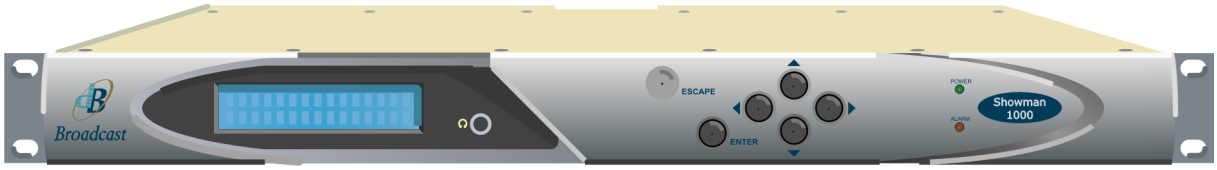
Broadcast

Showman 1000

Multi-Standard Analogue TV Demodulator



Handbook

Provisional Version 0.3

dB Broadcast Ltd
Registered Office:
Kestrel House
Sedgeway Business Park
Witchford
Ely
Cambridgeshire
UK
CB6 2HY
Tel: +44 (0) 1353 661117
Fax: +44 (0) 1353 665617
Email: sales@dbbroadcast.co.uk
Web: www.dbbroadcast.co.uk
Registered in England No. 2709677

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Firmware versions

Contents

Introduction

The Showman 1000 Multi-Standard Analogue TV Demodulator

The Showman 1000 Off Air Receiver from dB Broadcast is a multistandard (PAL / NTSC / SECAM) analogue TV demodulator for professional broadcast applications and is capable of receiving RF signals from most terrestrial or cable analogue broadcast TV standards.

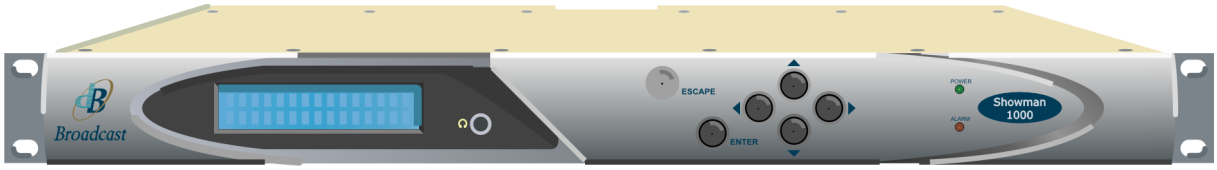


Figure 1: The Showman 1000 Multi-Standard Analogue TV Demodulator

Two Showman versions are available:

- A basic multi-standard S-Variant
- An enhanced P-Variant with alarm/monitoring and IF I/O

The P-Variant has added IF input and output capability along with monitoring and alarm functions – including a Status Log facility that can time and date stamp various alarm events for later analysis. The P-Variant is also capable, when receiving BTSC audio (Standard M), of providing simultaneous outputs of both Stereo and SAP (Second Audio Program). Demodulation is to base-band colour composite video and stereo audio (where available). The optional IF input and IF output is on 38.9MHz vision carrier frequency for all standards*. Demodulator functions may be controlled either via the front panel LCD (Liquid Crystal Display) and key menu system or via an RS232 Serial Port.

Note: *A single standard Showman 1000 Demodulator, dedicated to 45.75MHz IF frequency is also available. (N-variant, not covered by this manual).

Applications

- Fixed Monitoring / MCR - Monitoring of outgoing TV signals
- Analogue Cable head ends - Off air reception prior to modulation on to cable
- Digital TV head ends - Off air reception of analogue services prior to MPEG encoding
- Outside Broadcast monitoring - monitoring live programs and own
- Transmission monitoring · News Gathering in fixed or mobile situations
- Analogue TV Transmitter monitoring

Features

- Over 20 pre-installed country/region tables
- Multi-Standard - B/G, I, D/K, L'/L, M/N
- Video Systems - PAL, SECAM, NTSC
- Audio Systems - NICAM, FM-Stereo (A2 & EIA-J) BTSC
- Direct keying of frequency
- 99 program memory
- Headphone socket on front panel
- Dual composite video outputs
- Dual audio outputs
- Adjustable audio, video and chrominance levels
- RS232 Port - for external local control and software upgrades
- LCD screen display- 2 Line x 20 Characters (White on Blue)
- Compact 1RU solution

Optional features

- IF Input/Output option
- Alarm and logging option
- Second Audio Processor option
- Real Time Clock option - for time stamping alarm events
- Reset/Status Port option- local alarm monitoring and reset input

General safety summary

Precautions to avoid personal injury, fire or product damage.

Every care has been taken in the design, manufacture, assembly and testing of this product to obviate health and safety risks to personnel and to prevent fire or other hazards. However, please review the following safety precautions for continued protection.

General use. This product must only be used as specified in this manual. Failure to follow any ratings or directions for use may impair the protection provided.

On receipt of the product. Verify there is no damage and that all accessories are present.

Suspected damage or failure. Do not operate the product. Have it inspected by qualified service personnel or contact dB Broadcast or an authorised distributor.

Operating environment. The unit is for indoor use only. See the Specification chapter for further environmental, physical, certification and safety information.

Do not operate in wet or damp conditions.

Do not operate in an explosive atmosphere.

Power cable. Use only a power cable specified for this product and certified safe for the country of use.

Do Not Remove Covers. There are no user serviceable parts within the case. Qualified personnel only should perform any servicing necessary.

Grounding. *This product must be grounded*. Before making any signal connections, ensure that the product is grounded. The product is grounded through the power cable. To avoid electric shock under fault conditions, the protective grounding conductor within the power cable must be connected to an earth terminal of the building in which the product is located.

Bonding. A Ground Bonding (Earth) Terminal is located on the rear panel of the unit for equipotential bonding with other equipment or racking where required.

This Terminal is identified thus  :

Mains supply voltage and fuse ratings. See the Specification chapter. All ratings must be observed.

Cuts and abrasions. When handling the equipment, guard against cuts or abrasions from metal parts of the case or components.

CAUTION. Caution statements identify conditions or practices that could result in damage to this product or other property.

Toxic content. Unwanted or obsolete components must be disposed of safely as some may release toxic vapours if incinerated.

In case of difficulty. Please refer to dB Broadcast.

Lithium battery

A lithium battery maybe located in this product to provide back up for a real-time clock. In normal operation this battery has a life in excess of 5 years. If the real-time clock's operation becomes erratic when cycling the power, then the battery may need replacing. Battery replacement should only be performed by a 'skilled and competent technician', or by returning to db Broadcast for repair.

CAUTION: Danger of explosion if battery is incorrectly replaced.

Product damage precautions

Take anti-static precautions

Since this unit contains exposed PCB and electronic components, ensure proper anti-static precautions are observed when handing this equipment.

Provide proper ventilation

To prevent product overheating, provide proper ventilation.

Do not operate with suspected failures

If you suspect there is damage to this product, have it inspected by qualified service personnel.

There are no user serviceable parts

Return to dB Broadcast or an authorized distributor for repair/service.

Installation

On receipt of the unit, open the box and verify that the unit and all accessory items included.

Save the shipping carton and packing materials in case it becomes necessary to ship the unit to dB Broadcast for service or repair.

Installation

Before proceeding with product installation, please read the Safety section at the front of this manual.

Electrical Installation

The unit is designed to operate from a single-phase power source having one of its current-carrying conductors at or near earth ground (the neutral conductor). Only the line conductor is fused* for over-current protection.

Systems that have both current-carrying conductors live with respect to ground (such as phase-to-phase on multiphase systems) must not be used as power sources. A protective ground connection by way of the grounding conductor in the power cord is essential for safe operation.

The mains outlets intended to supply the unit should either be close to the unit and easily accessible to the user or the unit mains inlet should be easily accessible in the final installation.

Correct mains polarity must always be observed. Ensure all mains connections are connected correctly.

Fuse Rating: See Specification*

For continued protection against risk of fire, replace only with the same type and rating of fuse.

Pour ne pas compromettre la protection contre les risques d'incendie, remplacer par un fusible de même type et de mêmes caractéristiques nominales.

Installation within the UK

If supplied, the mains power lead for this unit is fitted with moulded connectors.

The mains plug may not suit local mains outlets, in which case the mains plug fuse should be removed and the mains plug cut off from the power lead and destroyed. This is in order to minimise any risk of shock from the exposed conductors, in the event of the discarded mains plug being inserted into a live socket.

The wires of the power lead are colour coded as follows:

BROWN	LIVE
BLUE	NEUTRAL
GREEN/YELLOW	EARTH

A suitable plug should be wired to the power lead as follows:

- Connect the BROWN wire to the terminal marked ‘L’ or coloured brown or red.
- Connect the BLUE wire to the terminal marked ‘N’ or coloured blue or black.
- Connect the GREEN/YELLOW wire to the terminal marked ‘E’ or ‘⏚’or coloured green and yellow or green.

