end, holding the HDD remove the 4 screws.(6-32 Pan head x ½")



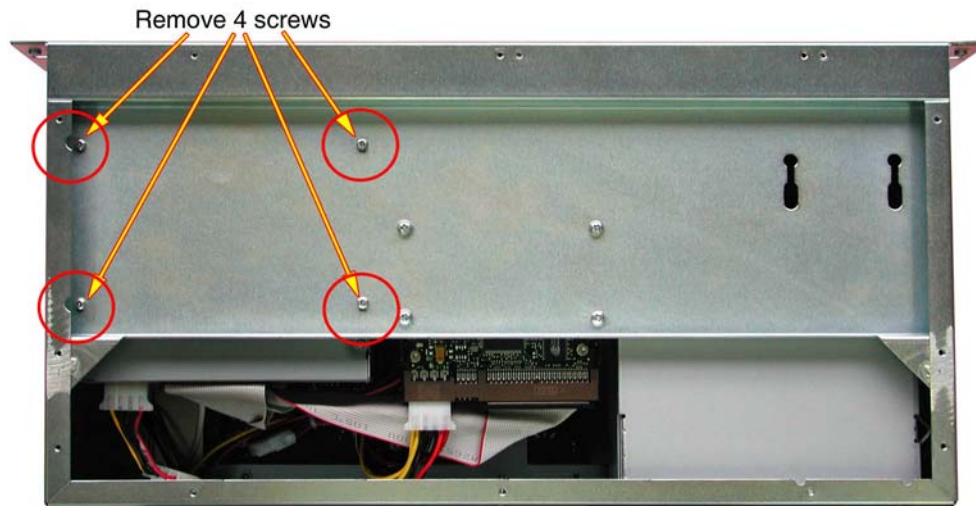
---

## 6.7 Remove the DVD / CD drive

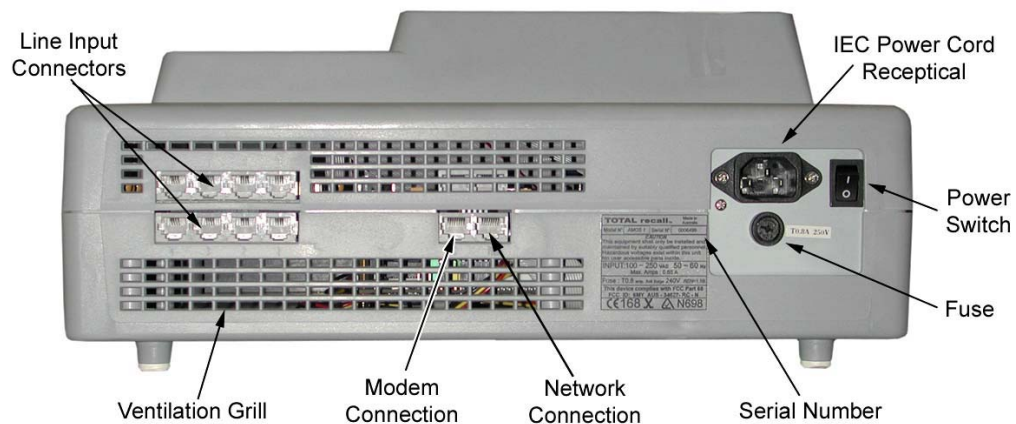
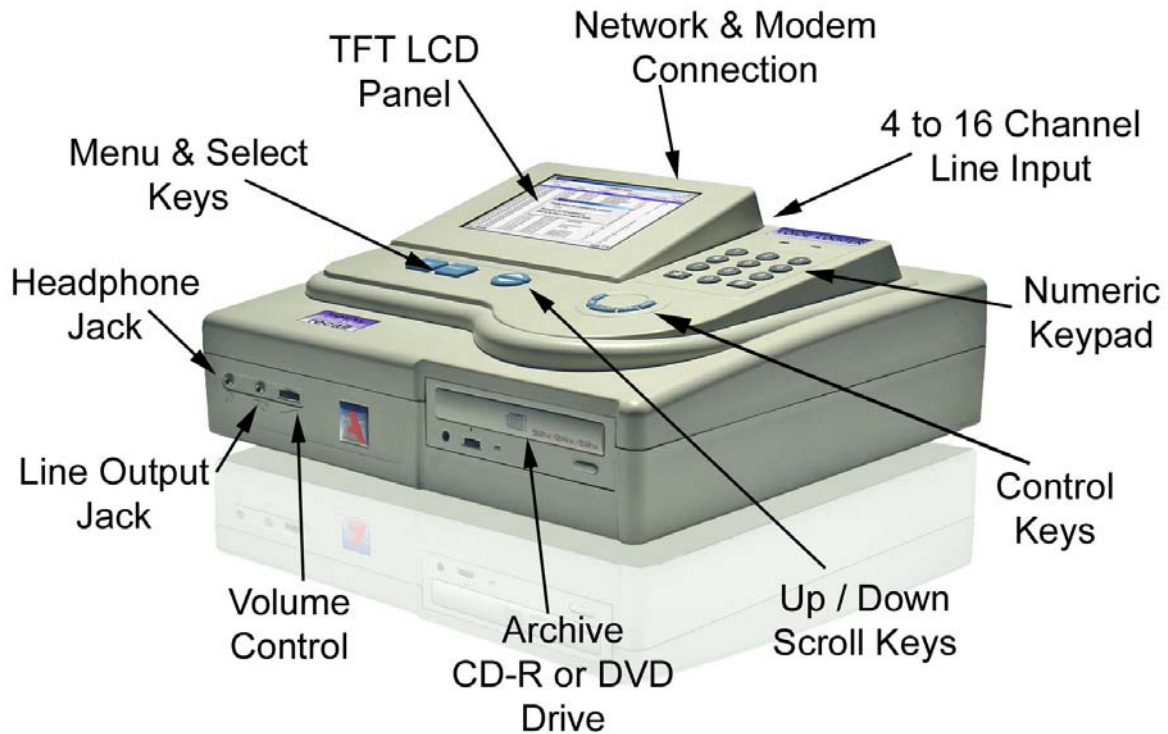
To remove the DVD or CD Drive first remove the Top and Bottom enclosure covers, see Section 3.2

Unplug the IDE cable and the Power cable from the DVD / CD Drive.

Stand the Rack Enclosure on one end, holding the DVD / CD Drive remove the 4 screws.(M3 Pan head x 6mm)



## 7 Identification of Total Recall (Desktop model)



---

## 7.1 Line Input Connectors



*4 channel DSP are BLACK*



*8 channel DSP are GREY*

The recorder will be configured as either a 4, 8, 12 or 16-port unit. The connectors for the telephone line interface are standard RJ11C / RJ12 / RJ14 (6P 6C) telephone sockets. *(They get called different names in different countries).*

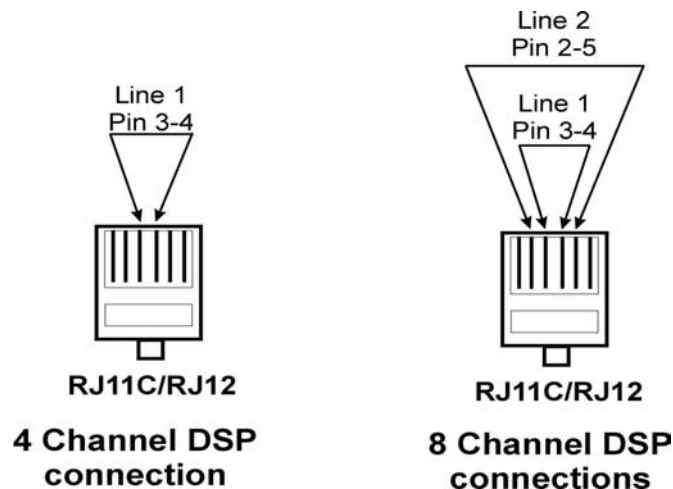
### The 2-wire analogue line interface:

**4 Channel DSP** (BLACK coloured RJ connectors viewed from the outside): 2 wire connection uses pins 3 & 4, (the centre 2 pins) See diagram

*Each connector has only one (1) x 2 wire input.*

**8 Channel DSP** (GREY coloured RJ connectors viewed from the outside); 2 wire connections, Line 1 is pins 3 & 4 (centre 2 pins), Line 2 is pins 2 & 5 See diagram

*8 channel DSP boards each connector has two (2) x 2 wire inputs.*



---

## **7.2 Remote Access Ports**

### **7.2.1 COM Port 1 for Modem**

Com 1 serial port (RS-232) using a standard RJ45 socket (8P 8C) for connection to a Modem for remote access. A Modem to Total Recall cable is supplied with each Total Recall unit. The Pin assignments for this cable can be found in Section 9.1.

The Modem that is recommend for use with Total Recall is a V92 56K external serial modem. The faster the modem the better. The modems will negotiate the optimum speed that they can communicate at.

You cannot use an internal modem with Total Recall.

Total Recall will support all external modems supported by Linux which is almost all of them.

For more details on modem compatibility read <http://www.tldp.org/HOWTO/Modem-HOWTO-2.html>

Do NOT use a Null Modem cable with crossed wires the cable should be straight through.

### **7.2.2 Network Port**

The Network port is an IEEE802.3U compatible 10/100 Base-T interface using a standard RJ45 socket (8P 8C) for connection to a Net Switch, Hub or other network device, for remote access. A Network Crossover cable is supplied with each Total Recall unit. The Pin assignments for this cable can be found in Section 9.2.



---

### 7.3 DSP Configuration Settings ( Desktop only )

To set the configuration for the DSP there are two Shorting Link Jumpers, JP1 and JP2. These are used to tell the system which is the first set of channels and which is the second set of channels.

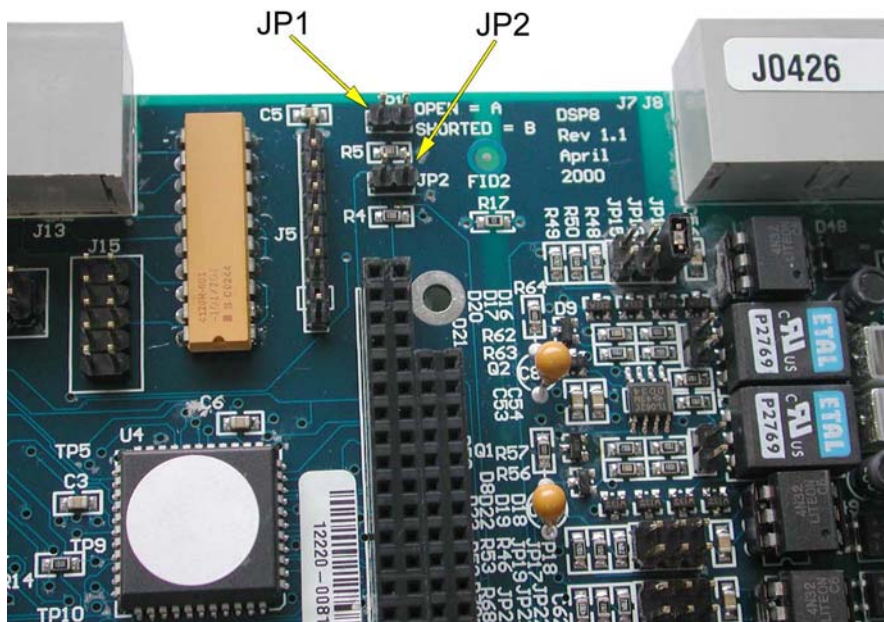
The lower DSP is DSP 1.

NO Jumper Link on either JP1 or JP2.



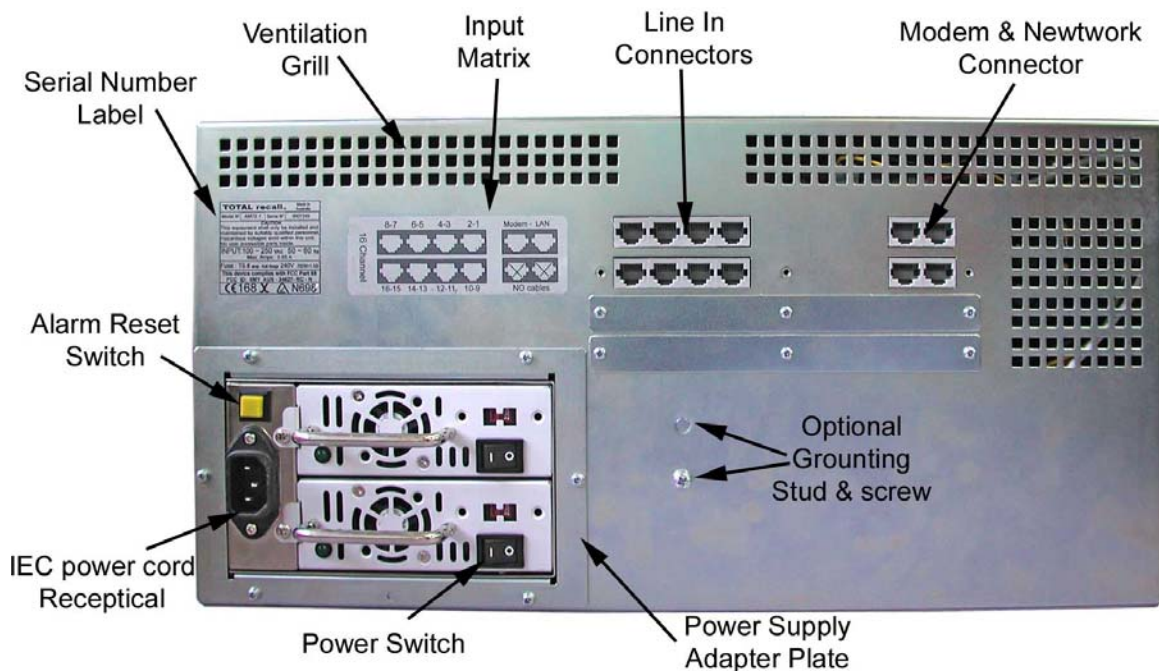
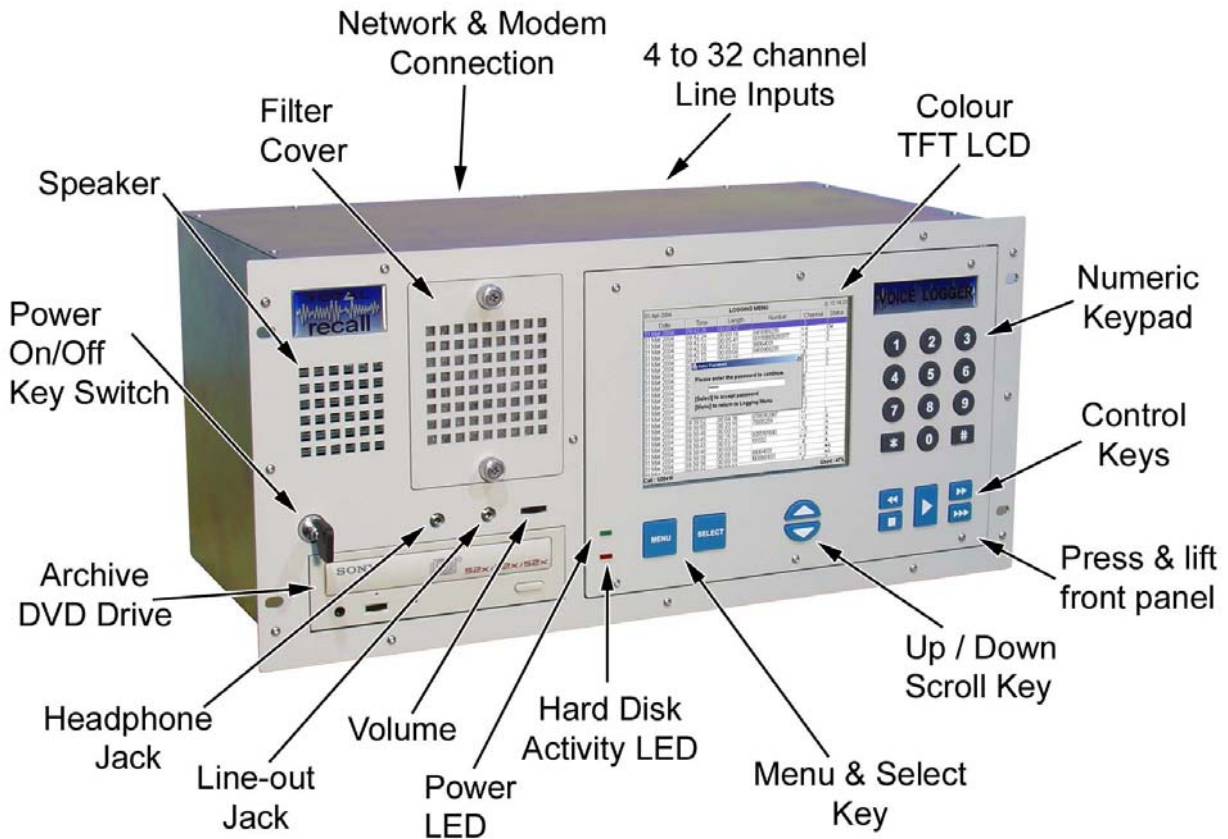
The top DSP is DSP 2.

Jumper Link on JP1 only.



DSP 1 with NO Jumper Link fitted is the DSP that has the Green audio cable connected.

