

**TANDBERG**  
Television

ST.US.E10141.4

## **USER GUIDE**

**TT1280 and TT1282  
HD Professional  
Receiver/Decoder**

**Software Version 2.0.0  
(and later)**



ENGLISH (UK)

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

### Trademarks

Dolby® / Dolby® Digital / AC-3® are registered trademarks of Dolby Laboratories Licensing Corporation.

### Customer Services

Europe, Middle East  
and Africa:

**Tel:** +44 (0) 23 8048 4455  
**Fax:** +44 (0) 23 8048 4467  
support@tandbergtv.com

Americas:

**Tel:** +1 (321) 308 0470  
fieldservice-americas@tandbergtv.com

China:

**Tel:** +86 10 6856 0260 (Beijing)  
**Tel:** +852 2530 3215 (Hong Kong)  
fieldservice-asia@tandbergtv.com

Australia/NZ:

**Tel:** +612 9360 2053  
fieldservice-australia@tandbergtv.com

Internet Address:

<http://www.tandbergtv.com>

### Technical Training

International:

**Tel:** +44 (0) 23 8048 4229  
**Fax:** +44 (0) 23 8048 4467  
training@tandbergtv.com

This document and the information contained in it is the property of TANDBERG Television Ltd and may be the subject of patents pending and granted. It must not be used for commercial purposes nor copied, disclosed, reproduced, stored in a retrieval system or transmitted in any form or by any means (electronic, mechanical, photocopying, recording or otherwise), whether in whole or in part, without TANDBERG Television's prior written agreement.

© 2003 - 2004 TANDBERG Television Ltd.  
All rights reserved.

Issue 4 first published in 2004 by:  
**TANDBERG Television Ltd**

Registered Address:  
Unit 2 Strategic Park, Comines Way,  
Hedge End, Southampton,  
Hampshire,  
SO30 4DA  
United Kingdom

Registered Company Number 03695535

**Contents**

**1 Who Should Use This User Guide? ..... 5**

1.1 What Equipment is Covered by This User Guide? ..... 5

1.2 Hardware and Software Options ..... 6

**2 Installing the Equipment ..... 7**

2.1 Introduction ..... 7

2.2 Operating Voltage ..... 7

2.3 Power Cable and Earthing ..... 7

2.4 Connecting Up the Basic Receiver ..... 8

2.5 Connecting the Receiver to the Power Supply ..... 9

**3 Operating the Equipment From the Front Panel ..... 11**

3.1 Introduction ..... 11

3.2 Local Control ..... 11

3.3 Navigation Pushbuttons ..... 11

3.4 Navigating the Menus ..... 12

3.5 LCD Menu Descriptions ..... 13

**4 Menu Structure ..... 15**

**5 Operating the Equipment Remotely ..... 16**

5.1 Introduction ..... 16

5.2 Remote Ethernet (SNMP) Operation ..... 16

**6 Basic Unit Set-up ..... 16**

6.1 Set the Transport Stream Input ..... 16

6.2 Set the Analogue Video Output Options ..... 17

6.3 Set the Digital Video Output Options ..... 17

6.4 Set the Transport Stream Output Options ..... 17

6.5 Select a Service ..... 18

6.6 Select Video Components ..... 18

6.7 Select Audio Components ..... 18

**List of Figures**

Figure 2.1: Rear Panel Connectors ..... 8

Figure 3.1: Front Panel Controls and Pushbuttons ..... 11

Figure 4.1: Menu Structure ..... 15

**List of Tables**

Table 1.1: Equipment Model Descriptions.....	5
Table 1.2: Hardware Options .....	6
Table 1.3: Software Options .....	6
Table 2.1: Types of Connector.....	8
Table 2.2: Fuse Type and Rating .....	10
Table 3.1: Navigate Mode.....	12
Table 3.2: Edit Mode.....	13
Table 3.3: Selecting a Menu Option.....	14
Table 3.4: Entering a Menu Value .....	14

## 1 Who Should Use This User Guide?

This User Guide is written for operators/users of the TT1280 and TT1282 Integrated Receiver/Decoder (IRD) to assist in installation and operation. The TT1280 and TT1282 are referred to throughout this User Guide as 'IRD(s)' unless there is a specific difference, where they will be referred to by the model number.



This User Guide is not intended to be a detailed source of information. This can be found in the *Reference Guide* companion document which is issued on CD.