The plug fitted should contain a 3 Amp fuse protecting the BROWN wire. Alternatively the distribution circuit supplying the plug must be protected by a fuse or circuit breaker of suitable rating. Ensure that the cord grip tightly clamps the power lead outer sheath.

This unit must be earthed.

Installation outside the UK

If the power lead supplied has a UK style moulded on mains plug (identified by the marking BS1363) the colour code of the wires within the lead is as follows:

BROWN	LIVE
BLUE	NEUTRAL
GREEN/YELLOW	EARTH

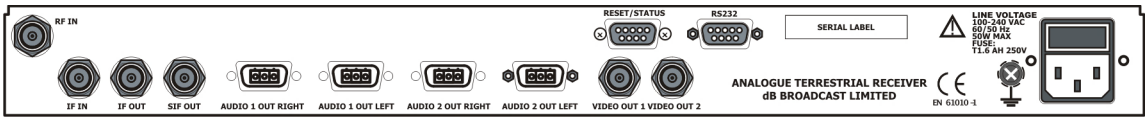
Ensure the relevant country wiring regulations are observed.

Mechanical Installation

This product requires no assembly and is designed to be installed in an industry standard 483mm (19-inch) rack. Allow at least 100mm clearance at the back of the product for cable connections. Ventilation slots on both sides of the product must be kept clear to allow free airflow.

Rear Panel Connectors

Most connections are available from the rear of the frame. A single 70Ω 6.35mm (¼") stereo headphone socket is provided at the front of the frame.



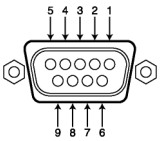
The connectors marked (optional) in the following table are for variants of the basic model.

Table 1: Connector Assignments

Connector	Connector signal
RF IN **75 Ω BNC**	Signal from an aerial/antenna or other RF source to be demodulated. Input frequency range: 45.25MHz to 863.25MHz. Signal level range: 48 to 80dBµV (0.2 to 10mVrms).
IF IN **(Optional) 50 Ω BNC**	This is a 38.9MHz vision carrier frequency input (all standards). The input has automatic gain control (AGC). Signal level range: –35dBm to -7dBm (4 to 100mVrms).
IF OUT **(Optional) 50 Ω BNC**	This is a 38.9MHz vision carrier frequency output (all standards). Output level: –10dBm (nominal for RF Input > 66dBµV).
SIF OUT 50Ω BNC	Standard dependent sound IF output. The primary sound carrier (S1) may be at 4.5MHz, 5.5MHz, 6.0MHz or 6.5MHz. A secondary sound carrier (S2) used for stereo or dual language mode may also be present. S1 output level: –9dBm (nominal for RF Input > 66dBµV).
RESET/STATUS **(Optional) 9-way D-type Connector (Female)**	The optional Reset/Status Port allows the Showman 1000 to be wired to a local monitoring system for status checks and alarms. See below for details.
RS232 **9-way D-type Connector (Female)**	Communications and Control port for local control and software upgrades.
VIDEO OUT 1&2 **75 Ω BNC Connectors**	Each provides a standard 1 volt colour composite video output.
AUDIO 1 and 2 OUT **3-way PSC Connectors**	Audio 1 and Audio 2 may be configured separately (via the Audio Options Menu) E.g. to give one stereo pair and one mono pair of outputs.
Mains Power Input & Fuse Holder	Accepts a standard IEC ac mains power lead. A mains input safety fuse is located within the Power Receptacle. Refer to the *Power* section of the *Specification* for replacement fuse details.
Ground Terminal	Screw Terminal. See previous Safety section.
Headphone socket **(Front Panel)**	70Ω 6.35mm (¼") stereo audio output on front panel.

Note: Always ensure all unused outputs are terminated to comply with CE emission requirements.

RS232 serial control port

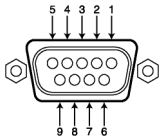


The RS232 serial port is provided for external local control and software upgrades.

Table 2: RS232 pinout

PIN	Signal
1	N/C
2	Transmit data (To PC)
3	Receive data (From PC)
4	N/C
5	Ground
6	N/C
7	CTS
8	RTS
9	N/C
Shell	Chassis ground

Reset/Status port



The Reset/Status port allows the Showman 1000 to be hardwired for local monitoring for status checking and, where necessary, to trigger an alarm or external reset.

Table 3: Reset/Status port pinout

PIN	Signal	Comments
1	Signal Ground	
2	Critical Alarm (Relay 1 common)	
3	Non-Critical Alarm (Relay 2 n/o)	Pins 3-8 Joined=Normal
4	Non-Critical Alarm (Relay 2 n/c)	Pins 4-8 Joined=Alarm
5	Reset Source (10Ω to ground)	Pins 5-9 Join to Reset
6	Critical Alarm (Relay 1 n/o)	Pins 6-2 Joined=Normal
7	Critical Alarm (Relay 1 n/c)	Pins 7-2 Joined=Alarm
8	Non-Critical Alarm (Relay 2 common)	
9	Reset Input (470Ω to +5V)	Pins 9-5. Join to reset
Shell	Chassis ground	Cable Shield

Monitoring is via two independent, isolated, sets of relay contacts that monitor critical and non-critical alarms, respectively.

Definition of critical and non-critical alarm:

Critical Alarm

A critical alarm indicates total power failure. In this state the Relay 1 is de-energised and Reset/Status port pins 2 and 7 are connected.

For *normal* operation, Relay 1 is energised and pins 2 and 6 are connected.

Non-critical Alarm

A non-critical alarm (see below) indicates a recoverable fault. In this state the Relay 2 is de-energised and Reset/Status port pins 8 and 4 are connected.

For *normal* operation, Relay 2 is energised and pins 8 and 3 are connected.

There are 6 possible non-critical alarms:

1. Self-test failure
2. Sync failure
3. Low RF level
4. High Nicam error rate
5. Temperature <+10ºC or >+70ºC
6. Power supply outside limits

Reset

To reset the unit, momentarily link pin 5 and pin 9 for >10mS.

Note: pin 9 is internally connected to a 470Ω ‘pull-up’ resistor to +5 volts.

Audio outputs – phase connections

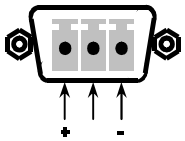


Table 4: PSC audio output pinout

PIN	Signal
1	Audio Positive Phase
2	Ground
3	Audio Negative Phase*

Note: Connect to 0V (Ground) for Un-Balanced

PSC Connector Details

The PSC-type rear panel mounted Audio Outputs connector (with male pins) is a 3-way, 3.5mm pitch, POWER-SUBCON type that has the outer geometry and screening capability of a 9-way D-SUB connector. The mating female plug may be a simple 3.5mm pitch MINI-COMBICON type (non-D-SUB profile), where positive cable retention is not deemed necessary. If cable retention is required, a POWER-SUBCON plug may be used. This can be fitted within a standard 9-way D-SUB housing, which has normal screw locking and cable retention facilities.

Connector Manufacturer: Phœnix Contact

Web Address: http://www.phoenixcontact.com

Table 5: PSC Connector Details

PART	Type Number	Comments
3-Way Mini-Combicon	MC 1,5/3-ST-3,5	No cable retention possible
3-Way Power-Subcon	PSC 1,5/3-F	Retention possible with housing.
Cable Housing	SCT-D-SUB 9-KG	Use with 3-Way POWER-SUBCON

Getting Started

This section provides a functional check and basic operation guide. It can also be used to learn how to use the control interface and check for correct operation.

Using the front control panel

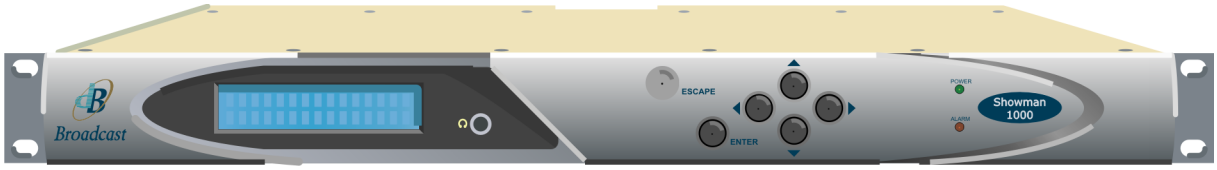


Figure 2: Front Panel

LCD Panel

A two-line, 20-character, liquid crystal display with backlight is used to present unit configuration and status information. Characters are in white on a blue background. The contrast is menu adjustable.

Cursor Keys

The Cursor Keys are used to navigate around display items or to change menu settings. The Cursor Keys are represented in this manual by the symbols ◄ ► ▲ ▼.

ENTER Key

Use the enter key to access the menu system or accept configuration changes.

ESCAPE Key

Use the escape key to exit the menu system or cancel configuration changes.