## 8 Identification of Total Recall (Rack Mount model)



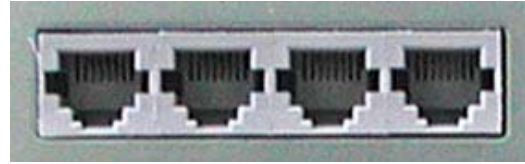
*Rear view Rack Mount fitted with Dual Hot-swap Power Supply*

---

## 8.1 Line Input Connectors



*4 channel DSP are BLACK*



*8 channel DSP are GREY*

The recorder will be configured as either a 4, 8, 12 or 16-port unit. The connectors for the telephone line interface are standard RJ11C / RJ12 / RJ14 (6P 6C) telephone sockets. *(They get called different names in different countries).*

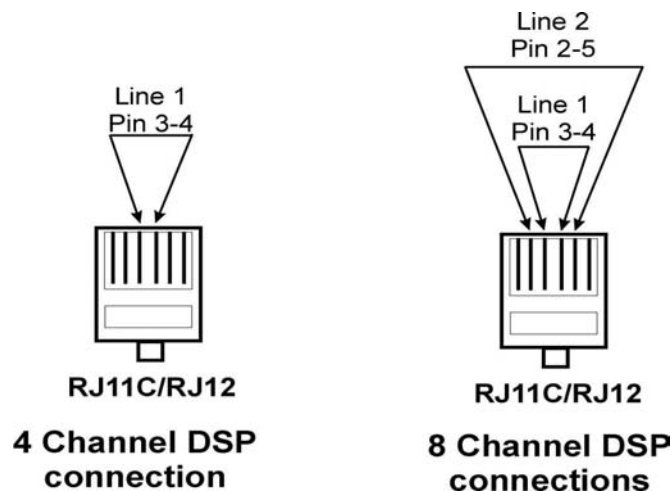
### The 2-wire analogue line interface:

**4 Channel DSP** (BLACK coloured RJ connectors viewed from the outside): 2 wire connection uses pins 3 & 4, (the centre 2 pins) See diagram

*Each connector has only one (1) x 2 wire input.*

**8 Channel DSP** (GREY coloured RJ connectors viewed from the outside); 2 wire connections, Line 1 is pins 3 & 4 (centre 2 pins), Line 2 is pins 2 & 5 See diagram

*8 channel DSP boards each connector has two (2) x 2 wire inputs.*



---

## 8.2 DSP Configuration Settings (Rack Mount model)

To set the configuration for the DSP there are two Shorting Link Jumpers, JP1 and JP2. These are used to tell the system which is the first set of channels and which is the second set of channels etc.

The Top DSP is DSP 1.

NO Jumper Link on either JP1 or JP2.



The next DSP is DSP 2.

Jumper Link on JP1 only.



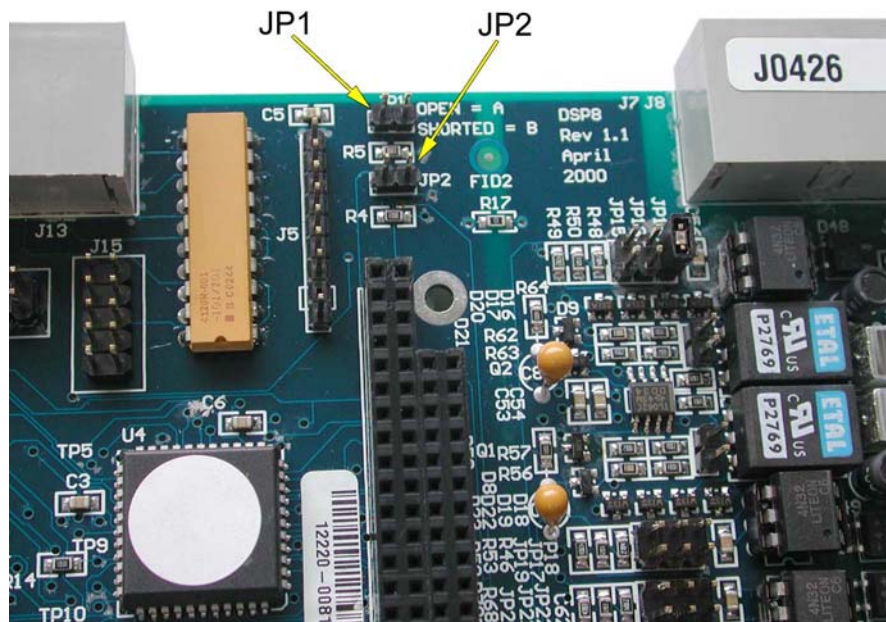
The next DSP is DSP 3.

Jumper Link on JP2 only.



The next DSP is DSP 4.

Jumper Link on JP1 & JP2.








DSP 1 with NO Jumper Link fitted is the DSP that has the Green audio cable connected.



### 8.3 Channel Numbering

Each input socket is numbered with an embossed figure in the plastic case. There is a maximum of 8 sockets so the configuration for the different TR units are:

<b>4 channel:</b> 1 = line 1 2 = line 2 3 = line 3 4 = line 4		4 channel DSP	
<b>8 channel</b> 1 = line 1 & 2 2 = line 3 & 4 3 = line 5 & 6 4 = line 7 & 8		8 channel DSP	
<b>12 channel</b> 1 = line 1 & 2 2 = line 3 & 4 3 = line 5 & 6 4 = line 7 & 8 5 = line 9 6 = line 10 7 = line 11 8 = line 12		8 channel DSP  4 channel DSP	
<b>16 channel</b> 1 = line 1 & 2 2 = line 3 & 4 3 = line 5 & 6 4 = line 7 & 8 5 = line 9 & 10 6 = line 11 & 12 7 = line 13 & 14 8 = line 15 & 16		8 channel DSP  8 channel DSP	
<b>20 channel</b> 1 = line 1 & 2 2 = line 3 & 4 3 = line 5 & 6 4 = line 7 & 8 5 = line 9 & 10 6 = line 11 & 12 7 = line 13 & 14 8 = line 15 & 16 9 = line 17 10 = line 18 11 = line 19 12 = line 20		8 channel DSP  8 channel DSP  4 channel DSP	

**24 channel** 1 = line 1 & 2  
 2 = line 3 & 4  
 3 = line 5 & 6  
 4 = line 7 & 8  
 5 = line 9 & 10  
 6 = line 11 & 12  
 7 = line 13 & 14  
 8 = line 15 & 16  
 9 = line 17 & 18  
 10 = line 19 & 20  
 11 = line 21 & 22  
 12 = line 23 & 24

8 channel DSP



8 channel DSP



8 channel DSP



**28 channel** 1 = line 1 & 2  
 2 = line 3 & 4  
 3 = line 5 & 6  
 4 = line 7 & 8  
 5 = line 9 & 10  
 6 = line 11 & 12  
 7 = line 13 & 14  
 8 = line 15 & 16  
 9 = line 17 & 18  
 10 = line 19 & 20  
 11 = line 21 & 22  
 12 = line 23 & 24  
 13 = line 25  
 14 = line 26  
 15 = line 27  
 16 = line 28

8 channel DSP



8 channel DSP



8 channel DSP



4 channel DSP



**32 channel** 1 = line 1 & 2  
 2 = line 3 & 4  
 3 = line 5 & 6  
 4 = line 7 & 8  
 5 = line 9 & 10  
 6 = line 11 & 12  
 7 = line 13 & 14  
 8 = line 15 & 16  
 9 = line 17 & 18  
 10 = line 19 & 20  
 11 = line 21 & 22  
 12 = line 23 & 24  
 13 = line 25 & 26  
 14 = line 27 & 28  
 15 = line 29 & 30  
 16 = line 31 & 32

8 channel DSP



8 channel DSP



8 channel DSP



8 channel DSP



---

## **8.4 Remote Access Ports**

### **8.4.1 COM Port 1 for Modem**

Com 1 serial port (RS-232) using a standard RJ45 socket (8P 8C) for connection to a Modem for remote access. A Modem to Total Recall cable is supplied with each Total Recall unit. The Pin assignments for this cable can be found in Section 9.1.

The Modem that is recommend for use with Total Recall is a V92 56K external serial modem. The faster the modem the better. The modems will negotiate the optimum speed that they can communicate at.

You cannot use an internal modem with Total Recall.

Total Recall will support all external modems supported by Linux which is almost all of them.

For more details on modem compatibility read <http://www.tldp.org/HOWTO/Modem-HOWTO-2.html>

Do NOT use a Null Modem cable with crossed wires the cable should be straight through.

### **8.4.2 Network Port**

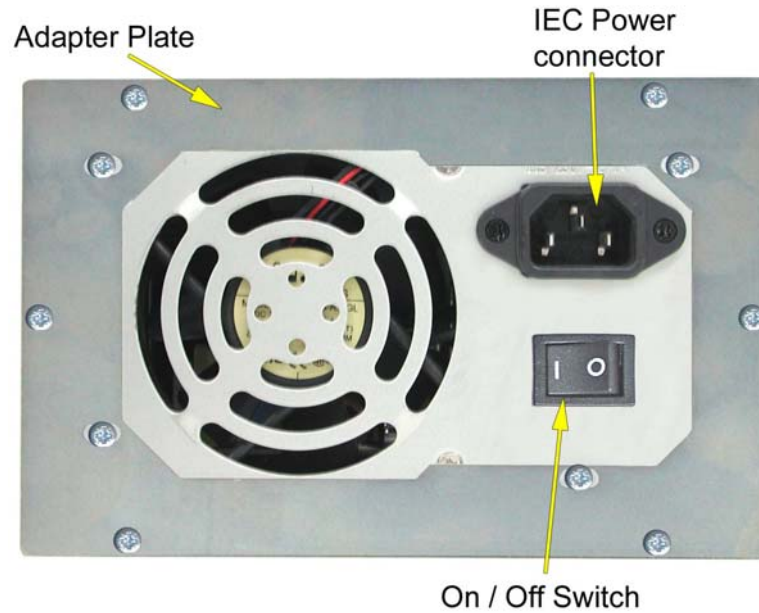
The Network port is an IEEE802.3U compatible 10/100 Base-T interface using a standard RJ45 socket (8P 8C) for connection to a Net Switch, Hub or other network device, for remote access. A Network Crossover cable is supplied with each Total Recall unit. The Pin assignments for this cable can be found in Section 9.2.

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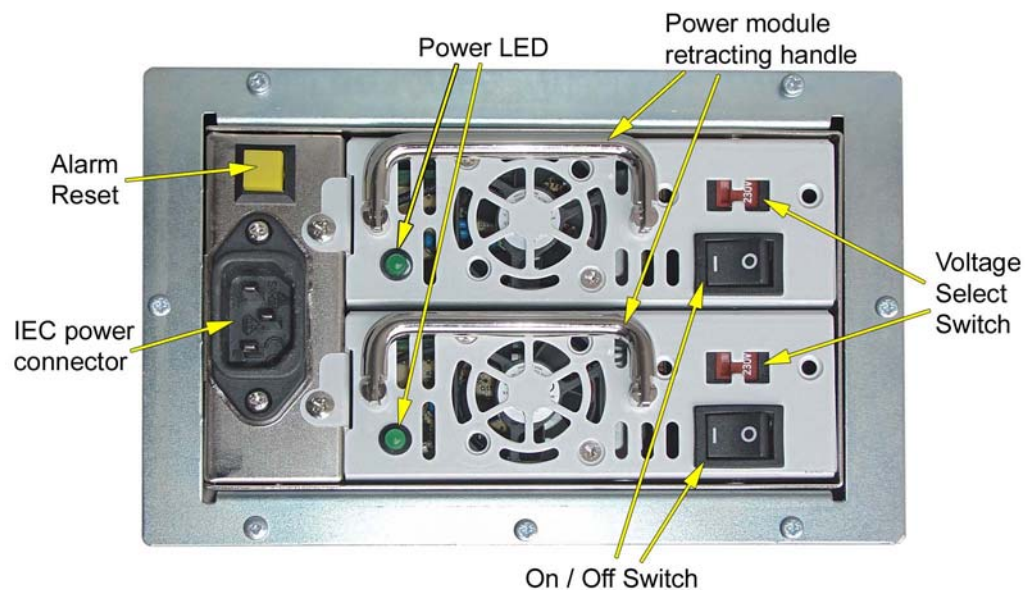
## 8.5 Power Supply Options

Total Recall 19" Rack Mount is available with 2 power supply options.

- 1: **Standard ATX PC** power supply auto sensing 90VAC to 260VAC, 50Hz > 60Hz 250 watts.



- 2: **Dual Hot Swap** power supply 110VAC switch-able 240VAC, 50Hz > 60Hz 300 watts total.





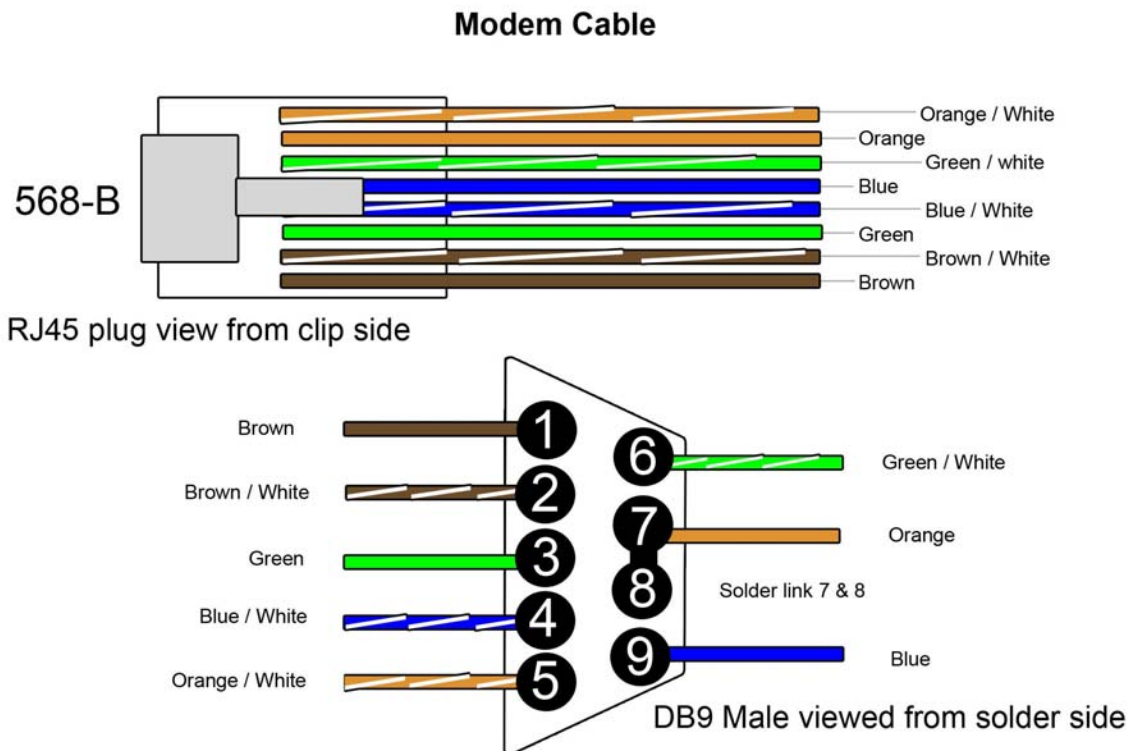
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## 9 Cable Pin Assignments

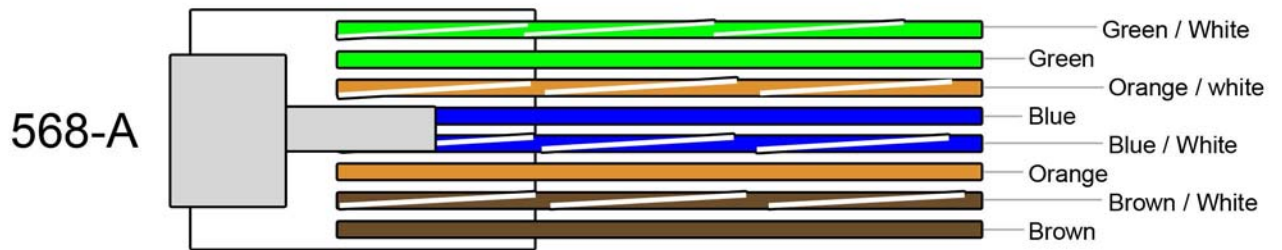
### 9.1 Modem cable

The pin numbering of the RJ45 plug: with the cable towards you and the gold connectors facing up pin 1 is on the left and pin 8 is on the right.

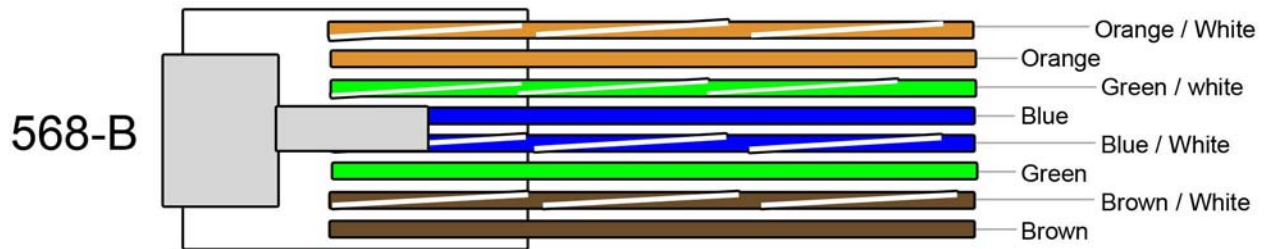
DB9 female plug is standard they are numbered on the plug.