	<p><b>WARNING</b></p> <p>Do not remove the covers of this equipment. Hazardous voltages are present within this equipment and may be exposed if the covers are removed. Only TANDBERG Television trained and approved service engineers are permitted to service this equipment.</p>
--	--

	<p><b>CAUTION</b></p> <p>Unauthorised maintenance or the use of non-approved replacements may affect the equipment specification and invalidate any warranties.</p>
--	---

### 1.1 What Equipment is Covered by This User Guide?

Table 1.1: Equipment Model Descriptions

Model Number	Marketing Code	Description
TT1280 Common Interface	TT1280/CIBAS	MPEG-2 HD Decoder with integrated Common Interface CAM reader, AC mains voltage input. MPEG 4:2:0 video decode only.
TT1280 Common Interface (-48 V version)	TT1280/CIBAS/48V	MPEG-2 HD Decoder with integrated Common Interface CAM reader, -48 Vdc voltage input. MPEG 4:2:0 video decode only.
TT1280 Director (-48 V version)	TT1280/DIRBAS/48V	MPEG-2 HD Decoder with integrated Director Smartcard Reader, -48 Vdc voltage input. MPEG 4:2:0 video decode only.
TT1280 Director	TT1280/DIRBAS	MPEG-2 HD Decoder with integrated Director Smartcard Reader, AC mains voltage input. MPEG 4:2:0 video decode only.

## TT128x High Definition Professional Receiver/Decoder

Model Number	Marketing Code	Description
TT1282 Common Interface	TT1282/CIBAS	MPEG-2 HD Decoder with integrated Common Interface CAM reader, AC mains voltage input. MPEG 4:2:0 and 4:2:2 video decode.
TT1282 Director (-48 V version)	TT1282/DIRBAS/48V	MPEG-2 HD Decoder with integrated Director Smartcard Reader, -48 Vdc voltage input. MPEG 4:2:0 and 4:2:2 video decode.
TT1282 Common Interface (-48 V version)	TT1282/CIBAS/48V	MPEG-2 HD Decoder with integrated Common Interface CAM reader, -48 Vdc voltage input. MPEG 4:2:0 and 4:2:2 video decode.
TT1282 Director	TT1282/DIRBAS	MPEG-2 HD Decoder with integrated Director Smartcard Reader, AC mains voltage input. MPEG 4:2:0 and 4:2:2 video decode.

### 1.2 Hardware and Software Options



See *Table 1.2* and *Table 1.3* for a list of hardware and software options available for the IRDs.

*Table 1.2: Hardware Options*

Marketing Code	Description
TT1280/HWO/QPSK	2 input QPSK demodulator input card.
TT1280/HWO/G703	G.703 E3/DS3 input card.
TT1280/HWO/IP	IP input card.
TT1280/HWO/HOM	4 input QPSK/8PSK/16QAM demodulator input card

*Table 1.3: Software Options*

Marketing Code	Description
TT1280/SWO/AC3	Dolby Digital decoder.
TT1280/SWO/HSEETHER	High speed Ethernet data output (data piping).
TT1280/SWO/RAS	RAS transport stream descrambling.
TT1280/SWO/RAS2	RAS 2 transport stream descrambling.
TT1280/SWO/DIR	Director functionality.

## 2 Installing the Equipment

### 2.1 Introduction



For best performance and reliability follow the instructions for site requirements and installation in the *Reference Guide* and only use installation accessories recommended by the manufacturers.

### 2.2 Operating Voltage

#### AC Models

AC models are fitted with a wide-ranging power supply. It is suitable for supply voltages of 100-120 Vac -10% +6% or 220-240 Vac -10% +6% at 50/60 Hz nominal.

#### -48 Vdc Models

Only models TT1280/CIBAS/48V, TT1280/DIRBAS/48V, TT1282/CIBAS/48V and TT1282/DIRBAS/48V use a dc power supply.

	<p><b>CAUTION</b></p> <p>This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your business, consult a qualified electrical engineer or your local power company.</p>
--	--




See *Table 2.2* for fuse information and also the *Reference Guide* for a full power supply specification.

### 2.3 Power Cable and Earthing

Check that the power cable is suitable for the country in which the Receiver is to be used.