POWER LED

A green LED to indicate that the unit is powered.

ALARM LED

A red LED to indicate that the unit has detected a fault condition.

Headphone Output

70Ω 6.35mm (¼") standard stereo headphone jack socket.

In this manual, the cursor key symbols ◄, ►, ▲ or ▼ along with <ENTER> and <ESCAPE>, indicates a single press (unless otherwise indicated) of the corresponding front panel keys.

To use the Showman 1000 for the first time or check basic operation, proceed as follows:

1. **Applying mains power**

Note: There is no power on/off switch.

Connect (100 to 240VAC, 50/60Hz) at the IEC input of the unit. The two-line LCD panel will illuminate and display an RF (IF) LEVEL bar graph (top line) and the currently tuned channel number and/or frequency (bottom line).

Note: This Top-Level Menu page is referred to in this manual as DEFAULT.

Tip: Press the <ESCAPE> key repeatedly to return the LCD to DEFAULT.

2. **Using the RF Input**

The RF Input has 75Ω nominal impedance. All connectors, co-axial cables, aerial/antennas or signal generators should be 75Ω. Apply an analogue television RF signal of between 46 and 80dBµV (0.2 and 10mVrms) to the RF IN connector.

Note: The T.V. standard and frequency/channel of the RF signal must Showman 1000 settings.

3. **Setting or checking the TV Standard**

- From DEFAULT (See item 1 above) press ► ►
- The T.V. Standard can now be viewed
- Press <ESCAPE> to return to DEFAULT

To change TV standard:

- From DEFAULT press: <ENTER> <ENTER> ▲ <ENTER>
- Press ▲ or ▼ to select the required standard
- Press <ENTER> to accept or <ESCAPE> to reject the selection
- Press <ESCAPE> again to return to DEFAULT

Note: For most standards, there are several *Channel Plans*, depending on region, country or frequency band (VHF or UHF).

To change channel:

- From DEFAULT press: <ENTER> <ENTER> <ENTER>.
- Press ▲ or ▼ to select the required channel.
- Press <ENTER> to accept or <ESCAPE> to reject the selection.
- Press <ESCAPE> again to return to DEFAULT.

To change frequency:

- From DEFAULT press: <ENTER> <ENTER> ▼ <ENTER>
- Press ◄ or ► to highlight the frequency digits to be adjusted
- Press ▲ or ▼ to adjust to the required value

- Press <ENTER> to accept or <ESCAPE> to reject the selection
- Press <ESCAPE> again to return to DEFAULT

When Showman 1000 is correctly tuned, between five and nine segments of the RF LEVEL bar graph should be solid.

4. **Using the optional IF Input**

The IF Input has 50Ω nominal impedance. All connectors, co-axial cables and signal generators should be 50Ω. Apply a -35 to -7dBm (4 to 100mVrms) 38.9MHz video signal to the IF IN connector.

To select IF input:

- From DEFAULT press: <ENTER> ▼ ▼ <ENTER> <ENTER>

Note: The LCD must show Input Source/RF Input for the option to be available, otherwise press <ESCAPE> twice to return to DEFAULT.

- If RF Input is displayed press ▲ or ▼ to select IF Input.
- Press <ENTER> to accept or <ESCAPE> to reject the selection.
- Press <ESCAPE> again to return to DEFAULT.

With the above I.F. signal applied, between five and ten segments of the IF LEVEL bar graph should be solid.

Note: For information on how to change other settings, refer to the Operation chapter.

5. **Top-Level Monitoring**

Repeat pressing of ► will step the LCD through the following “Top-Level” monitoring pages:

System Alarms: One or more of the following 3 letter codes may be displayed:

TST = Self test fail

SYN = Sync fail

LEV = Low signal level

NIC = Nicam error rate fail

TMP = Temperature <+10ºC or >+70ºC

PSU = Power supply outside limits

Standard: Indicates the television TV standard to which Showman 1000 is set and the detection or validity of any incoming sound carriers (S1 and S2).

- S1 “Yes” indicates that a primary FM or AM carrier is detected.
- S2 “Yes” indicates that a valid secondary FM or Nicam carrier for Stereo or Dual Language/SAP operation is detected.
- S2 “No” indicates that a second FM or Nicam carrier is either absent, not valid or is set to mono.

Note: the TV standard has to be set manually.

- **Audio Detected.** This page automatically shows the type of broadcast signal received, i.e. Mono, Dual Language, Stereo or SAP (Second Audio Program – M/N Standard only).
- **Audio 1 Quasi-Peak Detectors**. Twin bar graphs give a visual indication of audio activity on the left (L) and right (R) hand Audio 1 Outputs. Any solid segments of the bar graph indicate the presence of audio.
- **Audio 2 Quasi-Peak Detectors.** As for Audio 1 above but indicating audio activity on the Audio 2 Outputs.
- **Nicam BER**. This page is only valid for Nicam operation and indicates the Nicam Bit Error Rate (BER). A BER threshold can be set (see Nicam Alarm Set in the Configuration Options Menu section of the Operation chapter) to trigger the front panel ALARM LED or for remote alarm monitoring.
- **Serial No**. This page displays the unit's serial number, firmware number and firmware version
- Press <ESCAPE> to return to DEFAULT

6. **Video Monitoring:** Connect Video Out 1 or Video Out 2 to an analogue video picture or waveform monitor. Ensure that the monitor terminates the signal in 75Ω. Check for a correct video display.

7. **Audio Monitoring:** Connect a stereo audio monitoring system to either the Audio 1 or Audio 2 output pair.

   Note: These 3-pin audio output pairs supply electronically balanced, low impedance, line level signals designed to feed into 600Ω or higher impedance loads. Viewing these connectors from the rear of the unit, the left and right hand outer pins are, respectively, the + and – phase of the balanced audio signals. The centre pin of each connector is at ground potential. If unbalanced operation is required, then the – phase should be linked to the ground pin. Audio levels and output preferences can be adjusted via front panel menu options. (See the Operation chapter).

8. **IF Output Monitoring:** (Option) Connect a 50Ω terminated spectrum analyzer to the IF OUT connector. Peak power at 38.9MHz should be about –7dBm. Using a 100MHz oscilloscope terminated in 50Ω, sync tips should measure about 300mVP-P (excluding any sound carrier).

9. **SIF Output Monitoring:** Connect a 50Ω terminated spectrum analyzer to the SIF OUT connector. Typical power at 6.0MHz (PAL I Standard, FM carrier only) should be approximately -9dBm. Using a 100MHz oscilloscope terminated in 50Ω, the 6MHz waveform should measure about 230mVP-P.

10. **Headphones:** From DEFAULT, insert a standard 6.35mm (1/4") stereo headphone jack-plug into the front panel headphone socket to switch the LCD to a Headphone Volume setting mode.

    - Press ▲ or ▼ to adjust the volume. (It is not necessary to press <ENTER> to store the volume setting).

- Press <ESCAPE> to go to the Headphone Options menu.
- Press ▲ to select the Headphone Options/Audio Source menu.
- Press <ENTER> to select Audio Source.
- Press ▲ or ▼ to select between monitoring Audio 1 or Audio 2.
- Press <ENTER> to accept or <ESCAPE> to reject the selection.
- Press <ESCAPE> again to return to DEFAULT.
- Alternatively access the Headphone Options menu as follows: From DEFAULT: Press <ENTER> ▲ ▲.

Operation

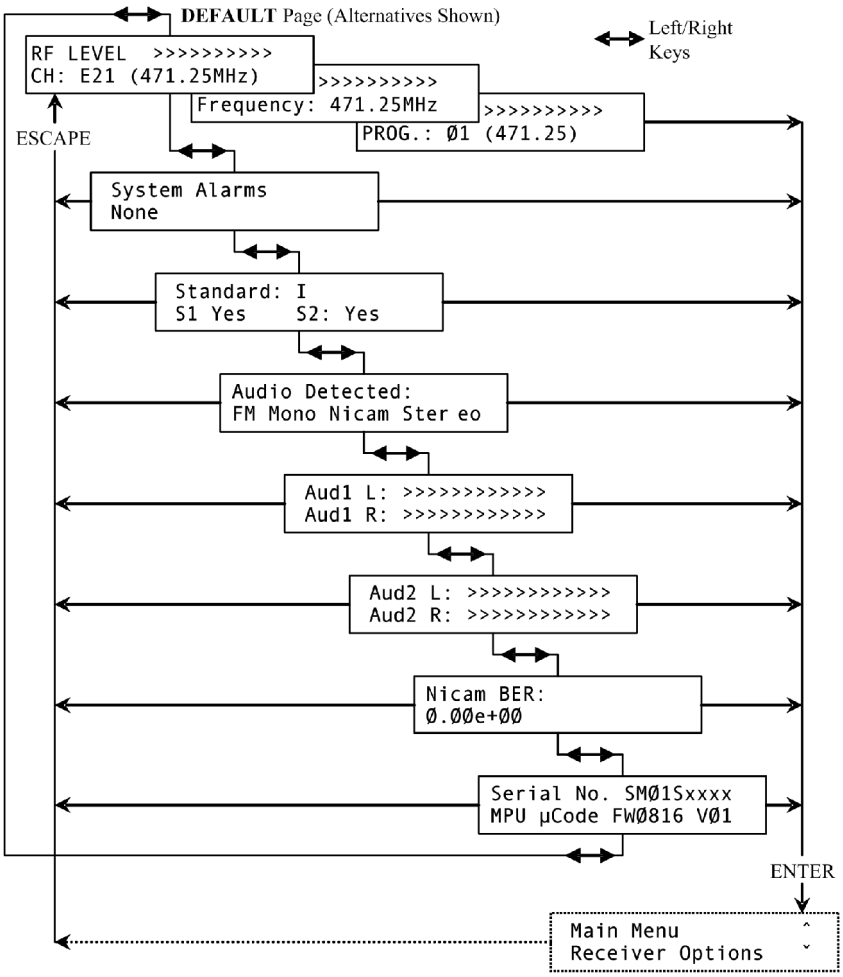
This section describes the menu structure of the Showman 1000 Multi-Standard Demodulator and provides operation and configuration information. Refer to the Getting Started Guide for basic operation or to find help with using the unit for the first time.