## Network Cross-over Cable

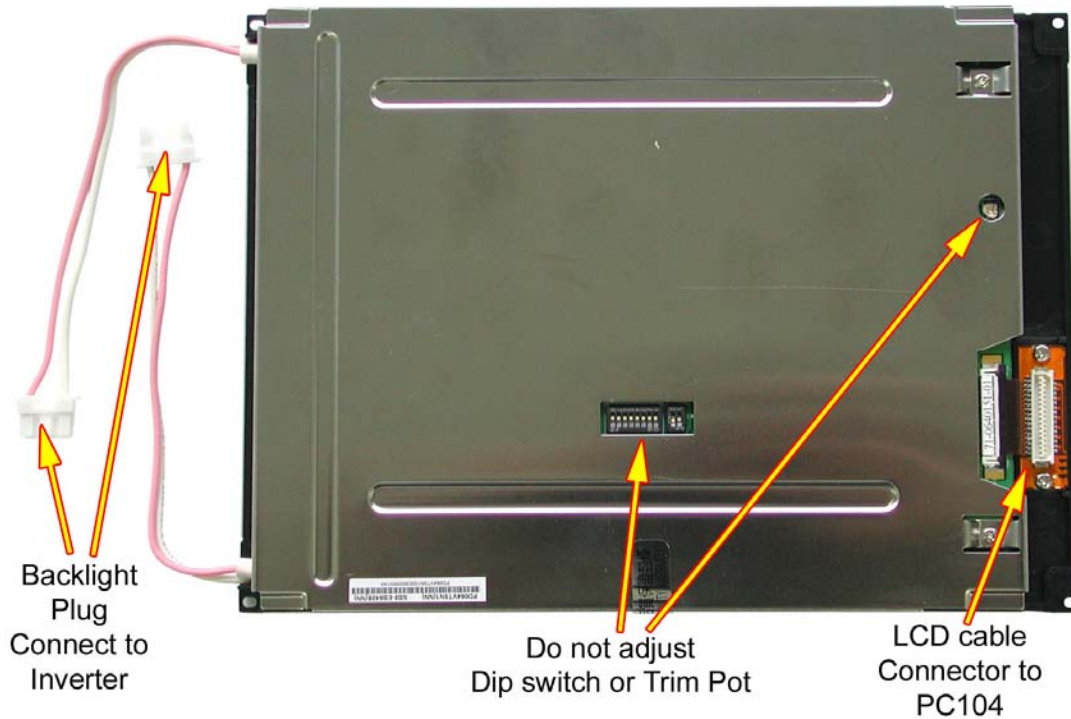


RJ45 plug view from clip side



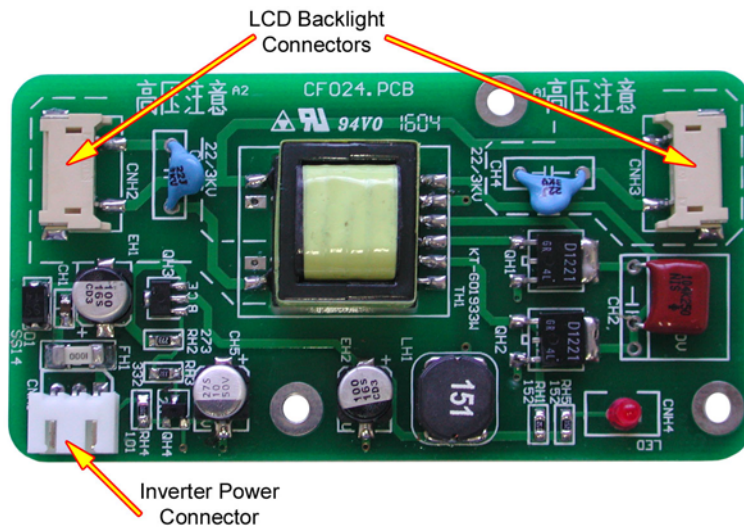
### 9.3 LCD & Backlights

The LCD used in Total Recall is a TFT colour 640 x 480 display. It will display 262,144 colours.



Do **NOT** change or adjust the Dip Switches or the Trim Pot on the back of the LCD any changes will cause the LCD to malfunction and void any warranty.

The Inverter that drives the LCD Backlight requires power supplied from the TR Midboard.



**Caution**

The voltage generated by the inverter for the backlight is 380 Vrms. Contact with these voltages could be harmful.

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## 9.4 Power Cable Socket

IEC 90-250VAC power cable socket.

## 9.5 On/Off Switch

### 9.5.1 Desktop



### 9.5.2 Rack Model

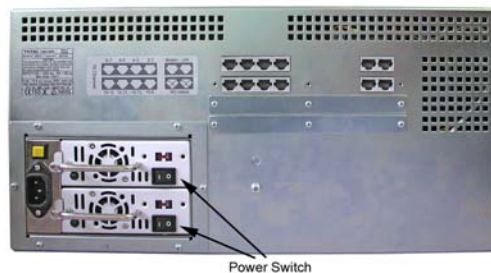
#### 9.5.2.1 Front Panel



#### 9.5.2.2 Back PC Power Supply



#### 9.5.2.3 Back Hot Swap Power Supply





## 10 Serial Numbers of parts

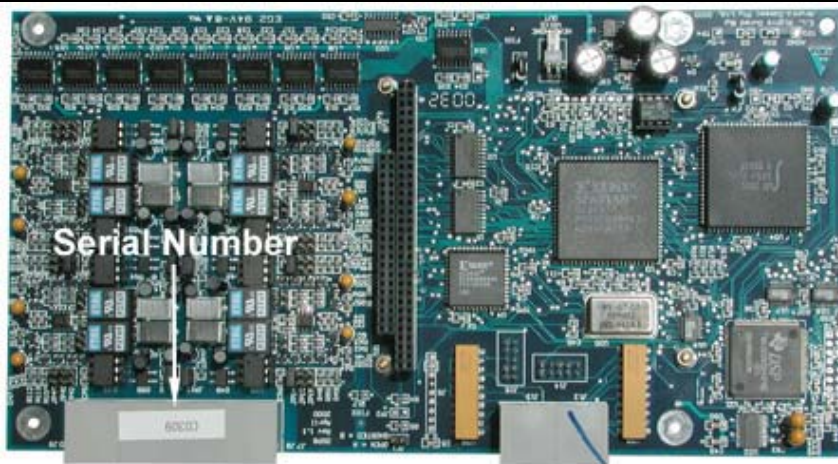
### 10.1 TR Serial Number Label



### 10.2 DSP Serial Numbers

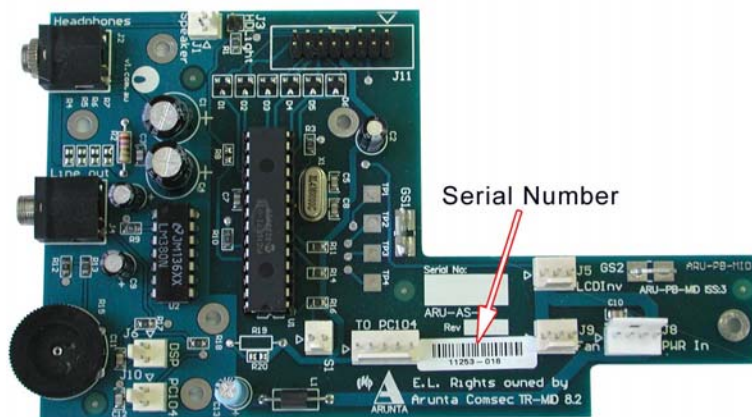


4 Channel DSP Serial Numbers

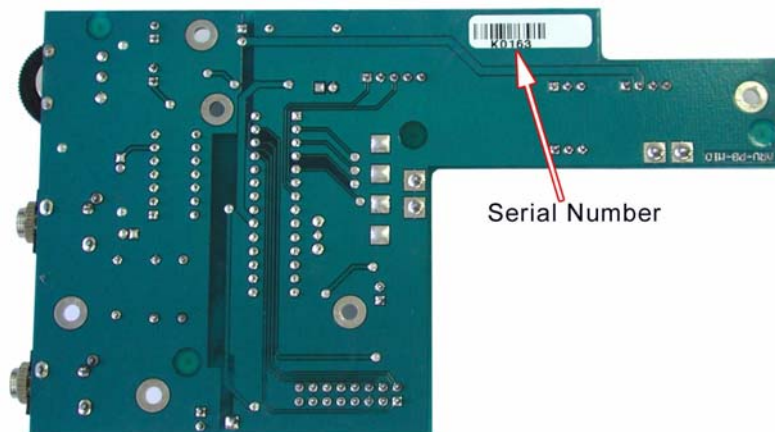


*8 Channel DSP Serial Number*

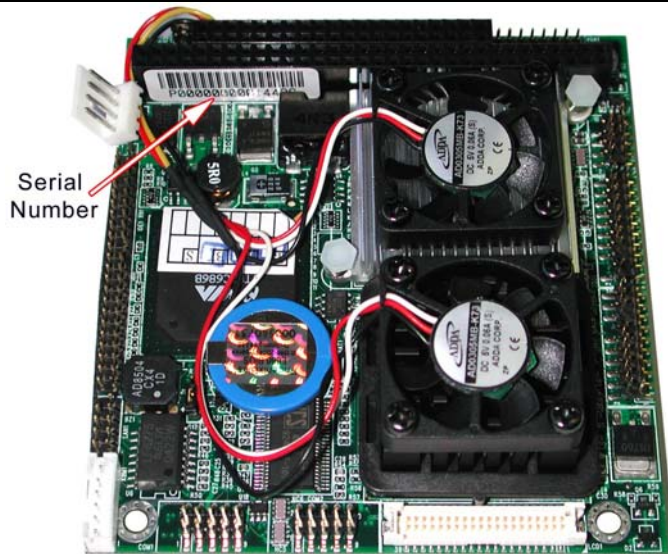
### **10.3 Mid-Board Serial Numbers**



*OR*



### **10.4 PC104 Small Computer Serial Number**



*PC104 CM786 Serial Number*

### **10.5 Power Supply Serial Number**



*Desktop Power Supply*





*Rack Mount Standard ATX PC Power Supply*



*Rack Mount Hot-Swap Power Supply*



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## 10.6 Fan Serial Number

Serial  
Number



## 10.7 DVD / CD-R Serial Number

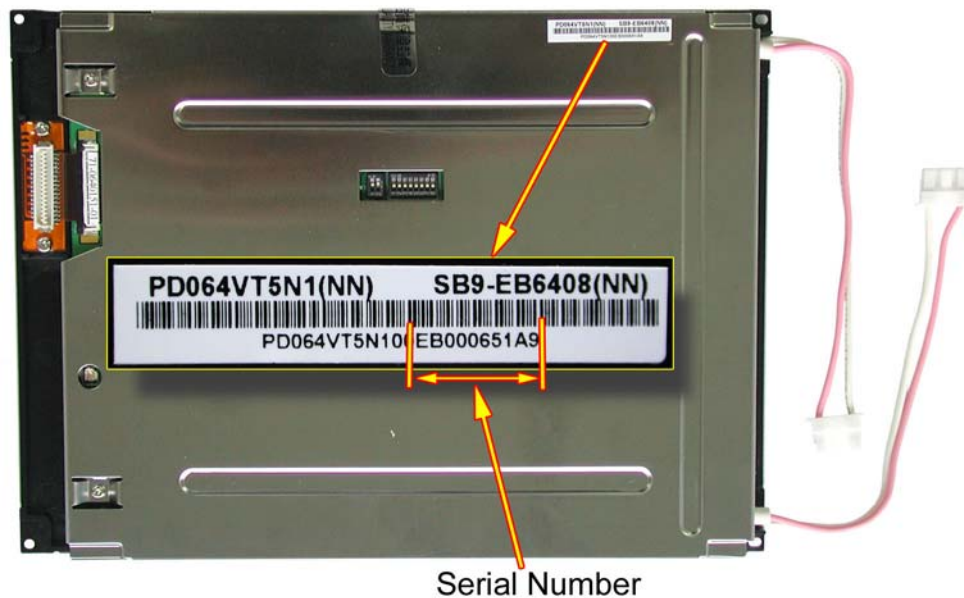
Serial Number



## 10.8 Hard Disk Drive Serial Number



## 10.9 LCD Serial Number



---

## 11 Connecting Total Recall

### 11.1 Signal Sources

Total Recall requires 2-wire analogue inputs.

A digital line signal will first need to be converted to analogue before connecting to the Total Recall.

Total Recall can be installed to record from any one of six possible signal sources:

An analogue trunk (exchange / PSTN) line.

An analogue PABX extension line.

A telephone handset, either analogue or digital (via handset splitter / Logger Patch).

A digital extension line, using D/A (Digital to Analogue) converters.

A digital trunk line, using D/A converters.

A radio or other audio signal presented as a two-wire analogue interface with an average signal strength greater than  $-40\text{dBm}$ . This can be balanced or unbalanced input.

### 11.2 Start Recording - Trigger Mechanism

This is the setting that starts recording on a channel. The trigger can be VOX (voice or audio signal), or Off-Hook (a change in voltage level of the phone line).

#### 11.2.1 VOX Trigger

VOX is a trigger method of starting a recording when there is not sufficient change in voltage to start the recording. There are six VOX settings with a range from  $-40\text{dBm}$  to  $-20\text{dBm}$ .

**VOX 6:** High signal and low sensitivity ( $-20\text{dBm}$ ). VOX 6 would pick up loud conversations, but may not pick up soft/normal conversations. This may be the first option to try if there is noise on the line giving false triggering and phantom records.

**VOX 5:** High signal and low sensitivity ( $-24\text{dBm}$ ).

**VOX 4:** This is the default setting. ( $-28\text{dBm}$ ).

**VOX 3:** Lower signal higher sensitivity ( $-32\text{dBm}$ ).

**VOX 2:** Lower signal higher sensitivity ( $-36\text{dBm}$ ). VOX 2 would pick up a very soft voice, but VOX 2 may trigger the recorder from a noisy line.

**VOX 1:** Lowest signal and high sensitivity ( $-40\text{dBm}$ ). VOX 1 would pick up a very soft voice, but VOX 1 also trigger the recorder from a noisy line.

#### 11.2.2 Off-Hook

This is the recommended setting for normal recording from a telephone line. If you are recording telephone calls, we recommend that the Trigger settings for each channel remain at the default during the initial configuration set-up.

---

The Off-Hook function is triggered by a voltage change on the phone line. The approximate voltages of a trunk line are:

ON Hook voltage = 48VDC

Off Hook voltage = 7VDC

The voltage trigger mask for Total Recall is:

Stop record (On Hook) = Higher than .35V

Start record (Off Hook) = Lower than 20V



*These settings may vary from board to board and channel to channel due to component tolerance in the Off-Hook circuitry.*

A drop in voltage (lifting the hand set Off-Hook) will normally provide sufficient voltage change to be detected by the recorder, and activate recording. Replacing the handset would normally stop the recording. If there is insufficient voltage on the line, the Off-Hook function will not work, and therefore a VOX trigger would need to be selected. When using Handset Splitter (Logger Patch) the voltage is too low for Total Recall to detect, so Off-Hook cannot be used when recording via handset splitter.



*If a channel is set to Off-Hook and no line is connected to the channel (no voltage), the channel will commence recording and can only be disabled by setting the channel to OFF or VOX.*

### **11.2.3 No line connected to a Channel**

If there is no line connected to a channel it should be set to **OFF** ; ( *Options Menu > Line > Line Settings* ) No recording is possible from a channel that has been set to OFF. This will stop phantom calls being generated from cross talk or from static with 2-way radio. It is recommended that all unused channels are set to OFF.

## **11.3 Line Interface Connectors**

The recorder will be configured as a 4, 8, 12 or 16 port for the Desktop Unit and 4, 8, 12, 16, 20, 24, 28, or 32 port for the 19" Rack Mount Unit. The connectors for the Input Line interface are standard RJ11C / RJ12 telephone sockets (6P 4C).

The 2-wire analogue line interface:

**4 Channel DSP** (BLACK coloured RJ connectors viewed from the back): 2 wire connection uses pins 3 & 4, (the centre 2 pins). See diagram below.

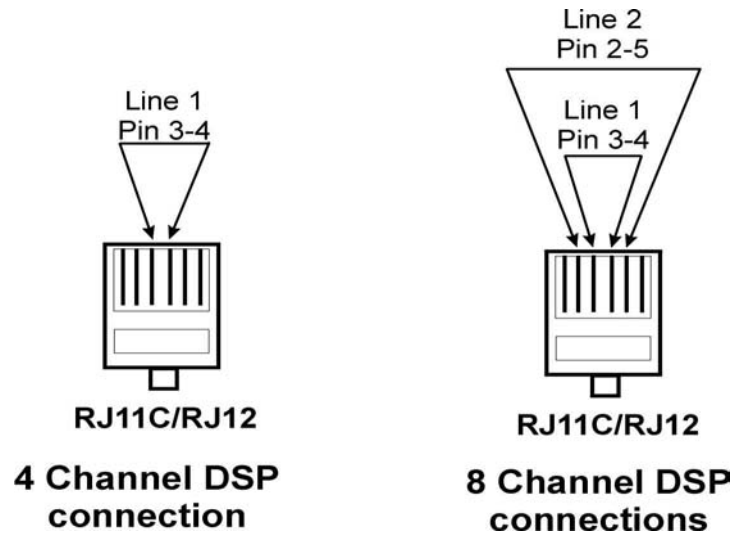
*Each connector has only 1 x 2 wire input.*



---

**8 Channel DSP** (GREY coloured RJ connectors viewed from the back); 2 wire connections, Line 1 is pins 3 & 4 (centre 2 pins), Line 2 is pins 2 & 5. See diagram below.

*On an 8 channel board each connector has 2 x 2 wire inputs.*



## 12 Connecting to the Telephone Network to Record Calls

The Total Recall line interface is two-wire analogue. The connector terminations on the rear panel of the recorder are standard RJ11C / RJ12 telephone sockets.

The line interface on the recorder is a terminating point and not a pass-through point and, therefore, it is not possible to connect the recorder in series with a telephone handset. This termination point is a parallel tap (Bridge Device) to an extension line, a trunk line or a digital handset, depending on the application.

Most PABX / PBX installations have MDF (Main Distribution Frame) or distribution frame fitted between the incoming trunk lines and the customer equipment. The trunk lines are terminated to the MDF, and then connected through to the PABX. Similarly, there is normally a distribution frame on the extension (office) side of the PABX. From this frame, the telephone cabling is routed through the office/work area to individual telephones, or telephone connection points.