	<p><b>NOTE</b></p> <p>Refer to the <i>Reference Guide</i> for details of the colour codes used on the mains leads.</p>
--	--

	<p><b>WARNINGS</b></p> <ol style="list-style-type: none"> <li>1. The Technical Earth is not a Protective earth for electric shock protection.</li> <li>2. This unit must be correctly earthed through the moulded plug supplied. If the local mains supply does not have an earth conductor do not connect the unit. Contact Customer Services for advice.</li> <li>3. Before connecting the unit to the supply, check the supply requirements in Annex B of the Reference Guide.</li> </ol>
---	--

**2.4 Connecting Up the Basic Receiver**



Always use the specified cables supplied for signal integrity and compliance with EMC requirements (see *the Reference Guide*).

Only those connectors used are labelled in *Figure 2.1* and described in *Table 2.1*.

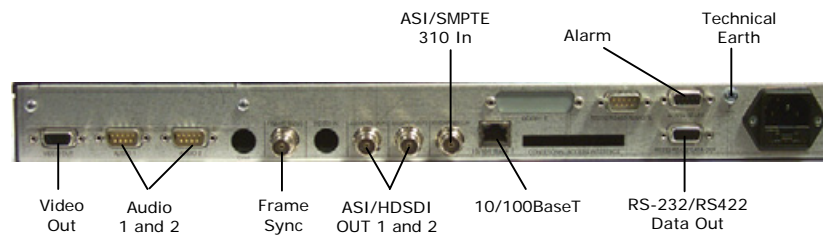



Figure 2.1: Rear Panel Connectors


Table 2.1: Types of Connector

Type of Connector	Description
Video Out	A 15-way D-type connector provides an RGB/HV (SVGA) or YPrPb interface. The video output format is selectable via the front panel.
AUDIO 1	A 9-way male D-type connector provides both analogue and digital outputs simultaneously
AUDIO 2	A 9-way male D-type connector provides both analogue and digital outputs simultaneously
FRAME SYNC	A 75 $\Omega$ BNC connector provides a frame lock mechanism for the output analogue and digital video. The frame sync input signal shall be a composite burst signal.

Type of Connector	Description
ASI/HDSDI OUT 1	A 75 Ω BNC connector provides either an MPEG transport stream output interface or serial digital video output. ASI or HDSDI output format is selectable via the front panel.
ASI/HDSDI OUT 2	A 75 Ω BNC connector provides either an MPEG transport stream output interface or serial digital video output. ASI or HDSDI output format is selectable via the front panel.
ASI/SMPTE 310 IN	A 75 Ω BNC connector provides an MPEG transport stream input interface. ASI or SSI (SMPTE 310) input format is selectable via the front panel.
10/100BaseT	An 8-way RJ-45 connector provides a 10/100BaseT Ethernet interface for external control and monitoring. Also optionally provides a High Speed Ethernet data output
Alarm Relay	If required, connect an external status monitoring device to the Alarm connector. A 9-way, D-type male connector provides an alarm relay interface which can be used to send a signal to remote equipment.
RS-232/RS-422 Data Out	RS-232 data is available on the Base Board.
Technical Earth	Connect the Receiver's Technical earth to a suitable point.

	<p><b>NOTE</b></p> <p>Refer to the <i>Reference Guide</i> for all power supply, fuse, safety, EMC information and operating conditions.</p>
---	---

## 2.5 Connecting the Receiver to the Power Supply

	<p><b>WARNINGS</b></p> <ol style="list-style-type: none"> <li>1. Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.</li> <li>2. As no mains switch is fitted to this unit, ensure the local power supply is switched OFF before connecting the supply cord.</li> <li>3. The Receiver is not fitted with an on/off switch. Ensure that the socket-outlet is installed near the equipment so that it is easily accessible. Failure to isolate the equipment properly may cause a safety hazard.</li> </ol>
---	--

Connect the Receiver to the power supply as follows:

- ▶ **Power Supply**  
Ensure the power supply is isolated and switched off.
- ▶ **Receiver**  
Ensure the correct fuse type and rating has been fitted to both the equipment and the power cable.
- ▶ **Supply Cord**  
Connect the lead to the Receiver input connector and then to the power supply. Switch on the power supply.

*Table 2.2: Fuse Type and Rating*

<b>Power Supply</b>	<b>Fuse Type and Rating</b>
100-120 Vac / 220-240 Vac	IEC/EN 60127-2 Sheet 5 Bussmann S505/Littelfuse 215 2 A 250 V T HBC
-48 V	Bussmann S505/Littelfuse 215 5 A 250 V T HBC

### 3 Operating the Equipment From the Front Panel

#### 3.1 Introduction

The front panel display and keypad may be used to configure, control and monitor the Receiver when an external control system is not used.