There are several user configurable settings stored in non-volatile memory which can be adjusted either from the front panel or via the RS232 remote control interface.

Top-Level Monitoring

The default Top-Level Monitoring mode is entered immediately following power-up.

Figure 3: The DEFAULT Top-Level Monitoring menu



This is one of a number of LCD pages obtained by pressing the ◄ or ► keys (before the ENTER key is first pressed).

Default Page. The default power-up menu page, *Top Level Monitoring*, shows either RF (or IF) LEVEL in the form of a horizontal bar graph. The bar graph symbols are hollow, when no RF (IF) input signal is present, but progressively fill from the left, as signal strength is increased. Below the bar graph is displayed, variously, Channel Number, Frequency or Program Number.

This page is referred to, in the rest of this manual, as the **DEFAULT** Page. It may always be reached by repeated pressing of the <ESCAPE> key.

System Alarms. One or more of the following 3 letter codes may be displayed:

TST = Self-test failure

SYN = Sync failure

LEV = Low RF level

NIC = High Nicam error rate

TMP = Temperature <+10ºC or >+70ºC

PSU = Power supply outside limits

Standard. This displays the TV standard to which Showman 1000 is set. If necessary it must be changed manually by selecting a Channel Table suitable for the region of operation (see below). Also displayed are S1 and S2, which give the status of any sound carriers detected.

S1 Yes indicates that the primary FM or AM carrier is detected

S2 Yes indicates that a valid secondary FM or Nicam carrier for Stereo or Dual Language/SAP operation is detected

S2 No indicates that a second FM or Nicam carrier may or may not be present but it is not valid or is set to mono

Audio Detected. This page automatically shows the type of broadcast signal received, i.e. Mono, Dual Language, Stereo or SAP (Second Audio Program – M/N Standard only).

Audio Quasi-Peak Detectors. Two pages of twin bar-graphs provide a visual indication of activity on the Audio 1 and Audio 2 outputs.

Nicam BER. This page is only valid for Nicam operation and indicates the Nicam Bit Error Rate. A BER threshold can be set (see Nicam Alarm Set in the Configuration Options Menu section of the Operation chapter) to trigger the front panel ALARM LED or for remote alarm monitoring.

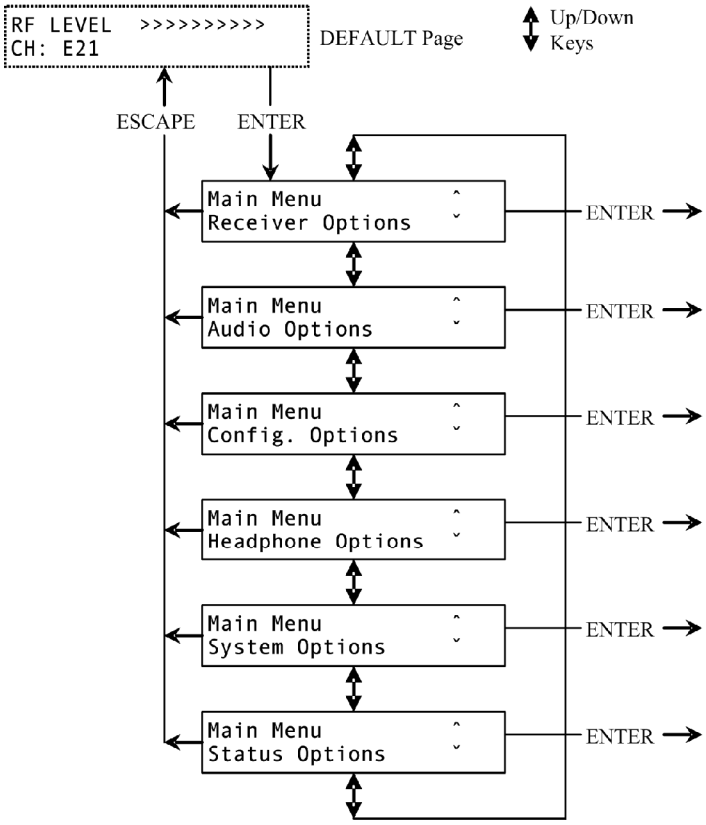
Serial No. This page displays the unit's serial number, firmware number and firmware version.

Note: Press the <ESCAPE> key from any of the above Top-Level Monitoring Menu items to recall the DEFAULT Page.

Main Menus

The Main Menu provides access to various Options menus detailed below.

Figure 4: Main Menus



Note: Some menu items may not be available on certain Showman 1000 variants.

To access the Main Menu:

Press <ENTER> when at DEFAULT or at any Top-Level Monitoring page

Press ▲ or ▼ to select the required Options menu

Press <ENTER> to select the chosen Options Menu or press <ESCAPE> to exit the Main Menu and return to DEFAULT

Receiver Options Menu

Use this menu to find out how to:

- Select a Channel Table for the country or region of operation
- Configure a User Defined Table
- Operate Channel Autosearch
- Select a Channel Number or Frequency
- Use 99-location Program memory (Load, Store or Delete Programs)