### 12.1 Connecting to Analogue Trunk or Analogue Extension Lines

Total Recall can be connected to the trunk side or the extension side of the PABX, depending on line characteristics.

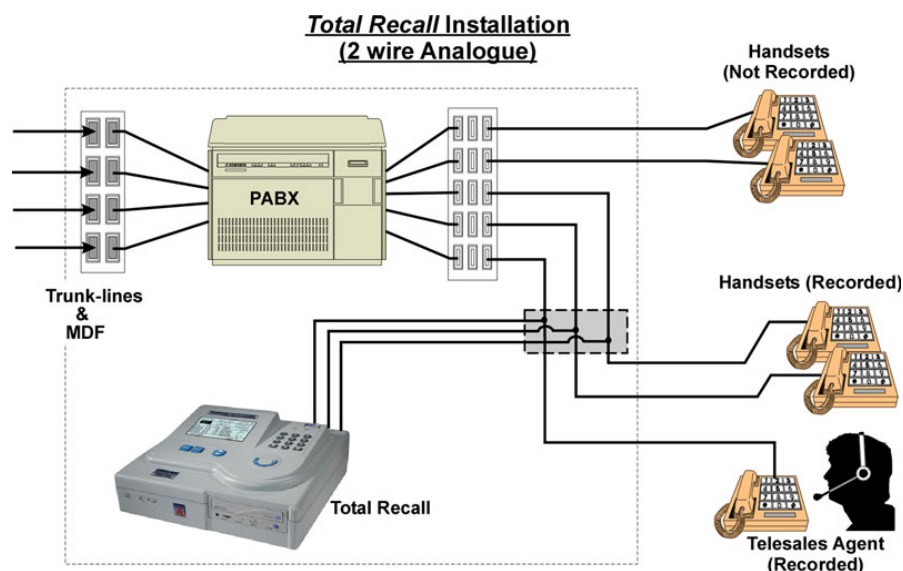
The main difference is that an extension side connection will enable the recording of internal (extension to extension) calls. In this case, the extension number dialled will be recorded as a search field, providing the handset generates a DTMF dialling tone.

If the number of extensions exceeds the number of trunks, and the requirement is only to record external calls and not internal office calls, then the recorder can be connected to the MDF or distribution frame on the trunk side. Connecting on the trunk side will also ensure CLI capture if it is activated on the trunk line.

For extension side recording, each line is dedicated to a specific channel, and will always record to the same channel unless the line is disconnected or physically changed to another port.

For trunk side recording, the next call in or out will generally pick up the next available trunk line /channel on the recorder, so extension calls are not channel specific.

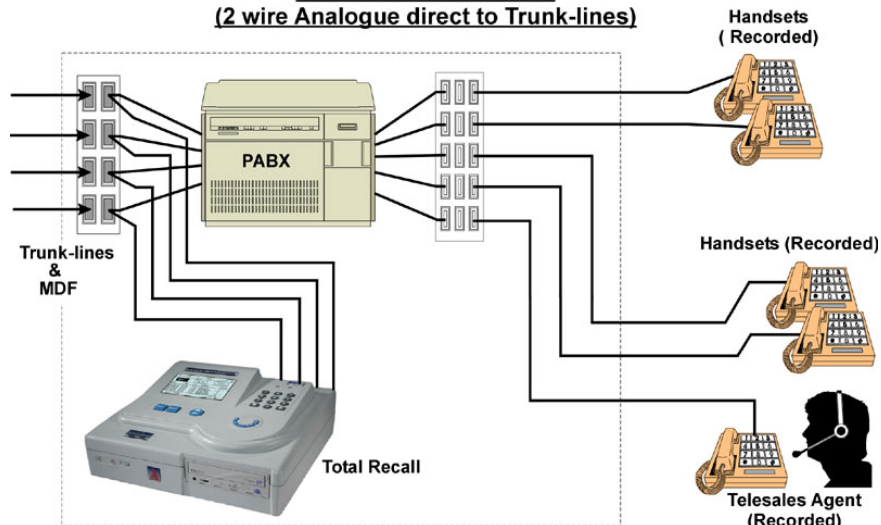
If the recorder is connected trunk side on an analogue line and an operator / receptionist answers the incoming call, the recorder will record the operator's comments, and also the continuing conversation of the call if it is transferred. However, in this scenario, the recorder will not know the agent's extension number.



In the example above, the recorder is connected to a distribution frame within the communications or PABX room. Only three of the five available extensions will be recorded.

---

**Total Recall Installation**  
**(2 wire Analogue direct to Trunk-lines)**



In the example above, Total Recall is connected directly to analogue trunk lines. All call activity, incoming and outgoing, will be recorded.

## **12.2 Connecting to a Digital Handset using Handset Adapters/Logger Patches**

Many PABX / extension installations are digital. It is common to have digital signalling on the extension side, with analogue trunk lines installed.

It is important to know the configuration of the PABX system before installing a voice logger. Total Recall will not record a digital line signal directly into the recorder, so digital to analogue conversion must be done prior to the line interface on the recorder.



Total Recall *does not* provide D /A conversion. A third party product would be required for this function.

Unlike standard two-wire analogue, most digital PABXs generate their own signalling protocol, and therefore recording from digital lines or handsets can be different for each application.

Most digital handsets have analogue audio signalling in the handpiece, with the speaker (earpiece) and microphone (mouthpiece) connected to the recorder. A Handset Adapter (Logger Patch) can be used to parallel tap this audio signal from the handpiece, and wire directly back to the recorder. It is possible to find a signal level difference between the speaker and microphone of the hand set (*side tone*) and therefore, in a recorded conversation, the 'B' party may be heard more loudly than the 'A' party. (This is a limitation of recording via handset adapters and not a recorder limitation.)

Combinations of PABX and digital handsets can also produce variable signal levels.

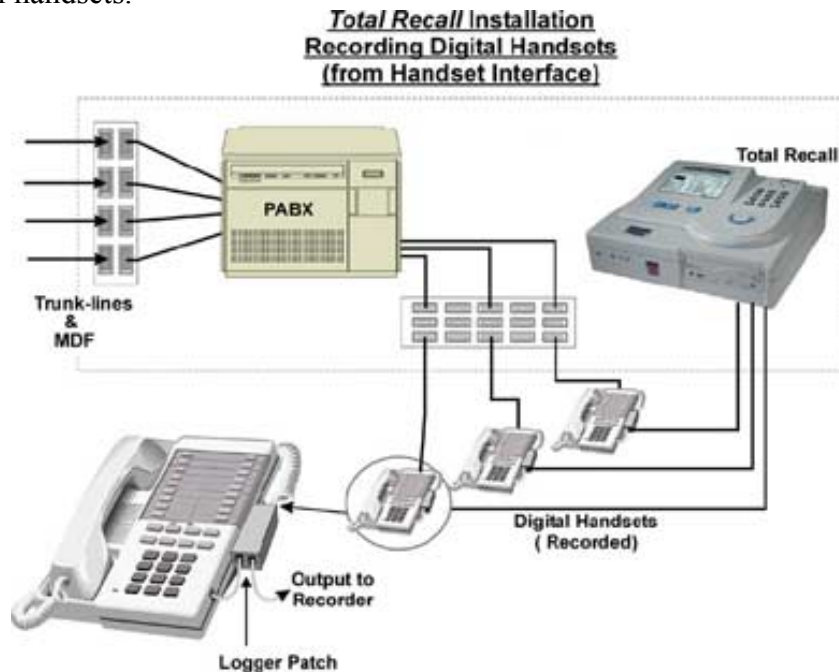


It is not possible to capture incoming call (CLI) data on the recorder when using handset adapters, as the recorder connection is to the handpiece rather than to the incoming line. Also, with

*some handsets, standard DTMF signalling tones are not transmitted but are transmitted by the PABX and thus will not be captured by the recorder.*

Handset adapters / logger patches are generally available from local suppliers. Your PABX supplier should be able to advise on a suitable handset adapter, compatible with the line signalling and wiring of the handsets installed.

The diagram below shows a representation of how handset adapters may be used to enable recording direct from digital handsets.



### **12.3 Logger Patch**

#### **Models Available**

Logger Patches are available from a variety of manufacturers.

There are two Logger Patches available from Arunta Comsec Pty Ltd:

TR-LP (U)                      Logger Patch, Unpowered

TR-LP (P)                      Logger Patch, Powered with beep function.

The essential difference between the models is that the powered Logger Patches provide beep function and (but require external DC power source derived from AC mains) whereas the unpowered Logger Patch does not provide beep function (requires no external DC power source). The choice of Logger Patch will depend on installation requirements.



*Arunta do not provide the DC power source for the powered Logger Patch, this will be readily available from local suppliers. DC power requirements follow in Specifications.*



---

### 12.3.1 TR-LP (U) *Logger Patch Unpowered*

#### Specifications

Power Supply:	Not-required		
Frequency Response:	200Hz - 5kHz		
Source Impedance :	7.5kΩ	(typical depending on PABX handset circuit)	
Signal-to-Noise Ratio	50dB	(typical depending on cable length)	
Weight:	40 grams		
Size:	83 mm - 3¼" (wide)	45 mm - 1¾" (high)	28 mm – 1⅛" (deep)

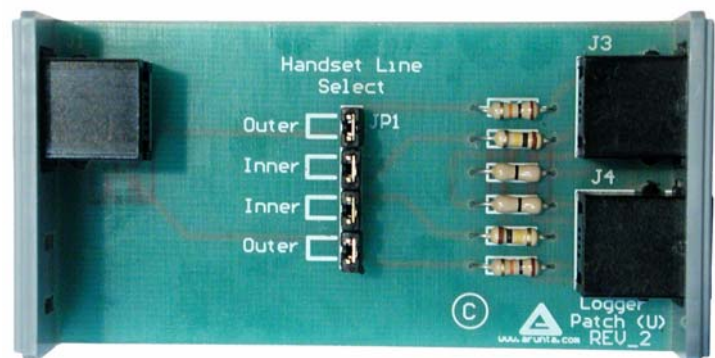


#### Description

The Total Recall Logger Patch enables recording from digital PABX handsets. The logger patch is simply inserted between the handset cord (Curly Cord) and the PABX telephone using the 250mm cable provided. 2 Looped RJ11 inputs (4P-4C) are provided to allow remote mounting of the logger patch.

Often phone handsets have different microphone and speaker outputs. Using the Handset Line Select (JP1) you can jumper the appropriate setting. Default setting is selected as “Both” .  
Jumper Configurations.

Handset Line Select: JP1		
Outer	Inner	Both



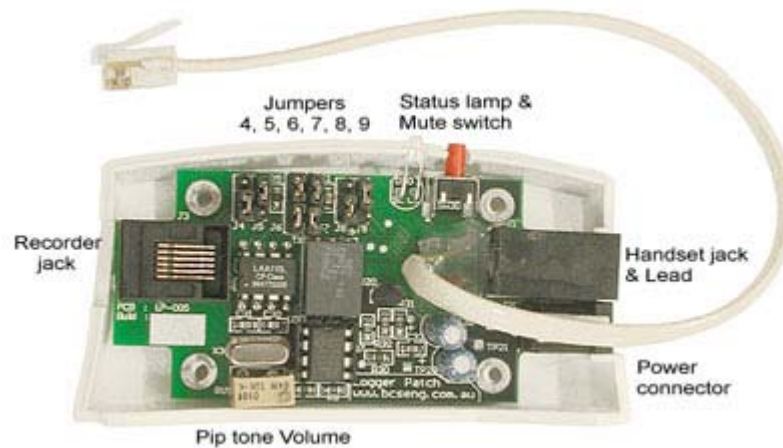
Output connector J1 (RJ-12) to Total Recall.

The output RJ12 (6P-6C) connector is configured as follows:

Pins 1,2 & 3 connected together, Pins 4,5 & 6 connected together

### Specifications

- Power Supply 7 VDC - 12 VDC @ 50mA
- Frequency Response 200Hz - 5kHz
- Pip Tone
  - Frequency 1.4kHz  $\pm$ 0.5%
  - Amplitude -35dB to -5dB
  - Pip Duration 300ms
  - Pip Space 15s
- Source Impedance 7.5k $\Omega$  (typical depending on PABX handset circuit)
- Signal-to-Noise Ratio 50dB (typical depending on cable length)
- Weight 50 grams
- Size 90 mm - 3½" (wide) 45 mm - 1¾" (high) 25 mm - 1" (deep)



### Jumper Configurations

Jumpers 4&5: TR 8 channel recorder line select

Odd Channel  
Selected



J4 J5

Even Channel  
Selected



J4 J5

Jumpers 6&7: Handset line select

Inner Pair  
Selected



J6 J7

Outer Pair  
Selected



J6 J7

Both Pair  
Selected



J6 J7

---

### Jumpers 8&9 : Pip-tone injection select

Inner Pair  
Selected



J8 J9

Outer Pair  
Selected



J8 J9



Use odd channel setting with 4 channel cards

## 12.4 Connecting to a Digital Extension Line

It is possible to connect (tap) directly to a digital extension line by using a Digital to Analogue (D/A) converter.

D/A converters are normally switch and protocol-specific, often using PABX protocol-specific interface cards in a rack mount configuration, with 1 or 2 connections per line card.

A D/A converter will monitor activity on the line, and reformat the digitised information on the line into a standard analogue format required by most recorders. The D/A converter will passively capture both sides of a conversation and send the audio signal to the recorder only when a conversation is present.

D/A converters will capture CLI information provided it is available on the line at the point of connection. D/A converters need to be installed in the Comms / PABX room, in close proximity to the PABX. There is normally a distance limitation between the D/A converter and the recorder. As with handset adapters, D/A converters are generally available from local suppliers.



**Total Recall** does not provide this D/A conversion facility.

## 13 CLI & DTMF Capture

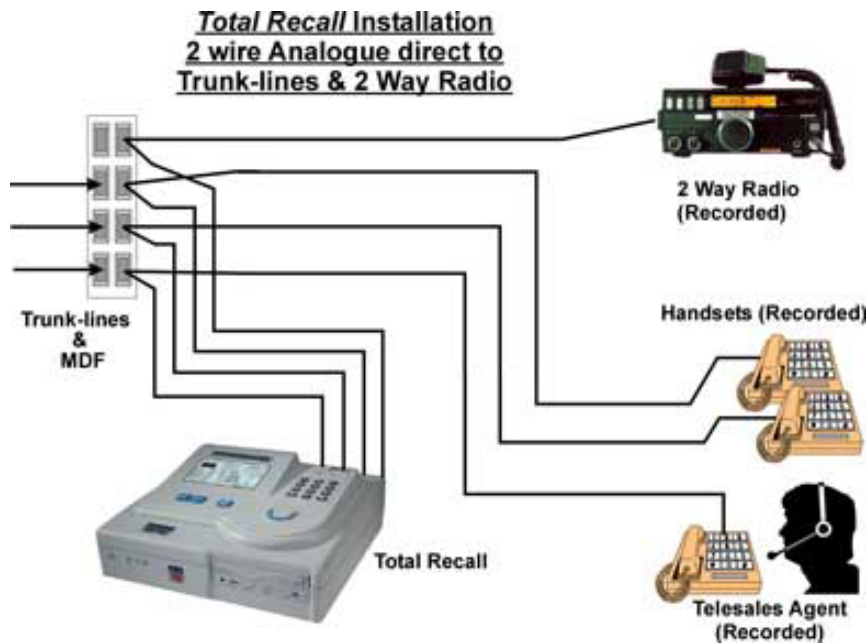
The CLI data will only be captured if it is embedded in the incoming call data. The Total Recall unit is always looking for CLI information. If it is detected it will record and display this. CLI will not be available from a logger patch or analogue extension.

The recorder is designed to detect DTMF tones and display the Dialed Number in the Number Field of the call record. If DTMF is not present at the point of recording, then the DTMF number will not be displayed. DTMF may not be available from a logger patch or analogue extension.

---

## 14 Connecting to 2-way Radio

If connecting to a 2-way radio, Transmit (Tx) and Receive (Rx) signals are required to be mixed at the output port of the radio, then one connection point will be required for Total Recall. If the Tx and Rx are *not* mixed, then two recorder ports will be required and, on replay, the user will only hear one side of the conversation at a time (either the Transmit or Receive).



Total Recall does not provide a facility for combining Tx and Rx signals. 2-way Radio Tx & Rx mixers are available from Arunta Comsec Pty Ltd.

### 14.1 2 Way Radio Mixer



The Total Recall Radio Mixer will enable the output from the transmit (Tx) and another from the receive (Rx) of the base station radio transceiver and mix the two signals together and give a two-wire analogue output for the Total Recall voice logger. Both the Tx and the Rx inputs have gain control so they can equalize the input levels.



The Rx input will need to be a two-wire output from the speaker. It is preferable if this output is connected before the volume control of the base station. If it is not and the volume control is turned down the Rx will not be recorded.

The Tx input will be a two-wire output from the Tx. This can be a parallel tap from the microphone.



How these connections are achieved will depend on the brand of base station radio. Some brands and models can be programmed to give both of these outputs from an auxiliary plug on the rear of the base station.

The outputs for the base station radio can be either balanced or unbalanced.

The connection from the Arunta Radio Mixer to the TR recorder needs only two-wire (telephone wire) with a RJ12 plug on both ends.