#### 3.2 Local Control

At power-on the Receiver runs through a boot sequence (boot time is approximately 15 seconds). The *Service* menu is displayed (Menu 3).

#### 3.3 Navigation Pushbuttons

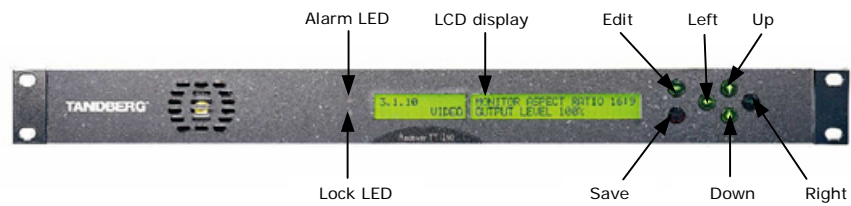


Figure 3.1: Front Panel Controls and Pushbuttons

### 3.4 Navigating the Menus

Operating the IRD from the Front Panel is via two operating modes: **Navigate Mode** and **Edit Mode**.

#### 3.4.1 Navigate Mode

**Navigate** mode allows the user to move between menus and pages within menus (editing the left display area).

*Table 3.1: Navigate Mode*

Action	Result
<b>Up</b> Pushbutton Pressed	Go to page given by uplink of current page, obtain and display current data.
<b>Down</b> Pushbutton Pressed	Go to page given by down link of current page, obtain and display current data.
<b>Left</b> Pushbutton Pressed	Go to page given by left link of current page, obtain and display current data.
<b>Right</b> Pushbutton Pressed	Go to page given by right link of current page, obtain and display current data.
<b>Edit</b> Pushbutton Pressed	Enter <b>Edit</b> mode at current page (if permitted else no effect).
<b>Save</b> Pushbutton Pressed	No effect.

Pushbutton LEDs will be updated to indicate which pushbutton presses are still valid as each navigation pushbutton press event is processed. For example, a lit **Up** pushbutton LED indicates there are pages above the current one.

#### 3.4.2 Edit Mode

**Edit** mode edits the right display area and allows the user to alter control parameters that define the IRD behaviour. To enter **Edit** mode press the **Edit** pushbutton when on a page containing an editable control parameter and the front panel is the controlling user interface. Edit may be entered on some special pages at all times, for example on the page defining the controlling user interface.

The Front Panel returns to **Navigate** mode when **Edit** is pressed again (abort edit with no save) or when **Save** is pressed (save modified parameter values).

Table 3.2: Edit Mode

Action	Result
<b>Up</b> Pushbutton Pressed	Increases value of current edit parameter by one unit.
<b>Down</b> Pushbutton Pressed	Decreases value of current edit parameter by one unit.
<b>Left</b> Pushbutton Pressed	Moves cursor one edit parameter/parameter digit left (making that the current edit parameter).
<b>Right</b> Pushbutton Pressed	Moves cursor one edit parameter/parameter digit right (making that the current edit parameter).
<b>Edit</b> Pushbutton Pressed	Aborts edit (no save/action of any modified parameters) and returns to <b>Navigate</b> mode, obtain and display current data.
<b>Save</b> Pushbutton Pressed	Save/action new parameter values and returns to <b>Navigate</b> mode, obtain and display current data.

Pushbutton LEDs are updated to indicate which pushbutton presses are still valid as each edit pushbutton press event is processed. For example, when the **Left** pushbutton LED is lit it indicates there are additional editable parameters to the left of the current cursor position.

There is a maximum idle period of five minutes when **Edit** mode will time out and return to **Navigate** mode.

### 3.5 LCD Menu Descriptions

Detailed LCD menu descriptions are given in the Reference Guide. This User Guide concentrates on describing the use of the menus for local operation.

#### 3.5.1 Selecting a Menu Option

Some items shown in the right display area of the front panel LCD display have a set number of options. An example of this is the VIDEO TEST PATTERN (Menu 3.1.6) which has a number of preset Video Test Patterns associated with it. Use the steps in *Table 3.3* as a general guide to selecting an option.