Figure 5: Receiver Options menu

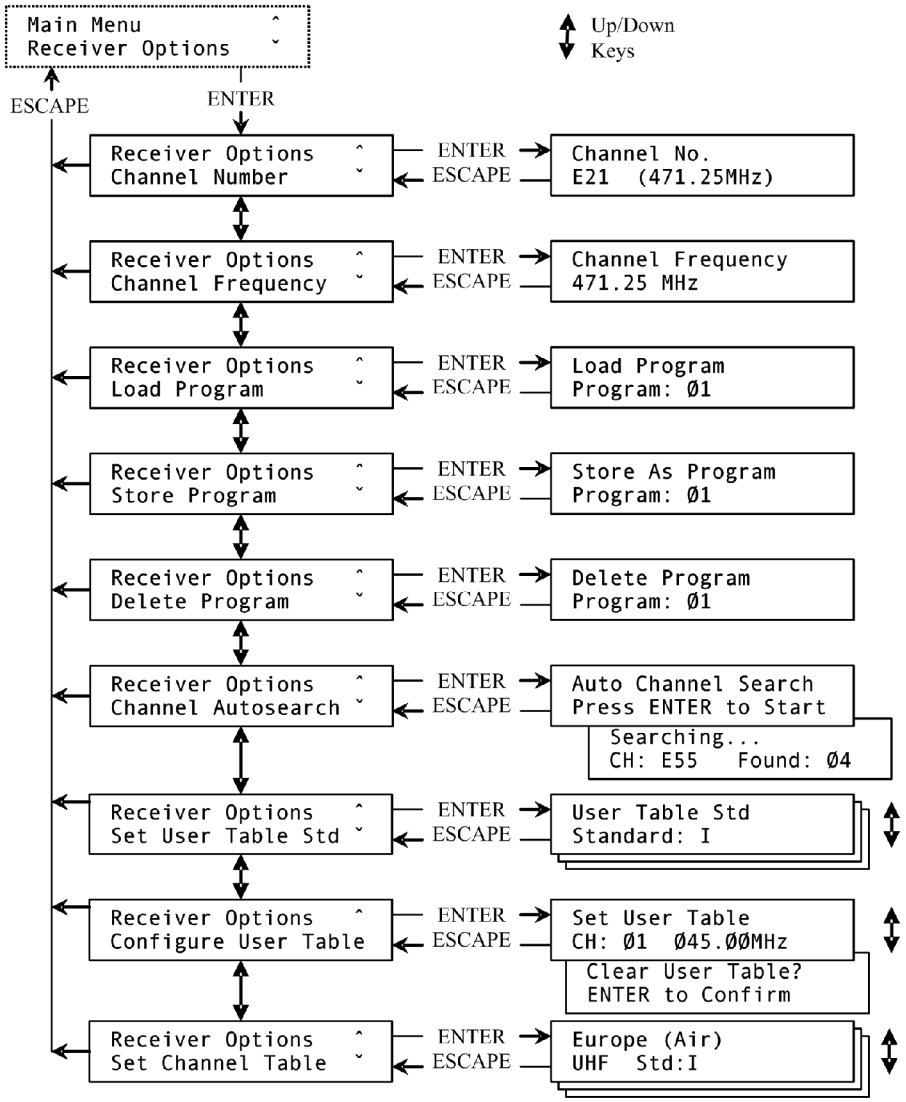
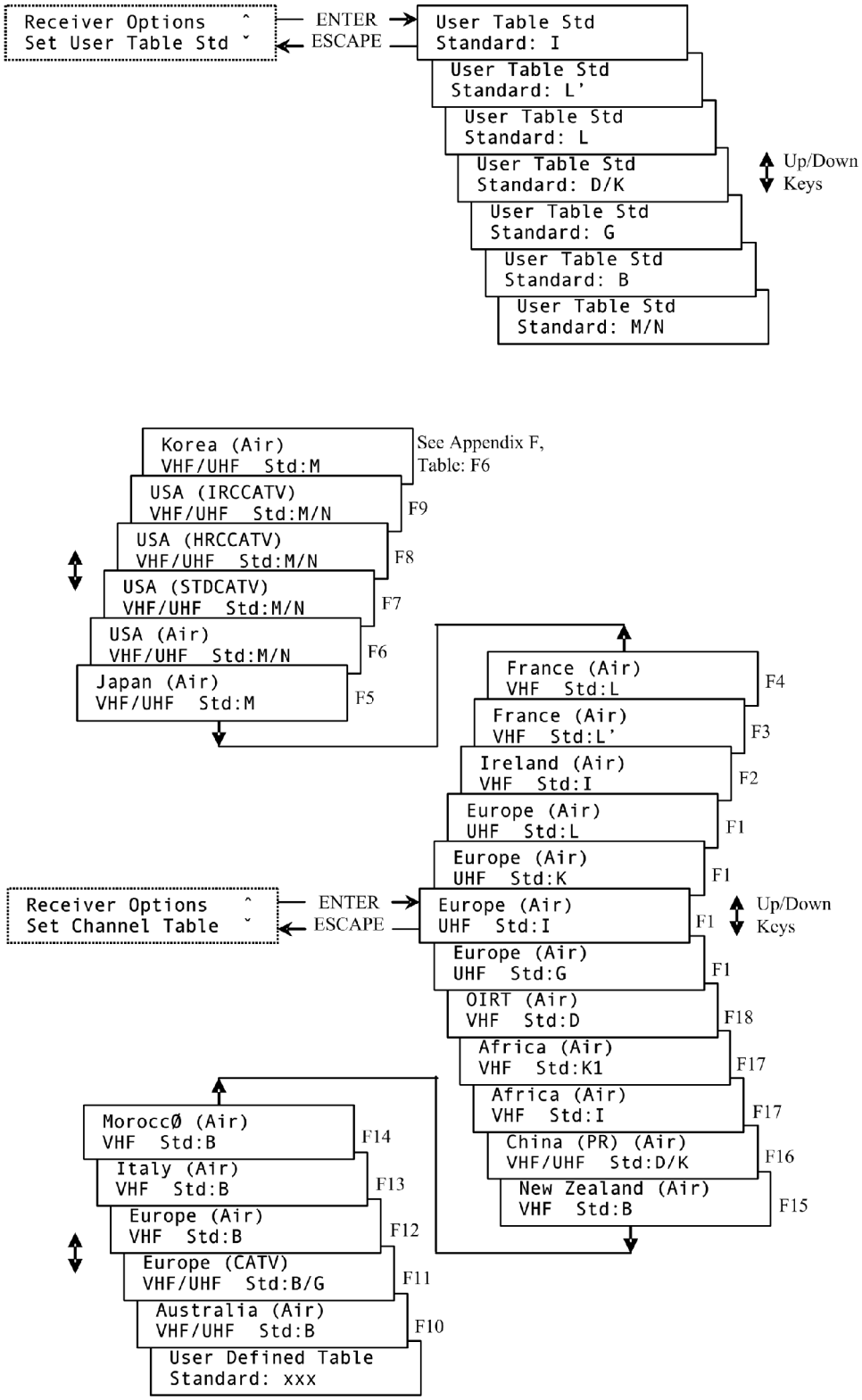


Figure 6: Receiver Options sub-menus



These *Receiver Option* menus follow on from the *Set User Table Std* menu and the *Set Channel Table* menu.

Selecting a Channel Table

To function correctly the unit must first be set to match the TV Standard for the region in which it is to operate. This is achieved either by selecting one of the pre-installed Channel Tables or by manually configuring a User Defined Table.

From DEFAULT:

Press <ENTER> < ENTER> ▲ <ENTER>.

The LCD should display the Current Channel Table (Factory default: Europe (Air) UHF Standard I).

Press ▲ or ▼ to select the required Channel Table or to select the User Defined Table (See below).

Press <ENTER> to accept the selection or <ESCAPE> to reject.

Press <ESCAPE> <ESCAPE> to return to DEFAULT.

User Defined Table

A User Defined Table may be created using the following two-part procedure. First assign a frequency to each Channel Number and then assign a TV Standard to the whole table.

Note: The whole table must be on a common TV Standard.

Setting Channels

From DEFAULT:

Press <ENTER> <ENTER> ▲ ▲ <ENTER>.

On LCD view Set User Table with a flashing Channel (CH) Number.

Press ▲ or ▼ to select to the required channel number.

WARNING: Pressing ▼ from CH: 01 will display the prompt: Clear User Table?

Only press <ENTER> IF YOU WANT TO COMPLETELY DELETE A PRE-CONFIGURED USER TABLE. All User Table channels will be then set to the default frequency of 045.25MHz.

After selecting the Channel Number to be configured:

Press ► to highlight the most significant frequency digit to be adjusted.

Press ▲ or ▼ to set the first digit to the required value.

Press ► to highlight the next most significant frequency digit and adjust as before. Proceed in this manner until all digits are set as required. Note that after the decimal point only 0.25MHz setting increments are possible.

Press <ENTER> to store any change.

If **ENTER** is pressed, the display will advance to the next Channel Number where the above process may be repeated.

After the final channel has been set:

Press <ENTER> to store.

Press <ESCAPE> <ESCAPE> <ESCAPE> to return to DEFAULT.

Setting Standard:

From DEFAULT:

Press <ENTER> <ENTER> ▲ ▲ ▲ <ENTER>.

The LCD should display User Table Standard (Factory default: Standard I).

Press ▲ or ▼ to select the required Standard.

Press <ENTER> to accept or <ESCAPE> to reject the selection.

Press <ESCAPE> <ESCAPE> to return to DEFAULT.

After the Channels and Standard have been set, the User Defined Table must be selected- See Selecting a Pre-Installed Channel Table above.

Channel Autosearch

Channel Auto-Search is a quick way to store the active analogue T.V. channels present at the RF Input of Showman 1000 and present them as a series of Programs, available for quick selection from DEFAULT.

The Auto-Search feature should only be used once the correct Channel Table has been selected (See above).

From DEFAULT:

Press <ENTER> <ENTER> ▲ ▲ ▲ ▲ <ENTER>.

The LCD should display Auto Channel Search.

Press <ENTER> to start the search.

The LCD should display Searching… along with a count showing the progress of the search through the current Channel Table.

The LCD will also display Found: XX where XX is a count showing the number of active channels found and stored as a series of Program numbers.

At the end of the search:

Press ▲ ▲ ▲ to display Receiver Options/Load Program.

Press <ENTER> <ENTER> to load the program.

Press <ESCAPE> <ESCAPE> to return to DEFAULT.

The bottom line of the DEFAULT screen should now display a Program and Channel number. To change Program simply press ▲ or ▼.

Change Channel

From DEFAULT:

Press <ENTER> <ENTER> <ENTER>.

Press ▲ or ▼ to select the required channel.

Press <ENTER> to accept or <ESCAPE> to reject the selection.

Press <ESCAPE> again to return to DEFAULT.

Change Frequency

From DEFAULT:

Press <ENTER> <ENTER> ▼ <ENTER>.

Press ◄ or ► to highlight the frequency digits to be adjusted.

Press ▲ or ▼ to adjust to the required value.

Press <ENTER> to accept or <ESCAPE> to reject the selection.

Press <ESCAPE> again to return to DEFAULT.