The Radio Mixer contains four jacks; the purpose of these jacks are described below:

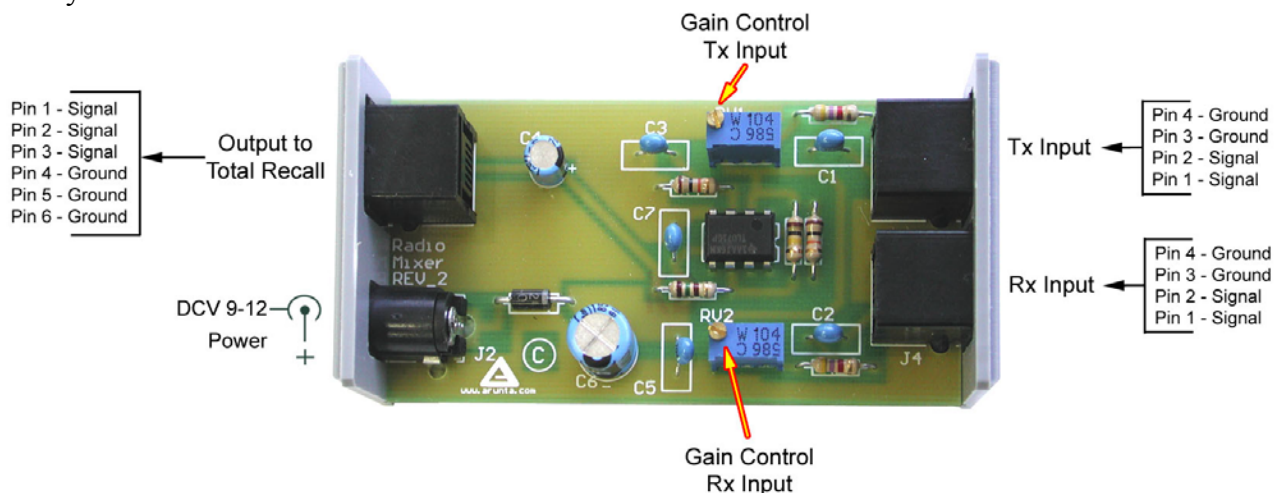
1. J1 – Output to Total Recall.
2. J2 - Power supply jack.
3. J3 - Input Tx - The sensitivity of which is controlled by VR1\*
4. J4 - Input Rx - The sensitivity of which is controlled by VR2\*

### Specification

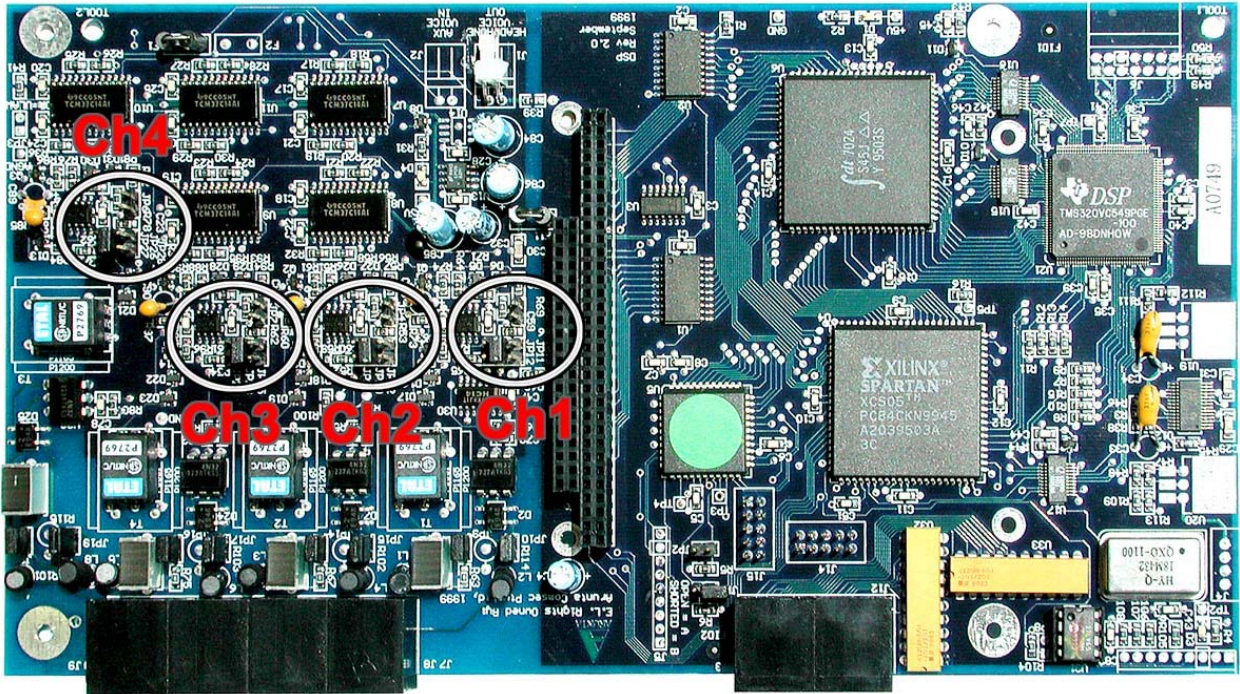
- Input impedance - > 5 k Ohms
- Output impedance - 150 Ohms
- Gain - both channels individually adjustable from 0dB to +26dB
- Power -
- DC - 9V - 15V @ 20mA, centre pin positive
- AC - 6V - 9V (rms) @ 25mA
- Frequency Response - 33Hz - 150kHz



With some Inputs they may be polarity sensitive. Therefore care needs to be taken with the polarity of connection so as to avoid short circuits.



## 15 4 channel DSP Jumper Settings



### Ch 1:

- JP10 Always ON
- JP9 To Disable OFF-Hook (move to JP13)
- JP11 Off-Hook setting 1
- JP12 Off-Hook setting 2
- JP5 AGC

### Ch 2:

- JP15 Always ON
- JP14 To Disable OFF-Hook (move to JP22)
- JP20 Off-Hook setting 1
- JP21 Off-Hook setting 2
- JP4 AGC

### Ch 3:

- JP17 Always ON
- JP16 To Disable OFF-Hook (move to JP25)
- JP23 Off-Hook setting 1
- JP24 Off-Hook setting 2
- JP7 AGC

### Ch 4:

- JP19 Always ON
- JP18 To Disable OFF-Hook (move to JP28)
- JP26 Off-Hook setting 1
- JP27 Off-Hook setting 2
- JP6 AGC

### Off-Hook settings

- Setting 1 ON only
- Setting 2 ON only
- Setting 1 & 2 ON
- Setting 1 & 2 OFF

### AGC Settings

- ON +10dB
- OFF +30dB

---

## 16 8 Channel DSP Jumper Settings

### Ch 1:

JP12 Always ON  
JP15 Short to disable OFF-Hook  
JP13 Off-Hook setting 1  
JP14 Off-Hook setting 2  
JP4 AGC

### Ch 2:

JP16 Always ON  
JP19 Short to disable OFF-Hook  
JP17 Off-Hook setting 1  
JP18 Off-Hook setting 2  
JP3 AGC

### Ch 3:

JP20 Always ON  
JP23 Short to disable OFF-Hook  
JP21 Off-Hook setting 1  
JP22 Off-Hook setting 2  
JP6 AGC

### Ch 4:

JP24 Always ON  
JP27 Short to disable OFF-Hook  
JP25 Off-Hook setting 1  
JP26 Off-Hook setting 2  
JP5 AGC

### Ch 5:

JP28 Always ON  
JP31 Short to disable OFF-Hook  
JP29 Off-Hook setting 1  
JP30 Off-Hook setting 2  
JP8 AGC

### Ch 6:

JP32 Always ON  
JP35 Short to disable OFF-Hook  
JP33 Off-Hook setting 1  
JP34 Off-Hook setting 2  
JP7 AGC

### Ch 7:

JP36 Always ON  
JP39 Short to disable OFF-Hook  
JP37 Off-Hook setting 1  
JP38 Off-Hook setting 2  
JP10 AGC

### Ch 8:

JP40 Always ON  
JP43 Short to disable OFF-Hook  
JP42 Off-Hook setting 1  
JP41 Off-Hook setting 2  
JP9 AGC

Off-Hook settings

Setting 1 ON only

Setting 2 ON only

Setting 1 & 2 ON

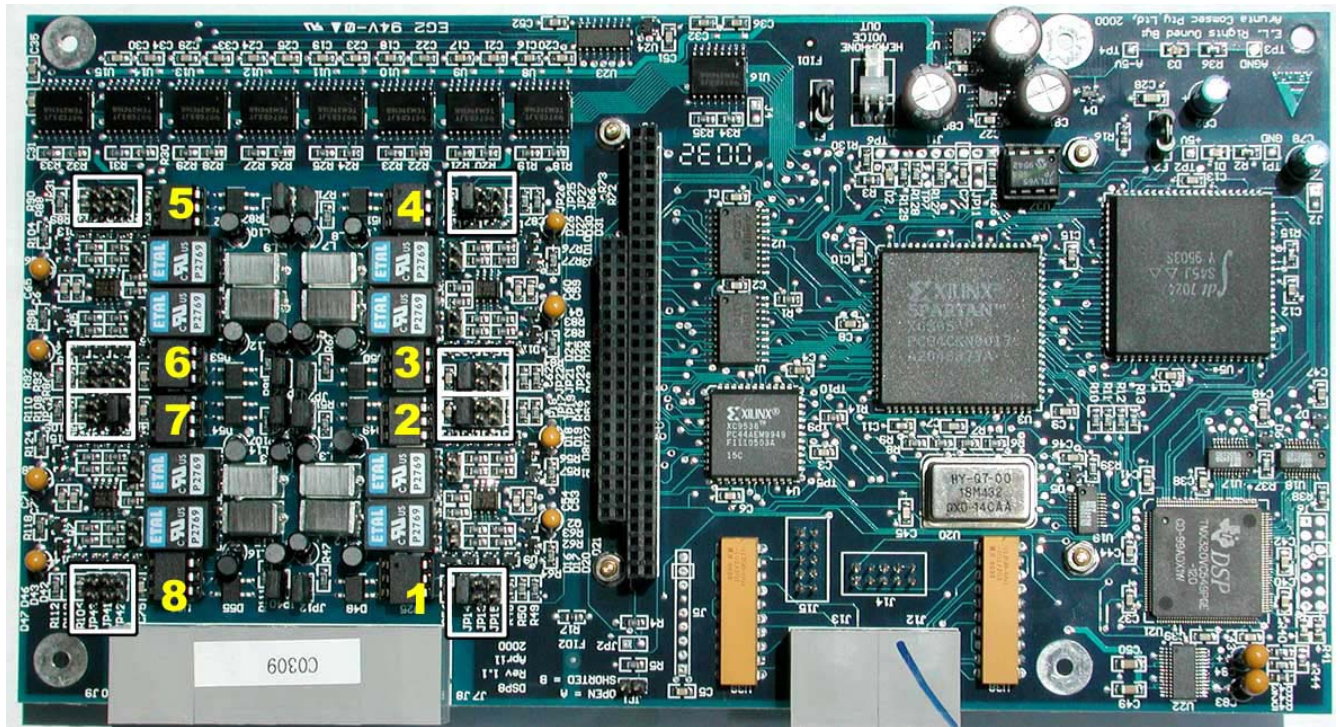
Setting 1 & 2 OFF

AGC Settings

ON +10dB

OFF +30dB (*Default*)





*8 channel DSP*



---

## 17 Upgrading Total Recall to Higher Channel Capacities

### 17.1 Desktop Model

The 4, 8, and 12 channel versions of the Desktop Model can be upgraded to a higher channel capacity by the addition of a 4-channel (Part Number TR-U4) or 8-channel (Part Number TR-U8) DSP card. Total Recall Desktop Model can accommodate 2 DSP cards only so the upgrade may necessitate the removal of an existing DSP card(s). Table 1 identifies the possible permutations:

Current Version	Upgrade To	Remove	Add
TR-04	TR-08		1 x TR-U4
TR-04	TR-08S	1 x TR-U4	1 x TR-U8
TR-04	TR-12		1 x TR-U8
TR-04	TR-16	1 x TR-U4	2 x TR-U8
TR-08	TR-12	1 x TRU4	1 x TRU8
TR-08	TR-16	2 x TR-U4	2 x TR-U8
TR-08S	TR-12		1 x TR-U4
TR-08S	TR-16		1 x TR-U8
TR-12	TR-16	1 x TR-U4	1 x TR-U8

### 17.2 19" Rack Mount Model

The 4, 8, 12, 16, 20, 24, 28 and 32 channel versions of the Rack Mount Model can be upgraded to a higher channel capacity by the addition of a 4-channel (Part Number TR-U4) or 8-channel (Part Number TR-U8) DSP card. Total Recall Rack Mount Model can accommodate 4 DSP cards only so the upgrade may necessitate the removal of an existing DSP card(s).

Any combination of 4 and 8 channel DSP cards up to 32 channels and a maximum of 4 DSP cards can be configured for the Rack Mount Model. The Jumper settings to designate DSP 'A', 'B', 'C', and 'D' can be found in Section 8.3.

---

### **17.3 Requirements**

- Copy of this procedure.
- Additional DSP circuit board.
- A clear and clean flat surface at least 750mm wide by 370mm deep.
- Anti-static workstation (ideal).
- Screwdriver Philips or Posi suitable for M3 pan head screws.
- Four (4) off M3 x 8mm pan head screws.

### **17.4 Disconnect power and telephone lines**

Shut down **Total Recall** program, and switch off the unit.

Switch off the 110/240VAC supply at the power outlet and then remove the plug.

Withdraw the IEC power cord connector from the back of the **Total Recall** enclosure.

Mark the telephone lines so that they can be replaced in the same locations. Remove the telephone line RJ11C / RJ12 plugs from the back of the **Total Recall** Unit.

### **17.5 Opening the Total Recall Case**

Instructions to open the Desktop Model see Section 3.1

Instructions to open the Rack Mount Model see Section 3.2

### **17.6 Fitting the additional DSP circuit board**

For the Desktop Model see Section 5.6.

For the 19" Rack Mount Model see Section 6.2.

### **17.7 Reassembly of the Total Recall**

The reassembly of the **Total Recall** case is the reverse of the previous procedure.

TR-U8 (8-channel DSP Card) is installed exactly the same way as the 4 channel board.

### **17.8 Software Issues**

There are no software issues that require consideration. Software will automatically recognise the configuration of Total Recall.

---

## 18 Total Recall Security

### 1) VIRUS attacks on Total Recall

The likelihood of Total Recall receiving a virus is very small for the following reasons:

a) The vast majority of virus' are written for the windows operating system and hence do not function on the Linux based Total Recall.

b) The vast majority of Linux based virus' are transmitted either through email or by transferring files to the Linux box. The Total Recall does not run mail. Files are not transferred to the Total Recall.

### 2) Other security attacks on the Total Recall.

The vast majority of other attacks are also directed at Windows machines and hence Total Recall is impervious to many of these attacks. Total Recall runs a very stripped down version of Linux and hence contains less services running which could be prone to these attacks and is hence more secure than many Linux boxes.

However it is possible that vulnerabilities could be discovered.

For this reason we recommend that you DO NOT connect Total Recall directly to the internet Total Recall should have an internal IP address (ie 10.x.x.x or 192.x.x.x.). There should always be one or more corporate firewalls between it and the internet.

3) It is possible to upgrade Total Recall from CD. If important security breaches are found Arunta will be able to patch these using the standard CD upgrade method.

4) If a security breach is suspected, we recommend that it be proved where possible using packet sniffers such as ethereal. We provide SSH into Total Recall as a last resort for experienced Linux system administrators to rectify the problem. (However we do not recommend that they do any major configuration changes, or run extra programs without contacting Arunta, as these may interfere with the operation of the recorder).

---

## 19 Total Recall & Remote Manager Computability

Total Recall LAN (Linux) has evolved over time and new features have been added. Remote Manager software has also evolved and with these changes some are not backward compatible with Remote Manager software.

The table below gives the compatibility of all the software up to date. It is recommended that all Total Recall Linux units (Desktop & Rack models) are kept up to date this requires updating both Total Recall and Remote Manager software. These are available from the Reseller pages on the web site. [www.totalrecallvr.com](http://www.totalrecallvr.com)

<b>Total Recall Software Version</b>	<b>Remote Manager Software</b>	<b>Date of Release</b>
V4.11	V1.15	16 Oct 2003
V4.13	V1.15	21 Sep 2004
V4.14	V1.15	06 Oct 2004
V4.20	V1.17	16 Nov 2004
V4.23	V1.20	25 Nov 2004
V4.25	V1.20	15 Dec 2004
V4.28	V1.24	25 Feb 2005
V4.33	V1.28	24 May 2005



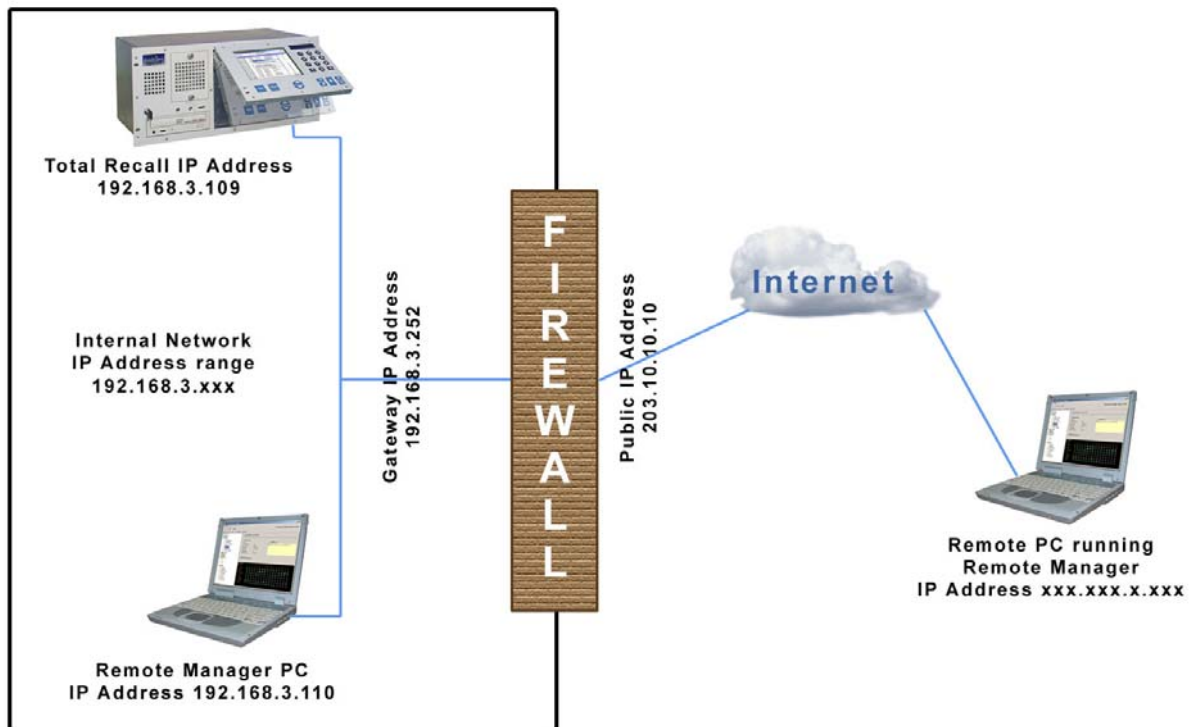
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## 20 Network TCP/IP

### 20.1 Accessing Total Recall from Remote Manager through a Firewall

While it is not possible to describe solutions for all different network setups it is hoped that from this simple example, a network administrator will be able to learn how to provide access to a Total Recall unit through a firewall.