Table 3.3: Selecting a Menu Option

Step	Action	Result
1	Select the menu and display the required selection.	Normally there is only one selectable item. If there is more than one, use the <b>Right</b> and <b>Left</b> pushbuttons as described in Table 3.4.
2	Press <b>Edit</b> on the front panel.	The <b>Save</b> button comes on to show that the new option can be stored.
3	Use the arrow pushbuttons to step through the options.	This action scrolls through the options in a continuous loop.
4	Press <b>Save</b> to store the option or press <b>Edit</b> to cancel the selection and return to the source menu.	

### 3.5.2 Entering a Menu Value

Some items shown in the right display area of the front panel LCD display have a user-entered value. An example of this is the IP Address (Menu 7.1.3) in which the unit's Network address has to be entered. Use the following steps as a general guide to entering a value.

Table 3.4: Entering a Menu Value

Step	Action	Result
1	Select the menu and display the required selection.	
2	Press <b>Edit</b> on the front panel.	The <b>Save</b> button comes on to show that the new value can be stored.
3	Use the <b>Right</b> or <b>Left</b> pushbutton to move the cursor to the required digit.	Each pushbutton has a built-in LED that turns on if the pushbutton function is appropriate to the displayed information.
4	Change the value by using the arrow pushbuttons.	
5	Press <b>Save</b> to store the option.	

**4 Menu Structure**

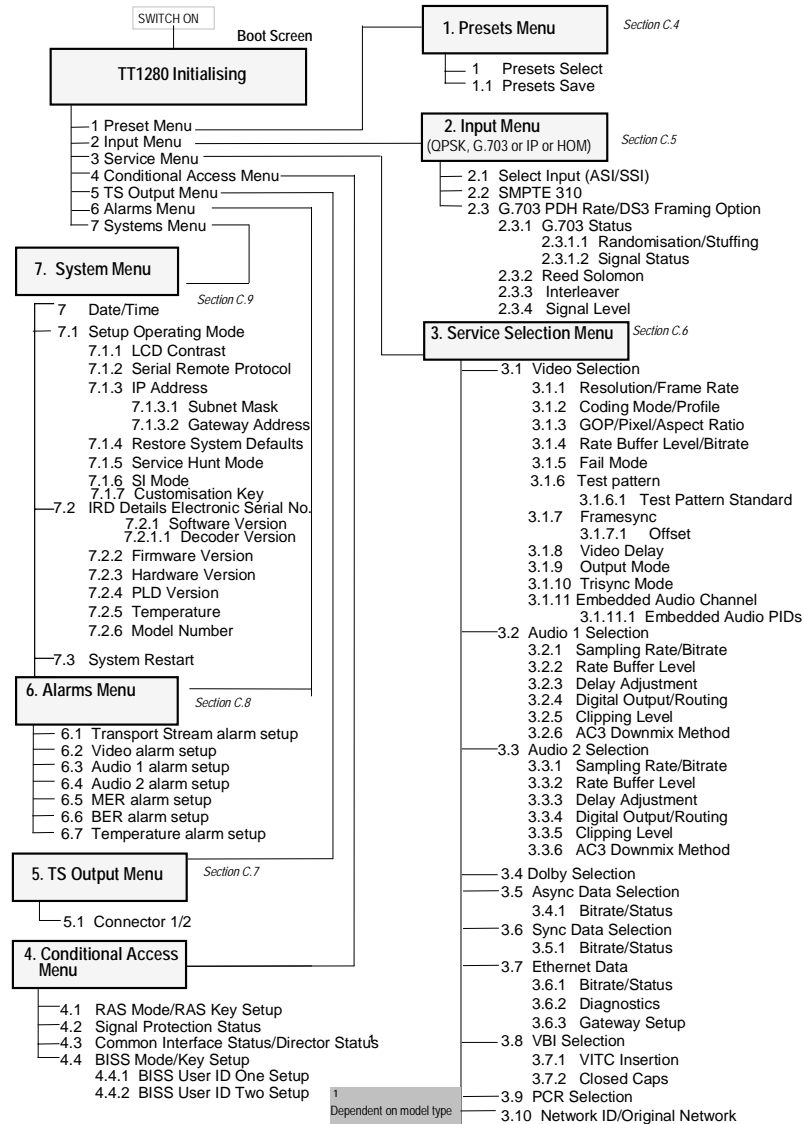


Figure 4.1: Menu Structure

## **5 Operating the Equipment Remotely**

### **5.1 Introduction**

When an external control system is used the Receiver may be configured, controlled and monitored remotely.