Program - Store

It was shown above, in Channel Auto-Search, how Programs could be accessed directly from the DEFAULT page. Individual programs may also be stored with Channels or Frequencies from a mix of TV Standards.

To create a program for a Channel/Frequency from any TV Standard: Set the Showman 1000 to the desired Standard and Channel/Frequency (See above).

Press <ENTER> <ENTER> ▼ ▼ ▼ <ENTER>.

Press ▲ or ▼ to select the required Program Number.

Press <ENTER> to accept or <ESCAPE> to reject the selection.

Press <ESCAPE> <ESCAPE> to return to DEFAULT.

Program - Delete

Any stored Programs, no longer required, may be deleted as follows:

From DEFAULT:

Press <ENTER> <ENTER> ▼ ▼ ▼ ▼ <ENTER>.

Press ▲ or ▼ to select the required Program Number for deletion.

Press <ENTER> to accept or <ESCAPE> to reject the selection.

Press <ESCAPE> <ESCAPE> <ESCAPE> to return to DEFAULT.

Programs - Load

Access to Stored Programs, via the DEFAULT page, will be temporarily lost if the Channel Number or Channel Frequency is changed via the Receiver Options menu.

The Stored Programs can be recalled to the DEFAULT page as follows:

From DEFAULT:

Press <ENTER> <ENTER> ▼ ▼ <ENTER>.

Press <ENTER> to load all stored programs or <ESCAPE> to cancel.

(Ignore any individual program displayed for loading).

Press <ESCAPE> <ESCAPE> to return to DEFAULT.

The bottom line of the DEFAULT screen should now display a Program and Channel number. To change Program simply press ▲ or ▼.

Audio Options Menu

Showman 1000 is capable of demodulating most of the world's broadcast TV stereo audio standards. These include Nicam, FM Stereo (also known as A2, Two-Tone/Zweiton), BTSC and EIA-J.

Figure 7: Audio Options menu – Excluding BTSC

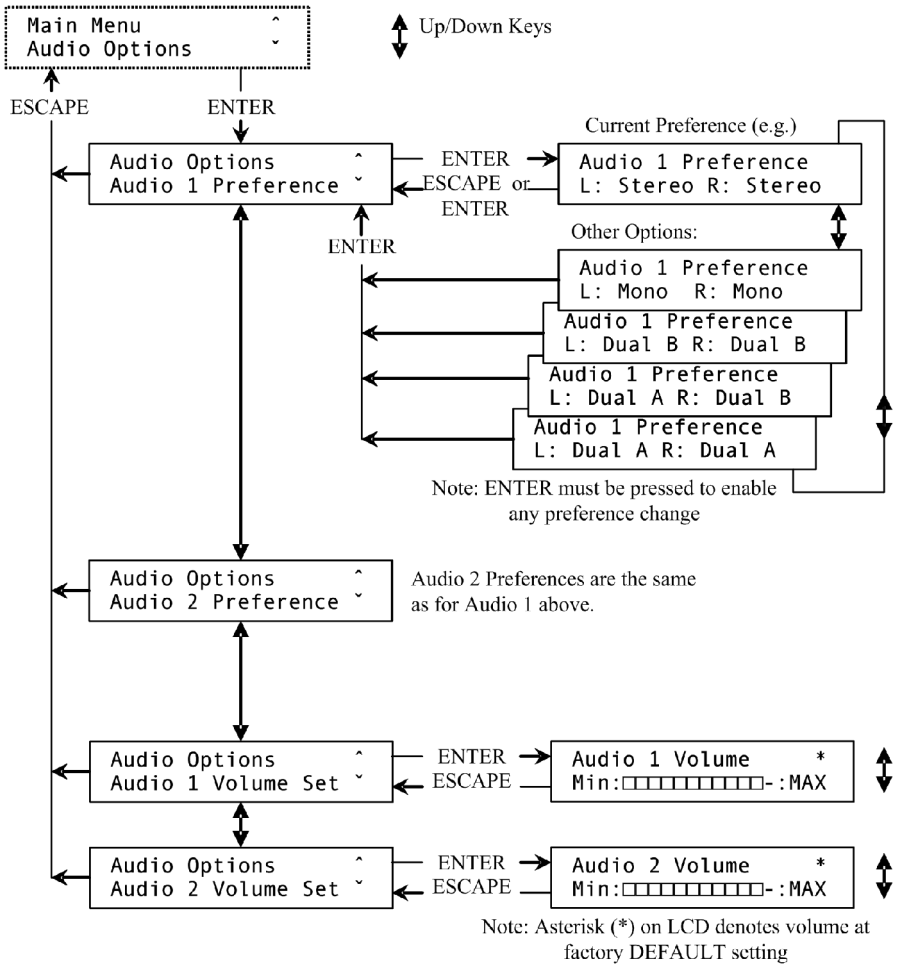


Figure 8: Audio Options menu – BTSC (P-Variant)

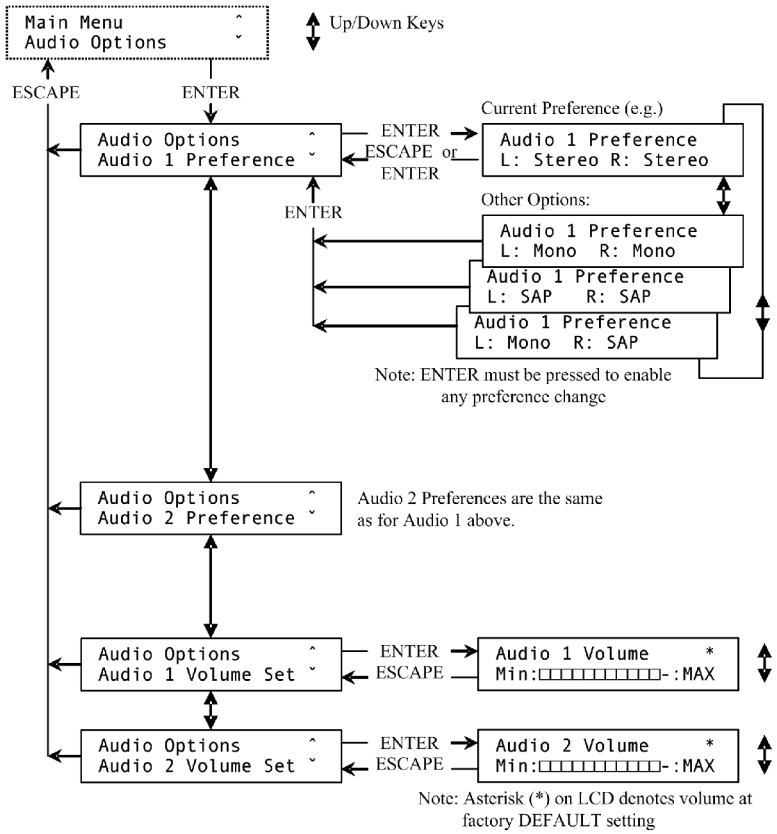
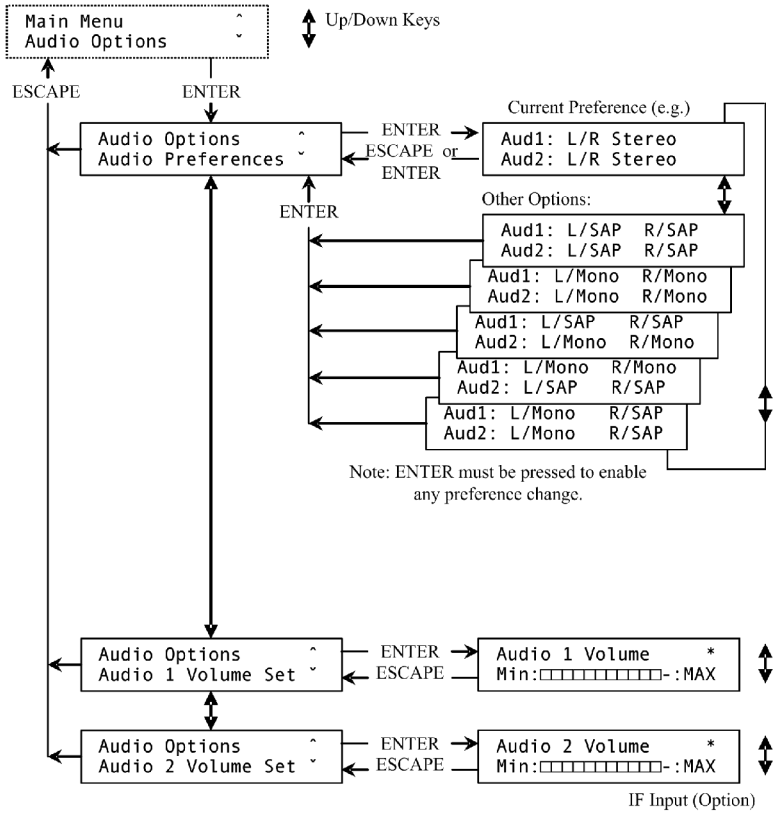


Figure 9: Audio Options menu – BTSC (S-Variant)



There are four Audio Output connectors, grouped into two pairs – Audio 1 (Left and Right) and Audio 2 (Left and Right). Separate menus control Audio Preference and Audio Volume for each pair. Audio Preferences control the routing audio between the audio decoder stages and the Audio Outputs.