Consider the following example:



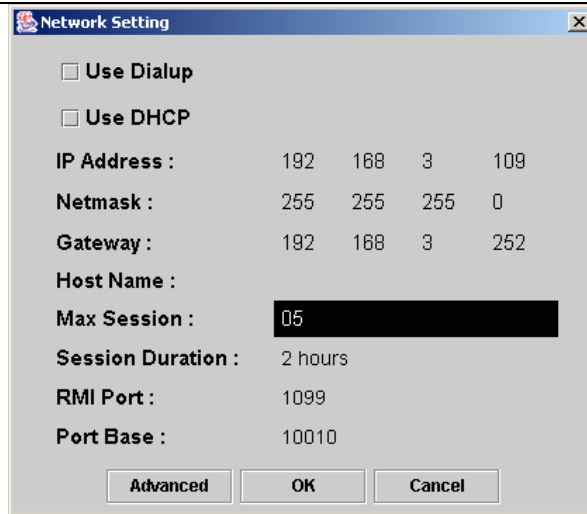
Here Total Recall is connected on an Internal Network with an IP Address range of 192.168.3.xxx. The Total Recall has the address 192.168.3.109. There is a firewall which provides access to the internet. This allows other company servers to be accessed using a Public IP Address in this case 203.10.10.10. The Firewall has the Internal address 192.168.3.252.

PC's on the Internal Network should be able to access the Total Recall units directly via the LAN.

A Remote PC would like to be able to connect to the Total Recall over the internet from home.

The network administrator should follow the following steps:

- Configure the Total Recall's IP Address and set the firewalls internal address as its gateway.



**Network Setting**

☐ Use Dialup

☐ Use DHCP

IP Address : 192 168 3 109

Netmask : 255 255 255 0

Gateway : 192 168 3 252

Host Name :

Max Session : 05

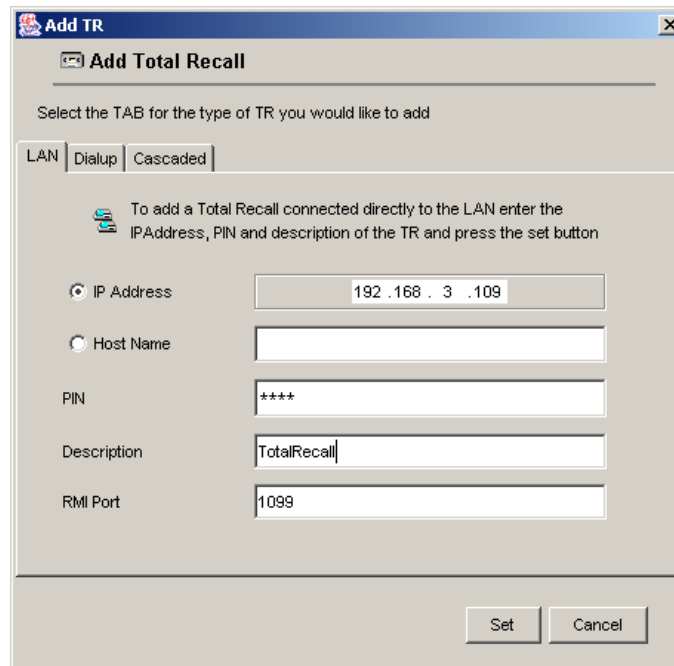
Session Duration : 2 hours

RMI Port : 1099

Port Base : 10010

Advanced OK Cancel

- Install Remote Manager on one of the Internal Network PC's.
- Add the Total Recall to Remote Manager as shown in the diagram.



**Add TR**

**Add Total Recall**

Select the TAB for the type of TR you would like to add

LAN Dialup Cascaded

To add a Total Recall connected directly to the LAN enter the IPAddress, PIN and description of the TR and press the set button

☒ IP Address 192 .168 . 3 .109

☐ Host Name

PIN \*\*\*\*

Description TotalRecall

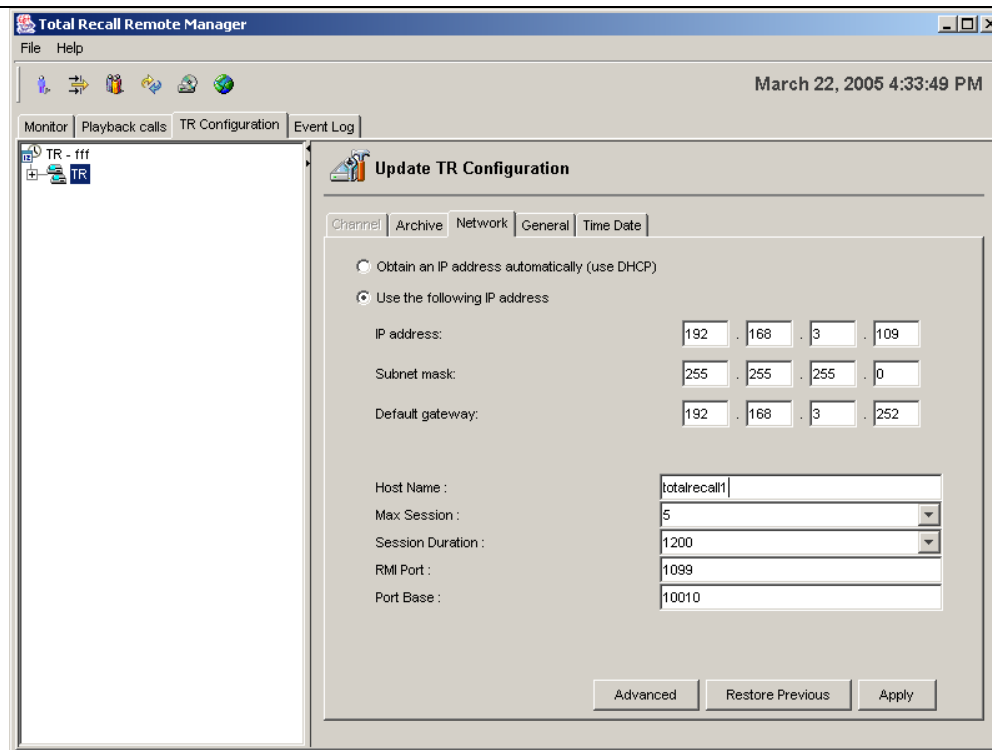
RMI Port 1099

Set Cancel

- Use the Remote Manager application to modify the Total Recall's host name as shown in the diagram below.



To connect to the TR externally through some firewalls you must connect using a host name rather than an IP Address. Remote Manager PCs on the Internal Network can connect using IP address rather than host name.



*As a small aside at this point the system administrator could add the Total Recalls IP Address into the internal DNS server so that Remote Manager clients running on the Internal Network could access Total Recall using the name 'totalrecall1' instead of having to remember the IP address. However that is not necessary for our particular example.*

- Configure the Firewall by forwarding the following ports:

Forward port 10010 to the Total Recall's address 192.168.3.109 (NB: 10010 is the configured Port Base in our example).

Note that this is a TCP connection.

In addition if you want to transfer files to your local folders, or email files from the Total Recall you will need to port forward FTP (port 21) to this address as well:

- A remote PC must be able to resolve the name 'totalrecall1' to the Firewalls externally visible IP Address.

One simple way to do this is to edit the hosts file... eg: On windows 2000 or windows XP modify the file 'C:\WINNT\system32\drivers\etc\hosts' to contain the line

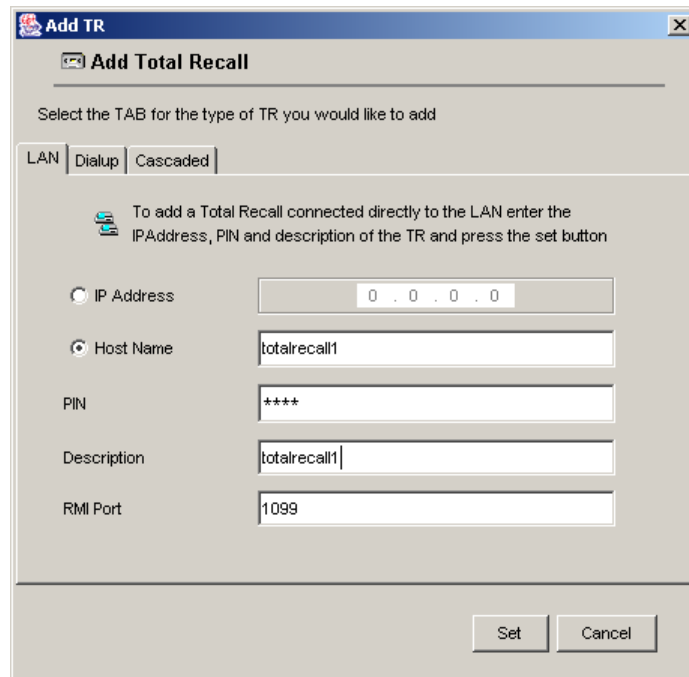
`'203.10.10.10 totalrecall1'`

You can ensure that this is correct by typing: 'ping totalrecall1' at a DOS command prompt.

- Install Remote Manager on the Remote PC machine.

---

Add the Total Recall making sure you use the hostname not the IP Address as shown in the following diagram:



The screenshot shows a window titled "Add TR" with a sub-header "Add Total Recall". Below this, it says "Select the TAB for the type of TR you would like to add". There are three tabs: "LAN", "Dialup", and "Cascaded". The "LAN" tab is selected. Inside the "LAN" tab, there is a message: "To add a Total Recall connected directly to the LAN enter the IPAddress, PIN and description of the TR and press the set button". Below this message are several input fields: "IP Address" (with a radio button and a text box containing "0 . 0 . 0 . 0"), "Host Name" (with a radio button and a text box containing "totalrecall1"), "PIN" (with a text box containing "\*\*\*\*"), "Description" (with a text box containing "totalrecall1"), and "RMI Port" (with a text box containing "1099"). At the bottom right of the dialog are "Set" and "Cancel" buttons.

The Remote PC's Remote Manager should now be able to access the Total Recall on the Internal Network.

## ***20.2 What if the Remote PC is behind a local firewall?***

If your you still can't connect its likely that the Remote PC's ISP is running a local firewall which blocks outgoing sockets.

At this time Remote Manager doesn't support the use of a configurable proxy server or SOCKS on the client side.

Many ISP's block all ports except port 80, so one thing to try is set the base port of the Total Recall to 80 and attempt to connect.



If the Total Recall is behind a firewall you will need to port forward port 80 as described previously in this document.

If this still doesn't work... its time to move to setup a VPN.

---

## 20.3 Remote Manager will not Live Monitor

### PROBLEM:

I don't hear any sound when I attempt to remotely monitor or remotely playback a call from Remote Manager, however I can playback a call from Remote Manager on a local CD / DVD or in a local folder.

### NOTE:

This procedure should only be used after consultation with the network administrator for your network. The following steps are written for Windows XP. They will need to be modified for other operating system versions.

### RESOLUTION

#### STEP 1:

Open the DOS command prompt Window and type the command *'ipconfig'*



#### STEP 2.

For Remote Manager to work correctly there should be one and only one IP address. If there are two IP addresses monitoring and playback will not work correctly. The diagram below shows the situation where two IP addresses are configured.



```
Command Prompt
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\seikn.BACKUP>ipconfig

Windows IP Configuration

Ethernet adapter Local Area Connection:

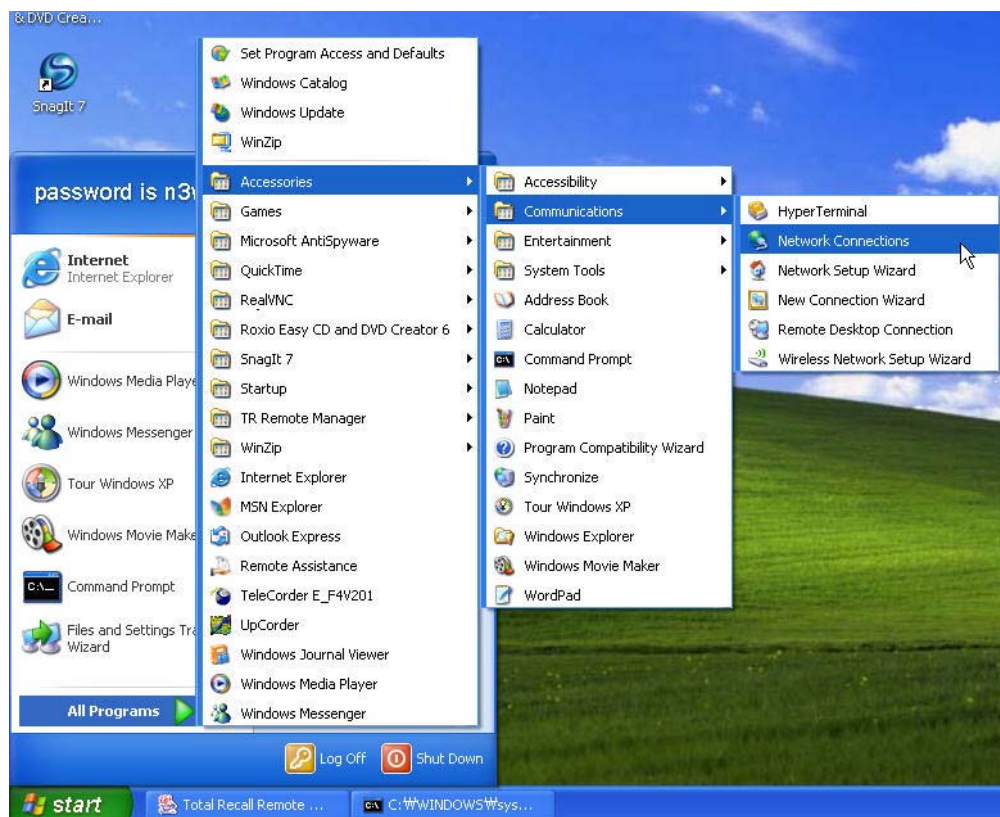
    Connection-specific DNS Suffix  . : 
    IP Address. . . . .               : 192.168.1.123
    Subnet Mask . . . . .             : 255.255.255.0
    IP Address. . . . .               : 192.168.3.38
    Subnet Mask . . . . .             : 255.255.255.0
    Default Gateway . . . . .         : 192.168.3.252

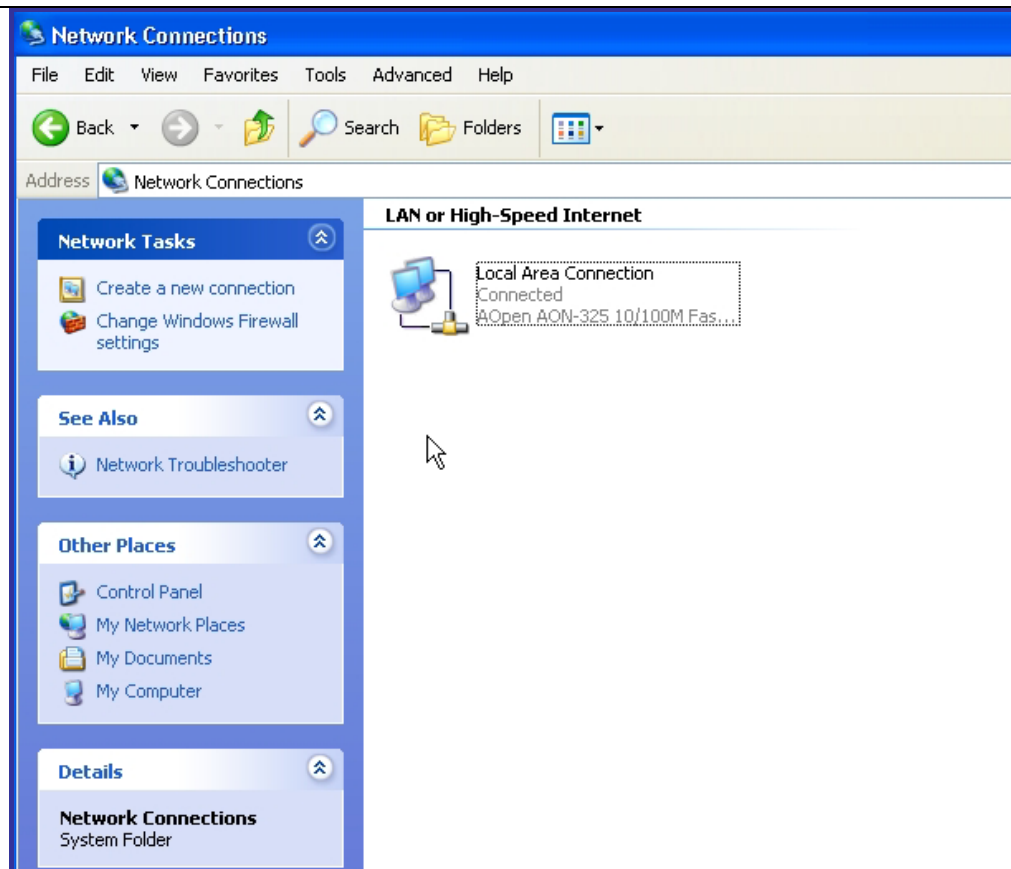
C:\Documents and Settings\seikn.BACKUP>
```

### STEP 3:

If two IP addresses are shown (as in the diagram above) then you need to remove one of the IP Addresses in the following way:

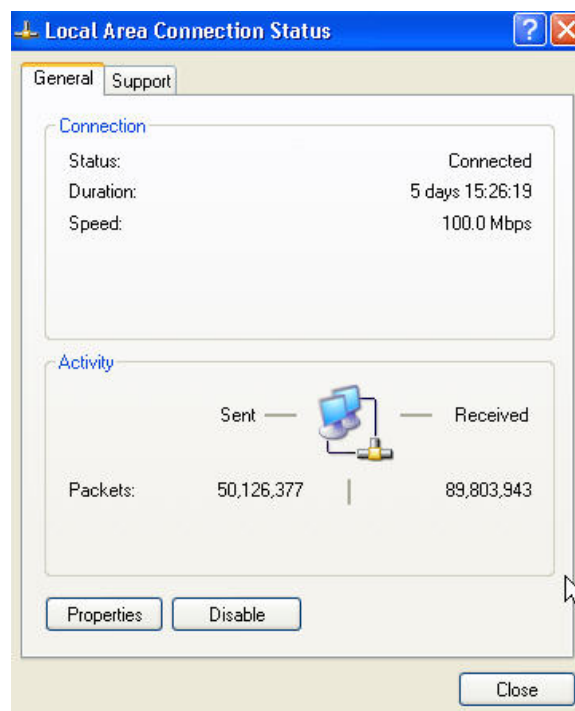
Run Network connections by going to 'Start > All Programs > Accessories > Communications > Network Connections' as shown in the diagram below.