### **5.2 Remote Ethernet (SNMP) Operation**

If the Receiver is to be controlled via its Ethernet interface the unit's IP address and associated parameters must be set in the relevant menus. Firstly, the unit's IP address should be set (Menu 7.1.3). Then the unit subnet mask should be set (Menu 7.1.3.1) and if the controlling device is on a separate network accessed through a gateway router then the gateway IP address should be set (Menu 7.1.3.2). Finally the operating mode should be set to "NETWORK (SNMP)" (Menu 7.1). The SNMP MIB for the IRD is available from TANDBERG Television.

## **6 Basic Unit Set-up**

### **6.1 Set the Transport Stream Input**

Navigate to the Input Menu (Menu 2.1/2.2) and select the transport stream input source required. This menu always has options ASI or SMPTE 310. Dependent upon what additional input option cards have been fitted, G.703, QPSK or IP may also be selected.

#### **ASI/SSI Input**

No other parameters need be set.

#### **G.703 Input**

- ▶ Set the Reed-Solomon (Menu 2.3.2)
- ▶ Set the Interleaver (Menu 2.3.3)

### **HOM/QPSK Input**

- ▶ Select the RF Input connector (Menu 2.3)
- ▶ Set the LNB frequency (Menu 2.3.2)
- ▶ Satellite frequency (Menu 2.3.2.1)
- ▶ Symbol rate (Menu 2.3.2.2)
- ▶ Modulation FEC (Menu 2.3.2.3)
- ▶ LNB power (Menu 2.3.2.4)
- ▶ LNB 22 kHz (Menu 2.3.2.5)
- ▶ Frequency search range (Menu 2.3.2.6)

### **IP Input**

- ▶ Receive UDP port number (Menu 2.3.2)
- ▶ Input IP address (Menu 2.3.2.1)
- ▶ Input subnet mask (Menu 2.3.2.2)
- ▶ Input gateway address (Menu 2.3.2.3)
- ▶ Input multicast IP address (Menu 2.3.2.4)

## **6.2 Set the Analogue Video Output Options**

Select RGB or YUV video output to match the requirements of the video monitor being used (Menu 3.1.9).

Navigate to the Trisync Mode Menu (Menu 3.1.10) and select the mode that matches the requirements of the video monitor being used – either “ON GREEN”, “ON ALL” or “NONE”.

## **6.3 Set the Digital Video Output Options**

Navigate to the HD SDI output selection menu (Menu 5.1) and select the HD SDI to be output on either Connector 1 or Connector 2 or both.

## **6.4 Set the Transport Stream Output Options**

Navigate to the ASI output selection menu (Menu 5.1) and select the transport stream output (ASI) to be output on either Connector 1 or Connector 2 or both.

## 6.5 Select a Service

Navigate to the Service Selection menu (Menu 3). For single service transport streams the service should be selected and displayed along with the service ID. For fully compliant DVB or ATSC transport streams the service name should also be displayed.

For multiple service transport streams press **Edit** and, using the **Up** and **Down** pushbuttons, scroll through the service name list. Then press **Save** to select the required service.

Alternatively, use the **Right** pushbutton to move the cursor to the service ID field and press **Edit**. Enter the required service ID using the **Up** and **Down** pushbuttons for each digit of the service ID.

## 6.6 Select Video Components

Navigate to the Video Component Selection menu (Menu 3.1). This menu displays the number of video elementary streams present in the current service.

To change the currently selected component, press **Edit** and, using the **Up** and **Down** pushbuttons, scroll through the component list. Then press **Save** to select the required component.

Alternatively, use the **Right** pushbutton to move the cursor to the PID field and press **Edit**. Enter the required component PID using the **Up** and **Down** pushbuttons for each digit of the PID.

## 6.7 Select Audio Components

Navigate to the Audio Selection menus (Menu 3.2 and 3.3).

To change the currently selected component, press **Edit** and, using the **Up** and **Down** pushbuttons, scroll through the component list. Then press **Save** to select the required component.

Alternatively, use the **Right** pushbutton to move the cursor to the PID field and press **Edit**. Enter the required component PID using the **Up** and **Down** pushbuttons for each digit of the PID.

Move the cursor to the audio standard field and press **Edit**. Using the **Up** and **Down** pushbuttons select the required audio standard type and then press **Save**.