For example, if Nicam stereo and FM mono are being decoded, then the Audio Preference menus could set **Audio 1** to carry the stereo signal and **Audio 2**, the mono signal. If *Dual Languages* are being broadcast and **Audio 2 Preference** is set to L: Stereo R: Stereo, then *Language A* will appear on Audio 2 Left output and Language B on Audio 2 Right output.

However preference could be set such that only *Dual A* or only *Dual B* appears on both left and right Audio 2 outputs. Stereo broadcasts would be unaffected by the Dual preference setting. Audio Preferences are only preferences - the actual outputs will depend upon what is being broadcast.

The factory default Audio Volume setting (indicated by an * in the top right-hand corner of the Audio Volume menu display) is set to give approximately 0dB gain between transmitter audio input and the Showman 1000 audio output. The output level provided may not suit all operators, in which case the Audio Volume menu may be used to set and store other levels.

Audio 1 Preference

From DEFAULT:

Press <ENTER> ▼ <ENTER> <ENTER> to view the current Audio 1 Preference.

Press ▲ or ▼, to view or select another preference.

Press <ENTER> to accept or <ESCAPE> to reject the selection.

Audio 2 Preference

From DEFAULT:

Press <ENTER> ▼ <ENTER> ▼ <ENTER> to view the current Audio 2 Preference.

Press ▲ or ▼, to view or select another preference.

Press <ENTER> to accept or <ESCAPE> to reject the selection.

Note: The Audio Preference choice differs between Showman 1000 variants and is also TV Standard dependant.

Audio 1 Volume Set

From DEFAULT:

Press <ENTER> ▼ <ENTER> ▼ ▼ <ENTER> to view the current Audio 1 Volume setting.

Press ▲ or ▼ to raise or lower the volume.

Press <ENTER> to accept or <ESCAPE> to reject the selection.

Audio 2 Volume Set

From DEFAULT:

Press <ENTER> ▼ <ENTER> ▲ <ENTER> to view the current Audio 2 Volume setting.

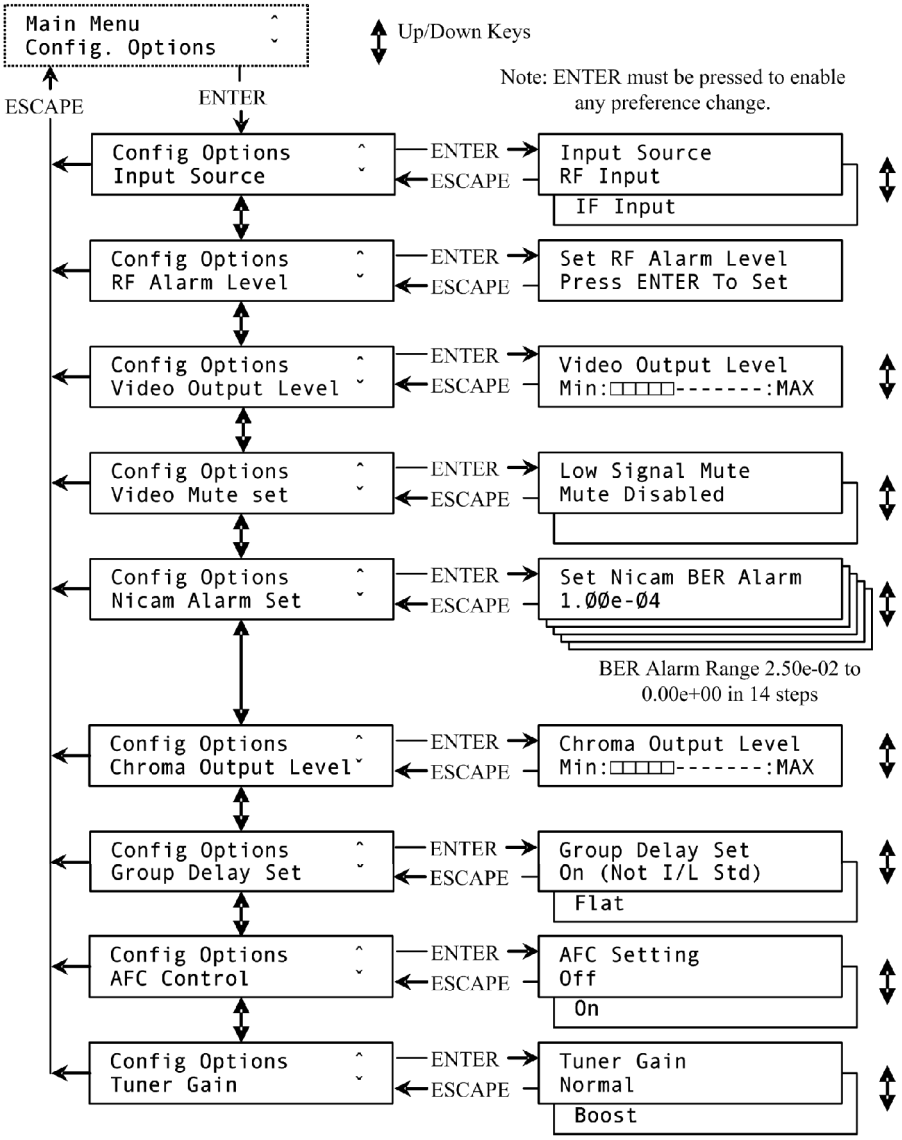
Press ▲ or ▼ to raise or lower the volume.

Press <ENTER> to accept or <ESCAPE> to reject the selection.

Configuration Options Menu

This menu is for configuring ancillary functions within Showman 1000. Some options may not be available on certain Showman 1000 variants.

Figure 10: Configurations Options menu



To enter the Configuration (Config.) Options menu from DEFAULT:

Press <ENTER> ▼ ▼ <ENTER>

Pressing ▲ or ▼ will cycle the display through some or all of the following Configuration Option items:

Input Source

The choice is between RF and IF Input.

From Config. Options - Input Source:

Press <ENTER>

Press ▲ or ▼ to select IF or RF Input.

Press <ENTER> to accept or <ESCAPE> to reject the selection.

Press <ESCAPE> again to return to DEFAULT.

RF Alarm Level

Apply an RF Input at the required RF Alarm trip threshold level.

From the Config. Options - RF Alarm Level:

Press <ENTER> <ENTER> to Set the RF Alarm Level.

Press <ESCAPE> <ESCAPE> to return to DEFAULT.

Video Output Level

The video output level is factory set to provide a nominal value of 700mV (100IRE for M/N Standard) when terminated in 75Ω. This may be adjusted via the Configuration Option - Video Output Level menu.

WARNING: Adjusting the Video Output Level affects all Channels and Standards.

From Config. Options - Video Output Level:

Press <ENTER>

Press ▲ or ▼ to adjust the Video Output Level.

Press <ENTER> to accept or <ESCAPE> to reject the selection.

Press <ESCAPE> <ESCAPE> to return to DEFAULT.

Video Mute Set

When Video Mute Set is enabled, a check is made for Showman 1000 synchronisation with the incoming RF signal. Where none is detected, then the video output is muted. The Video Mute Set factory default is Mute Disabled.

From Config. Options - Video Mute Set:

Press <ENTER>

Press ▲ or ▼ to select Mute Enabled or Mute Disabled as required.

Press <ENTER> to accept or <ESCAPE> to reject the selection.

Press <ESCAPE> <ESCAPE> to return to DEFAULT.

Nicam Alarm Set

The Nicam Alarm menu sets a BER (Bit Error Rate) threshold, above which an alarm is triggered and the Nicam audio is muted.

From Config. Options – Nicam Alarm Set:

Press <ENTER>

Press ▲ or ▼ to select the BER threshold required.

Press <ENTER> to accept or <ESCAPE> to reject the selection.

Press <ESCAPE> <ESCAPE> to return to DEFAULT.

Chroma Output Level

The amplitude of the colour burst signal on the video output is factory set to provide a nominal value of 300mV (or 40IRE for M/N Standard) when terminated in 75Ω. This may be adjusted via the Configuration Option - Chroma Output Level menu.

WARNING: Adjusting the Chroma Output Level affects all Channels and Standards.

From Config. Options - Chroma Output Level:

Press <ENTER>

Press ▲ or ▼ to adjust the Chroma Output Level.

Press <ENTER> to accept or <ESCAPE> to reject the selection.