**STEP 4:**

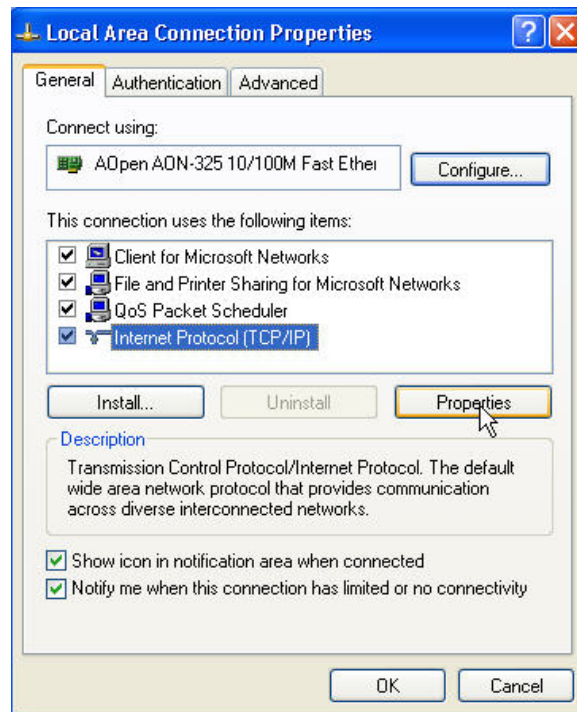
Double click on Local Area Connection to bring up the following dialog box:



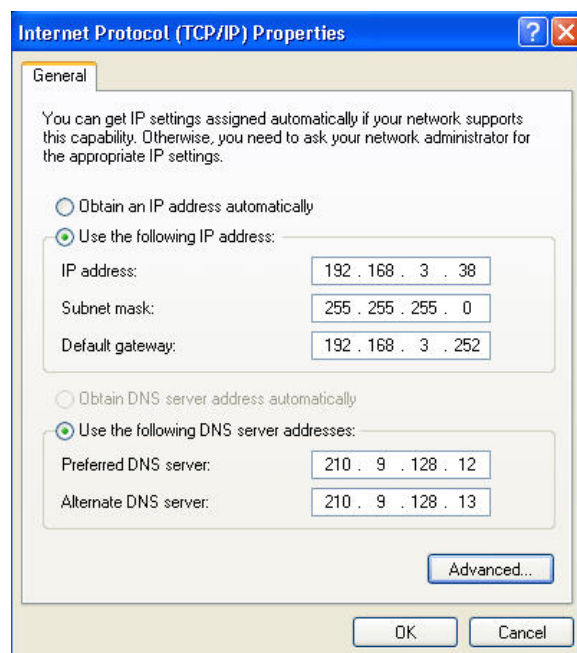
---

**STEP 5:**

Click the Properties button to give the following dialog box.

**STEP 6:**

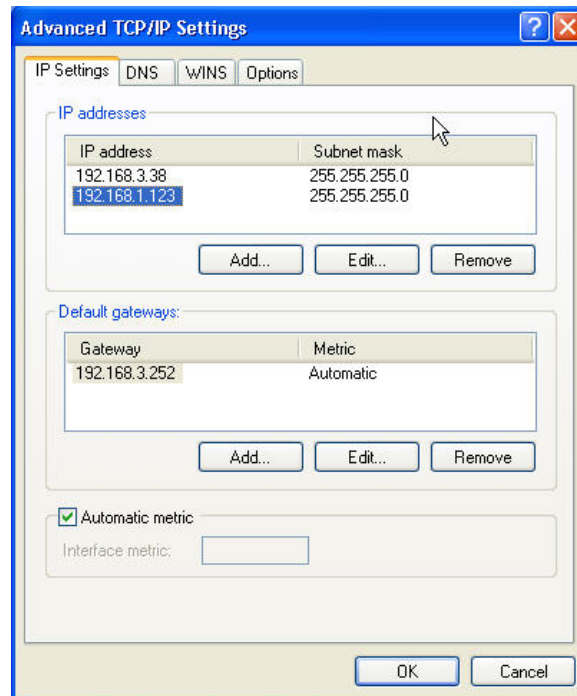
Select Internet Protocol(TCP/IP) and press the properties button to bring up the following dialog box:



---

**STEP 7:**

Press the advanced button to bring up the following dialog box:

**STEP 8:**

Select the unwanted IP Address and press the remove button. The remaining IP address should be an IP Address which is on the same network as the Total Recall. For example if the Total Recall is configured as 192.168.3.39 then use 192.168.3.38 as the main IP address for the PC. If in doubt which one to remove talk to your network administrator.

Press OK... and check that the PC only has one IP Address configured. This can be done by running '*ipconfig*' in the command prompt as described in steps 1 and 2 of this document.

The diagram below shows the desired output. Note: Only one IP Address is shown

```
C:\WINDOWS\system32\cmd.exe
Microsoft Windows XP [Version 5.1.2600]
(C) Copyright 1985-2001 Microsoft Corp.

C:\Documents and Settings\seikn.BACKUP>ipconfig

Windows IP Configuration

Ethernet adapter Local Area Connection:

    Connection-specific DNS Suffix  . : 
    IP Address. . . . . : 192.168.3.38
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.3.252

C:\Documents and Settings\seikn.BACKUP>
```

Confirm that remote monitoring and playback now work by running Remote Manager.

---

## **20.4 Remote Manager will not Live Monitor**

Lets assume you're running XP. If you look in Local Area Network Properties, then look at the Authentication tab. If any of this authentication is configured it can stop Remote Manager from receiving the IP Packets which contain the audio for monitoring and playback.

If you look in Local Area Network Properties, then look at the Advanced tab. You may have a firewall configured for that PC this firewall could be blocking the IP packets which contain the audio sent from the Total Recall. For example if you tick the "Don't allow exception" in the firewall setting that will block the packets.

## **20.5 Network is Slow**

Total Recall's. has an onboard Ethernet on the CM-786 single board computer which uses a RealTek 8139 chip to do the Ethernet.

HUB's aren't as good as Network Switches because if two devices try to talk at once, then the packets will be discarded. For normal TCP/IP connections that won't matter that much because the packets will just be resent. So connecting Remote Manager and Total Recall shouldn't be a problem. Although this could be the reason people start complaining a "network is slow", as more devices are added to the hub.

When it comes to actually listening to calls via playback or monitoring, using a Hub's can become an issue.

This is because the audio is sent via UDP packets which aren't resent. (This is common for all Voice Over IP type systems).

Unfortunately you may find that in this case the best solution is to replace a HUB's with Network Switches.

## **20.6 Total Recall Socket API**

Available from Total Recall V4.29

### **20.6.1 Description**



---

The aim of this interface is to provide the user with information as the recorded calls are started and completed in as simple manner as possible.

Total Recall will be listening for socket connections when started up. Simply connect a socket to the appropriate port and total recall will send you a line of ASCII text whenever a call starts or ends.

You can have multiple sockets connected at one time. In this case all the sockets will receive the strings.

### **20.6.2 What Port is Total Recall Listening on?**

Total Recall will be listening for socket connections by default on port 10011. (This can be modified by changing the “Port Base” setting from the Network settings dialog off the Options Menu on total Recall. Total Recall will always listen on PortBase+1).

Note the IP Address of the total recall can also be found by viewing the Network Settings dialog from the Options menu.

### **20.6.3 Format of the Lines of Text**

Each time a call starts or ends a line of text is sent consisting of comma separated values followed by a return. A line will consist of the following values:

<StartCall or EndCall>,	
<Channel Number>,	{ An Integer from 1 to 32 }
<CallDirection>,	{ Unknown, In or Out }
<StartDate>,	{ YYYY.MM.dd }
<StartTime>,	{ HH:MM:SS in 24 hour local time }
<CallLength>,	{ Duration of the call in seconds. This will be 0 for a StartCall line }
<PhoneNumber>,	{ The CLI of the person who rang, or the number dialled }
<Notes>,	{ Any notes entered in TR manager as monitored }
<RecorderID>,	{ The id of this recorder }

Example Strings:

```
EndCall,12,Unknown,2005.06.27,19:09:42,60,,,1
StartCall,12,Unknown,2005.06.27,19:10:42,0,,,1
EndCall,13,In,2005.06.27,19:09:42,60,,,1
StartCall,13,In,2005.06.27,19:10:42,0,,,1
```

### **20.6.4 Viewing the Strings**

As a simple test you can just use telnet to view the strings...

Eg: telnet 192.168.3.16 10011

### **20.6.5 Additional Notes**

---

Multiple client sockets can be connected at one time. All clients will receive copies of the strings

- Unfortunately Unicode notes are not supported in this interface
- Nothing will be sent if Total Recall is not recording.
- Just close the socket when you are finished. You can reconnect straight away
- Please do read from your socket as quickly as possible... failing to read the socket could cause the socket buffer eventually to fill up and stop other clients from receiving their strings.

## 20.6.6 Example Java Client Code

```
import java.io.BufferedReader;
import java.io.IOException;
import java.io.InputStreamReader;
import java.io.PrintWriter;
import java.net.InetAddress;
import java.net.Socket;
import java.net.UnknownHostException;

public class SocketTestClient
{
    public static void main(String[] args)
    {
        try {
            InetAddress addr = InetAddress.getByName("192.168.3.16");
            // Change to the totalRecall IP Address

            int port = 10011; // The TotalRecall Port Number ie PortBase+4

            // This constructor will block until the connection succeeds
            Socket socket = new Socket(addr, port);
            PrintWriter out = new PrintWriter(socket.getOutputStream(), true);

            try {
                BufferedReader rd = new BufferedReader(
                    new InputStreamReader(socket.getInputStream()));

                String str;
                while ((str = rd.readLine()) != null) {
                    System.out.println(str);
                    // Add your processing here!
                }
                rd.close();
            } catch (IOException e) {
                e.printStackTrace();
            }

            } catch (UnknownHostException e) {
                e.printStackTrace();
            } catch (IOException e) {
                e.printStackTrace();
            }
        }
    }
}
```

## 20.7 DNS Network Service

The host name feature allows the Total Recall to be referred to by an alphanumeric name rather than an IP Address. Many people find this easier to remember.

A Service called DNS or Domain Name Service provides the mapping between this alphanumeric name and the IP Address of the Total Recall.

---

The network administrator will need to update the DNS to provide this mapping (or at least update the HOSTS file on the client machine).

Then the user can add the Total Recall using the host name instead of specifying the IP Address.

## **20.8 Export Call Data**

The best way to obtain the call information is to use Remote Manager to generate a .csv file.

The call data that will be saved to the .csv file, (or printed) will be exactly that data displayed in the table on the screen when you select "Save Call List as" from the File menu.

This will be the results of the last search which can be from the TR or CD or Local Folders. In this way you can get reports matching any search criteria.

You can rearrange the table columns by dragging around the title bars of the table.

This allows you to order the data however you want.

You can select which data goes into the table using the Customize table button (ie the second button from the right).

Date data is always in DD MMM YYYY format so you will need to do your own conversions on this. ( As Total Recall is sold world wide, this was the best compromise date format). You can of course write your own script to do this conversion or just change the date format in excel.

---

## 21 Total Recall Will Not Boot

If Total Recall will not boot there may be a number of causes.

- 1:     Power;           Mains Supply  
                        Total Recall Power Supply  
                        Internal Power cables
- 2:     Hard Disk Drive, (IDE cable, power cable, corrupt software, etc.)
- 3:     BIOS
- 4:     DSP line interface card
- 5:     LCD

There will be varying symptoms and causes for each of these conditions.

- 1:     **Power:**  
       **Symptom:**   No Boot, No Power LED, No LCD Backlight.  
       **Causes:**     No power from the wall socket / power source, IEC cord faulty or not plugged in, Faulty Total Recall Power Supply, internal cables not plugged in.  
       **Test:**        Try another appliance in the wall socket. Try a different IEC power cord. Check all internal cables are plugged in to their correct socket. Test with a voltmeter / multimeter the output DC voltage from the internal power supply.

**Test:**            Check the voltage from the power Supply at the Midboard power connector.

Red to Black       = 4.78VDC   to    5.35VDC

Yellow to Black    = 11.80VDC to    12.35VDC

If the voltage is out side of these ranges the Power Supply will need to be replaced.

**Fix:**            Check fuse (*Desktop only*)

It is possible that the fuse holder may have become loose during transit or the fuse is blown. Disconnect the power cord, remove the fuse holder at the rear of the unit (*Refer Section 3*) and check that the fuse is OK. Power-up again.

- 2:     **Hard Disk Drive:**  
       **Symptom:**   No Boot, BIOS loads but will not load Linux, Linux loads but Total Recall software will not load..  
       **Causes:**     On going research.  
       **Test:**  
       **Fix:**
- 3:     **BIOS:**  
       **Symptom:**   Power LED ON, HDD LED ON, Start Beep, LCD vertical and horizontal strips, will not boot, no key press beep.

---

**Cause:** Possible Power Surge or spike. On going research.  
**Test:** Plug a VGA CRT cable into the PC104 *see Section 4.4*. Connect standard PS2 101 Keyboard to the PS2 Keyboard cable from the PC104. Boot the Total Recall unit and observe the onscreen results. Possible error messages are, CRC error, Checksum error.  
**Fix:** Re-Boot the unit and at the first screen with text Press the DELETE key to open the BIOS. When the BIOS menus open goto LOAD DEFAULTS and press Enter. Then go to Save and Exit and allow the unit to boot. The unit can boot with both the CRT and the LCD connected and will display on both.

4: **DSP:**  
**Symptom:**

**Cause:** On going research.

**Test:**

**Fix:**

5: **LCD:**

**Symptom:** No Backlight, Backlight on but no display / text.

**Cause:** On going research.

**Test:**

**Fix:** The LCD Keeps Scrolling

After switching on the Total Recall unit check the following start-up procedure:

▶ Turn the volume control thumbwheel all the way to the right. (***Do not force it or use too much pressure***)

▶ After about 50 seconds the Total Recall splash screen will show.

▶ Then an information text screen will show.

▶ Then the Logging Menu will be displayed.

If the LCD screen keeps scrolling after about 2 minuets press the <***Select***> or the <***Menu***> key if there is a beep heard then there could be a problem with:

- 1: The LCD display screen or
- 2: The Midboard or
- 3: The PC104.



The time on start-up maybe more than is quoted above if the Total Recall has had an incorrect shut-down. This could extend longer depending on how many call are stored on the HDD.

▶ If after 10 minutes there is no beep and no HDD activity power off the TR unit and wait about 30 seconds and then restart. If there is no activity after about 10 minutes you will need to attach a CRT monitor to see the Boot up process.



---

***Other causes:***

TR Midboard or

PC104 small computer board.

---

## 22 Helpful Total Recall keystrokes

These are keys that will help when operating TR with a full size keyboard.

[Esc] = Shutdown Total Recall

**The standard TR keys also have equivalents on a PC keyboard:**

Menu = [ + ]

Select = [ Enter ]

Up = [ Arrow Up ]

Down = [ Arrow Down ]

0..9 = [ 0 ] .. [ 9 ] on the alpha keypad.

★ = [ ★ ]

<< = [ R ]

Stop = [ T ]

> = [ Y ]

>> = [ U ]

>>> = [ I ]

## 23 LCD Screen Messages

<u>Date</u>	<u>The date the call was placed or received.</u>
<u>Time</u>	<u>The start time of the call.</u>
<u>Len</u>	<u>The length or duration of the call, in seconds.</u>
<u>Number</u>	<u>The inbound or outbound call number.</u>
<u>&gt; &lt;</u>	<u>The direction of the call is displayed if either CLI or DTMF has been captured.</u>
<u>CH#</u>	<u>The channel number associated with the call.</u>
<u>ST</u>	<u>The status of the call (see below).</u>

The possible messages in the status column are as follows:

<u>*</u>	=	<u>The call is tagged.</u>
<u>C</u>	=	<u>The call is current.</u> <u>(i.e. it is happening at this time).</u>
<u>X</u>	=	<u>The call has been damaged.</u>
<u>A</u>	=	<u>The call has been archived.</u>
<u>M</u>	=	<u>Monitoring this live call.</u>

If a call is being replayed the status column will indicate the following:

<u>&gt;</u>	=	<u>Playing</u>
<u>&gt;&gt;</u>	=	<u>Fast Forward</u>
<u>&gt;&gt;&gt;</u>	=	<u>Skipping Forward</u>
<u>&lt;&lt;</u>	=	<u>Rewinding</u>
<u>  </u>	=	<u>Paused</u>

---

## 24 Sounds and Noises

### 24.1 Continuous Noise

There is a loud and continuous tone sounded after pressing keys.

One of the keys may be stuck down against the casing. Just move the keys about to release it.

## 25 DVD / CD Drive Cleaning

There are CD / DVD drive Laser Lens cleaning kits available from retail outlets. These may clean the Laser but they require you to press the Play button to start the cleaning process. Total Recall does not have such a process.

If the cleaning CD is put into Total Recall the CD will spin but the Laser will not be lined up with the cleaning brush.

### *Workaround:*

Remove the CD / DVD drive from the Total Recall and install it in a PC then the cleaning process can take place.

## 26 Archiving Problems

### 26.1 Keypad lockup when Archiving

I have selected *Archive* from the *Search Menu*. Now my keyboard has locked-up and the recorder does not seem to be working.

The archive process takes time. Writing to a DVD / CD is a time-consuming process. During the archive process, the <MENU> and <SELECT> keys will be disabled and you will have no access to other functions of the recorder.

**DO NOT SWITCH OFF THE POWER.** Although you have no access to the recorder, it will still be recording on active channels, and it will still be archiving calls to the DVD / CD. It is recommended to start the archive process during times of low-usage, or when you do not need to gain further access to the recorder for a period of time.

### 26.2 After Archive the % on the HDD did not change

I have archived calls to a DVD / CD but the “% Used” indicator on the *Logging Menu* remains at the same level.

The *Archive* “Do you want to remove the calls you archive?” option will archive calls to DVD / CD and either delete them from the hard drive (*Yes*) or keep them on the hard drive (*No*). If you choose to keep the archived calls on the hard drive the “% Used” indicator will not change. If you choose to delete the archived calls from the hard drive, after archive then the “% Used” indicator will decrease.

---

## 27 Recording Problems

### 27.1 Problem Recording with Off Hook

The Total Recall is connected to an analogue extension on a PABX and Off Hook will work on some channels but keep recording on others.

**Reason:** The On Hook voltage is too low.

Measure the Off Hook voltage and the On Hook voltage and compare them with the figures below.

**What to Try:** The Off Hook jumpers are set at time of manufacture for each channel to comply with the voltage mask below. For channels that have continuous recording problems try removing any fitted jumper shorting links. With the jumpers off (removed ) this is the lowest voltage setting. The Jumpers can be found in *Sections 15 & 16*.



Do **NOT** remove other jumper links.

The Off-Hook function is triggered by a voltage change on the phone line. The approximate voltages of a trunk line are:

ON Hook voltage = 48VDC

Off Hook voltage = 7VDC

The voltage trigger mask for Total Recall is:

Stop record (On Hook) = Higher than 35V

Start record (Off Hook) = Lower than 20V



*These settings may vary due to component tolerance in the Off-Hook circuitry.*

A drop in voltage (lifting the hand set Off-Hook) will normally provide sufficient voltage change to be detected by the recorder, and activate recording. Replacing the handset would normally stop the recording. If there is insufficient voltage on the line, the Off-Hook function will not work, and therefore a VOX trigger would need to be selected. When using Handset Splitter (Logger Patch) the voltage is too low for the Total Recall to detect, so Off-Hook cannot be used when recording via handset splitter.



*If a channel is set to Off-Hook and no line is connected to the channel (No voltage), the channel will commence recording and can only be disabled by setting the channel to OFF or VOX.*

---

## **27.2 Continuous Recording**

The channels are maybe set to Off-Hook. Enter the *Options Menu* and change the Line Trigger setting from Off-Hook to VOX 4 or Off.

### **27.3 Call cut into Multiple Records of Varied length**

During the process of recording a call, the call appears to be cut into multiple records, each of a varied length.

Check the VOX level settings of the channel(s) concerned. It is possible that the VOX level threshold is too sensitive in detecting silence on the line. For example, “VOX 6” detects a high signal with associated low sensitivity, so if the voice at either end is not loud enough or is not talking continuously, the recorder may detect a period of silence and cut the call.

At the same time, check the VOX Timeout setting in the Options Menu. If the VOX level threshold is too low, the calls will be cut based on the VOX Timeout setting. A combination of changing the Trigger setting to VOX 4 or lower and also increasing the *VOX Timeout* setting should eliminate the problem of cut calls.

### **27.4 Call cut into Multiple Records of Equal length**

During the process of recording a call, the call appears to be cut into multiple records, each of a equal length.

Check the *Maximum call length* setting in the *Options Menu (Call button)*. If a call recording reaches the maximum length setting, the recording will be stopped and then restarted as a new (continuation) record, with no loss of recording in between the stop and restart.

To avoid cutting the call into multiple records, increase the *Maximum call length* setting. The default is 1 hour.

### **27.5 False recording on an adjacent channel.**

1: If flat cable has been used to connect to the Total Recall this can induce cross-talk. Twisted cable must be used.

2: If the channel that is recording the phantom calls has no line connected and no voltage this may be the cause. Set this channel to Off in the Options menu > Channel Settings.

3: If there is a line connected and the line voltage is very low and the Ring signal is causing a phantom call on the adjacent channel a filter may help.

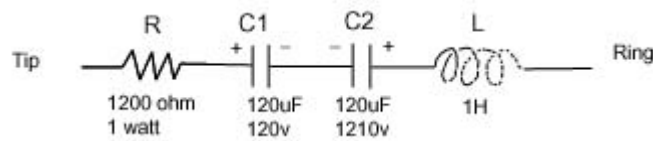
The following series resonant circuit needs to go in parallel with the line.

This circuit provides a 1200 ohm shunt @ 20Hz (assuming no losses in the capacitor or inductor). It will not effect the circuit at normal audio frequencies giving a 2.2k ohm shunt impedance at 300Hz and a 21k ohm shunt impedance at 3.4kHz (normal line impedance at these frequencies is 600 ohm).



---

This circuit will have the effect of reducing the cross-talk ring signal by a factor of 50.



Note the polarity of the two capacitors.

- R = Resistor 1200 ohm 1 watt.  
C1 = Capacitor 120 uF 120 Volt (Electrolytic Polar capacitor)  
C2 = Capacitor 120 uF 120 Volt (Electrolytic Polar capacitor)  
L = Line Inductor 1 Henry

## 27.6 Recording with Logger Patch

When recording with a Logger Patch I get lots of phantom calls of short duration.

**Reason:** Some PABX systems with the handset On Hook (on the cradle, hang-up) their microphone is still active and will always supply a signal to the Total Recall, some being strong enough to start a recording.

**Fix:** Read the instruction sheet that came with the Logger Patch or refer to *Section 12.3.1*. There are jumper settings that will disable the connection to the microphone of the hand-set. This will record from the Speaker / earpiece and with the side tone both sides of the conversation will be recorded.



The near side party will be softer than the far side party. This is because it is relying on the side tone.

## 27.7 Call Finished in Middle of Conversation

The call I am replaying finishes in the middle of the call, and I know that there was an extended conversation.

This call has most likely been “cut” as determined by the *Maximum call length* setting. Check the channel number of the call in the *Search Menu*, then search for the next call on the same channel number and you will find the remainder of the call. The second part of the call should be indicated by a (*cont...*) entry in the number field that indicates a continued call.

---

## 27.8 Remote Party very quiet

When making a telephone call, I can hear the remote party very clearly but when I play back the call, it is hard to hear the remote party.

This is associated with the AGC (Auto Gain Control) built into the recorder.

The recorder is designed to “record” all the sounds heard on the line, both Transmit (Tx) and Receive (Rx). This includes background noise, line noise and ambient noise.

The recorder “records all audio noise”, and cannot distinguish between “background” and “foreground” noise. This problem may be compounded if the recording is made via Handset Splitter (Logger Patch). In this case, the “background noise” fed back through the microphone of the handset is combined with the Receive (Rx) signal from the “Remote Party”, and therefore what appears to be a clear voice to the listener may sound soft or hard to hear upon replay.

This is a function of the AGC, which “averages out” all the audio signals detected during the recording.

If on the other hand, there is no background noise, then the “Remote Party” will sound very clear and loud upon replay.

## 28 Search and Replay

### 28.1.1 Search Results

Total Recall search function takes into consideration a call record that is not identified as IN or OUT.

An incoming call is a call that CLI has been detected and recorded into that call file.

An outgoing call is a call that DTMF has been detected and recorded into that call file.

If a call for some reason did not detect CLI or DTMF the call has no number in this field so Total Recall cannot determine if the call is Incoming or Outgoing.

When a search is done for Incoming calls the result will display all Incoming call and calls that TR cannot determine if they are IN or OUT.

## 29 Testing the Speaker

▶ Turn Volume knob on the Total Recall up all the way to the right (***Do Not Force It***).

▶ When any of the keys on the TR unit are pressed do you hear any beep sound?

▶ When trying to replay a call do you hear any sound?

▶ Open the TR case by unscrewing the 8 screws on the underside. (*Refer drawing Section 3*)

- 
- ▶ Check speaker plug is connected, gray wire to J2 on the left of the Mid-Board.
  - ▶ Check green wire is connected to J6 of the Mid-Board and to the DSP.
  - ▶ Check brown wire is connected to J11 of the Mid-Board and to the PC104.

## 30 DTMF

I am dialling a number and I can hear the tones on my phone, but no DTMF number appears in the *Logging Menu* next to the (C) Current Call.

If recording via a handset splitter (Logger Patch), it may not be possible for the recorder to detect DTMF tones. If your phone system transmits a proprietary signal to the PABX, and the PABX converts this signal to DTMF tones, then the recorder cannot detect the DTMF as it is not present at the point of recording.

The recorder is designed to detect DTMF tones on dialling and display the “Dialled Number” in the Number Field of the call record. If DTMF is not present at the point of recording, then the DTMF number will not be displayed.

## 31 CLI

The CLI data will only be captured if it is embedded in the incoming call data. Total Recall is always ready to receive CLI (CLIPA).

## 32 Standard BIOS Setup

Phoenix – Award BIOS V6.00 PG CM786 Rev 1.4		& 1.5	
<b>Standard CMOS Setup</b>		<b>Integrated Peripherals</b>	
Primary Master	Auto	On Chip IDE Channel 0	Enabled
Primary slave	Auto	On Chip IDE Channel 1	Enabled
Secondary Master	None	IDE Perfetech Mode	Disabled
Secondary slave	None	Primary Master PIO	Auto
Drive A	None	Primary Slave PIO	Auto
Drive B	None	Secondary Master PIO	Auto
Video	EGA/VGA	Secondary Slave PIO	Auto
Halt On	All Errors	Primary Master UDMA	Disabled
Panel Type	640*480 TFT	Primary Slave UDMA	Disabled
Boot Device Selected	CRT+LCD	Secondary Master UDMA	Disabled
<b>Advanced BIOS Features</b>		Secondary Slave UDMA	Disabled
Virus Warning	Disabled	Init Display First	PCI Slot
CPU Internal Cache	Enabled	On Chip USB	Enabled
External Cache	Enabled	USB Legacy Support	Disabled
CPU 12 Cache ECC Checking	Enabled	IDE HDD Block Mode	Disabled
Processor Number Feature	Enabled	Onboard LAN Boot ROM	Disabled
Quick Power On Self-Test	Enabled	Onboard LAN	Enabled
First Boot Device	HDD-0	Onboard FDC Controller	Disabled
Second Boot Device	CDROM	Onboard Serial Port 1	3F8/IRQ4
Third Boot Device	Disabled	Onboard Serial Port 2	2F8/IRQ3
Boot Other Device	Enabled	UART 2 Mode	Standard
Swap Floppy Drive	Disabled	Onboard Parallel Port	Disabled
Boot Up Floppy Seek	Disable	Onboard Parallel Mode	Normal
Boot Up NumLock Status	On	Onboard Legacy Audio	Disabled
Gate A20 Option	Fast	<b>Power Management Setup</b>	
Typematic Rate Setting	Disabled	Power Management	Press Enter
Security Option	Setup	PM Control By APM	Yes
OS Select For DRAM > 64mb	Non-OS2	Video Off Option	Suspend -> Off
Video Bios shadow	Enabled	Video Off Method	V/H SYNC+Blank
C8000-CBFFF Shadow	Enabled	Modem use IRQ	NA
CC000-DC000 Shadow	Disabled	Soft – Off by PWRBTN	Instant off
Small Logo (EPA) show	Enabled	Wake Up Events	Press Enter
EEPROM Write Protect	Enabled	<b>PNP/PCI Configuration</b>	
<b>Advanced Chipset Features</b>		PNP OS Installed	No
SDRAM Cycle Length	3	Reset Configuration Data	Disabled
Bank Interleave	Disabled	Resources controlled By	Auto (ESCD)
Memory Hole	Disabled	PCI /VGA Palette Snoop	Disabled
P2C/C2p Concurrency	Enabled	<b>PC Health Status</b>	
System BIOS Cacheable	Enabled	<i>(Not Configurable)</i>	
Video RAM Cacheable	Enabled	<b>Frequency / Voltage Control</b>	
Frame Buffer Size	8M	Auto Detect DIMM / PCI Clk	
AGP Aperture Size	64M	Spread Spectrum	
AGP Driving Control	Auto	Enabled	
OnChip Sound	Auto	Disabled	
CPU to PCI Write Buffer	Enabled		
PCI Dynamic Bursting	Enabled		
PCI Master 0 WS Write	Disabled		
PCI Master 0 WS Read	Disabled		
PCI Delay Transaction	Disabled		
PCI #2 Access #1 Retry	Enabled		
ISA Bus Clock	PCICLK/4		
AGP Master 1 WS Write	Disabled		
AGP Master 1 WS Read	Disabled		

---

### 33 Specifications

Number of Channels:	4, 8, 12 or 16	Desktop Unit
	4, 8, 12, 16, 20, 24, 28 or 32	Rack Mount Unit
	(Channel upgrades available 4 or 8ch)	
Security:	Password (2 levels)	
Coding Method:	8kbps High Quality Vector Quantisation providing over 10,000 hours on-line database of recordings.	
Line Impedance (AC):	(Aus & USA) 6 K ohm	
	(NZ) 12 K ohm	
	(EUR) 67 K ohm	
Line Impedance (DC):	(Aus /NZ/Europe) 1M ohm	
	(USA) 10M ohm	
Frequency Response:	300-3400 Hz, +/- 0.5dBm.	
Signal to Noise:	-34dBm.	
Cross-talk:	-60dBm.	
Record (PIP) Tone:	1.4kHz. Channel and Level selectable.	
	(Off, -33dBm, -27dBm, -21dBm)	
Recording Triggers:	Off-Hook, VOX (adjustable), OFF, VOX 6 -20dBm, VOX 5 -24dBm, VOX 4 -28dBm, VOX 3 -32dBm, VOX 2 -36dBm, VOX 1, -40dBm	
CPU Type:	PC104 Celeron 400Mhz	
RAM:	256Mb SDRam	
Internal Storage:	Hard Disk Drive.	
Call Data capacity:	37Mb	
DVD Drive:	IDE (uses DVD+RW media for Archive.)	
Display:	130mm x 97mm Colour TFT with twin CCFL backlit LCD	
Power Requirements:	90VAC - 260VAC, 50Hz - 75Hz	
	50 Watts Maximum	
Max Line Voltage:	Tip to Ring; 250VDC	
	Tip to Ring ; 150VAC rms	
	Tip to Ground; 1500VDC	
	Tip to Ground ; 1000VAC rms	
Analogue Ports:	4, 8, 12, 16.	
	RJ11C/RJ12/RJ14 (PSTN) line interface ports.	
	4-channel DSP interface uses pins 3/4	
	8-channel DSP interface uses pins 3/4 and 2/5	
Line Out Jack:	3.5mm stereo phono	



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Headphone Jack:	3.5mm stereo phono
Client Software:	<i>Remote Manager</i> (Windows 95/98/NT/ME/2000/XP)
System Software:	Field upgradeable via CD Media
Operating System:	Linux Fedora Core 2
Desktop Unit Size :	365 x 375 x 165 mm. 14½ x 14¾ x 6½”.
Desktop Unit Weight:	6 kg net 13 lb net
Rack Mount Size:	480 x 230 x 220 mm (5U) 19” x 9” x 8½”
Rack Mount Weight:	10 kg net 22 lb net
Desktop Enclosure:	UL 94V-0 ABS plastic
Rack Mount Enclosure:	Zinc Passivated steel with Powder-Coated face panel. Standard EIA 19” Rack configuration (5U)

*Specifications subject to change without notice.*

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## 34 Software Licence Agreement

### **End-User Licence Agreement for Arunta Software – *Total Recall & Remote Manager.***

#### **IMPORTANT - READ CAREFULLY:**

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Should you have any questions concerning this ASLA, or if you desire to contact Arunta for any reason, please contact the Arunta reseller serving your country, or write to:

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