Press <ESCAPE> <ESCAPE> to return to DEFAULT.

Group Delay Set

The group delay characteristic of the Showman 1000 Demodulator is pre-determined, according to the selected TV standard. However it is possible to set the group delay response to nominally flat, if required, for example when measuring transmitter performance.
Note: The group delay response for Standards I and L is nominally flat.

From Config. Options – Group Delay Set:

Press <ENTER>

Press ▲ or ▼ to select Flat or On (Not I/L Standard) as required.

Press <ENTER> to accept or <ESCAPE> to reject the selection.

Press <ESCAPE> <ESCAPE> to return to DEFAULT.

AFC Control

Showman 1000 frequency tuning is in accurate 0.25MHz increments. This is normally sufficient for tuning into terrestrial or cable broadcast TV transmissions. Automatic Frequency Control (AFC) is a means for automatically tuning into “off standard” frequencies to within a resolution of ±50kHz. AFC should normally be set to the factory default of Off.

From Config. Options – AFC Control:

Press <ENTER>

Press ▲ or ▼ to select AFC On or Off as required.

Press <ENTER> to accept or <ESCAPE> to reject the selection.

Press <ESCAPE> <ESCAPE> to return to DEFAULT.

Tuner Gain

This function may be set to Normal or Boost. In Boost mode, the tuner, at the expense of some IF filtering, provides extra IF gain. This mode is intended only for use in situations where the signal is very weak and no strong adjacent signals are present. It should not be used in “normal” signal strength areas.

From Config. Options – Tuner Gain:

Press <ENTER>

Press ▲ or ▼ to select Normal or Boost as required.

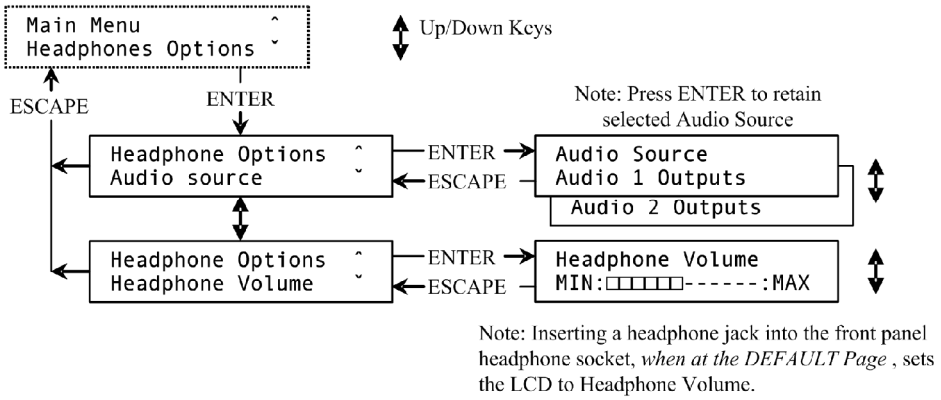
Press <ENTER> to accept or <ESCAPE> to reject the selection.

Press <ESCAPE> <ESCAPE> to return to DEFAULT.

Headphones Options Menu

A standard 6.35mm (¼") stereo headphone jack-socket is provided on the front panel of Showman 1000. If a pair of stereo headphones, with a standard jack-plug is inserted into the jack-socket (when the unit is powered and at DEFAULT) the LCD will automatically change to show Headphone Volume, which may be adjusted by pressing ▲ or ▼ as required. (This Headphone Volume display may also be reached via the menu system as described below). Headphones monitor either Audio 1 or Audio 2 outputs, the selection being made via the Audio Source menu.

Figure 11: Headphones Options



Audio Source (Headphones)

From DEFAULT:

Press <ENTER> ▼ ▼ ▼ <ENTER> <ENTER>

Press ▲ or ▼ to select Audio 1 or Audio 2 for headphone monitoring.

Press <ENTER> to accept or <ESCAPE> to reject the selection.

Press <ESCAPE> <ESCAPE> to return to DEFAULT.

Headphone Volume

From DEFAULT:

Press <ENTER> ▼ ▼ ▼ <ENTER> ▼ <ENTER>

Press ▲ or ▼ to raise or lower the Headphone Volume.

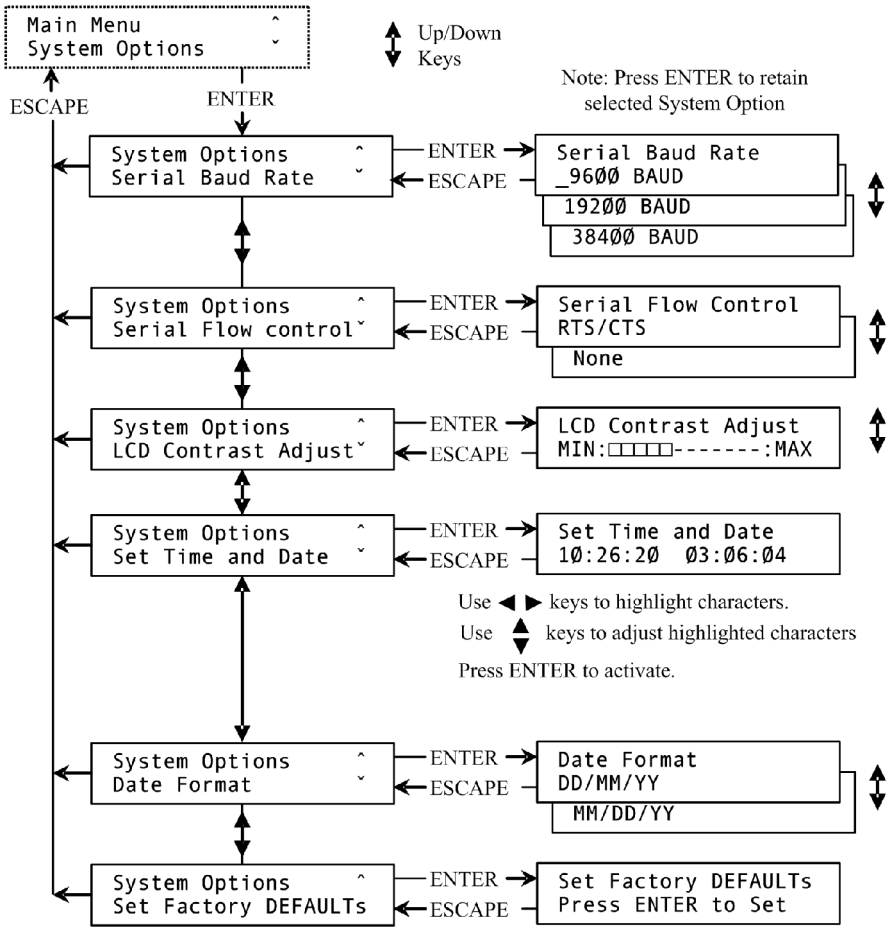
Press <ESCAPE> <ESCAPE> <ESCAPE> to return to DEFAULT.

System Options Menu

The System Options menu deals with communication set-ups, LCD contrast adjustment, Real-Time Clock set-ups and the setting of Factory defaults.

Some options are not available on certain Showman 1000 variants.

Figure 12: System Options menu



To enter the System Options menu from DEFAULT:

Press <ENTER> ▼ ▼ ▼ ▼ <ENTER>

Press ▲ or ▼ to cycle the display through some or all of the following System Option items:

Serial Baud Rate

From System Options – Serial Baud Rate:

Press <ENTER>

Press ▲ or ▼ to select desired BAUD rate.

Press <ENTER> to accept or <ESCAPE> to reject the selection.

Press <ESCAPE> <ESCAPE> to return to DEFAULT.

Serial Flow Control

From System Options – Serial Flow Control:

Press <ENTER>

Press ▲ or ▼ to select RTS/CTS or None

Press <ENTER> to accept or <ESCAPE> to reject the selection.

Press <ESCAPE> <ESCAPE> to return to DEFAULT.

LCD Contrast Adjust

From System Options – LCD Contrast Adjust:

Press <ENTER>

Press ▲ or ▼ to obtain optimum contrast.

Press <ENTER> to accept or <ESCAPE> to reject the selection.

Press <ESCAPE> <ESCAPE> to return to DEFAULT.

Set Time and Date

From System Options – Set Time and Date:

Press <ENTER>

Press ◄ or ► to highlight the time or date digits to be adjusted.

Press ▲ or ▼ to adjust the digit values.

Press <ENTER> to accept the settings and start the clock or <ESCAPE> to reject the selection.

Press <ESCAPE> <ESCAPE> to return to DEFAULT.

Date Format

From System Options – Date Format:

Press <ENTER>

Press ▲ or ▼ to select DD/MM/YY or MM/DD/YY format

Press <ENTER> to accept or <ESCAPE> to reject the selection.

Press <ESCAPE> <ESCAPE> to return to DEFAULT.

Set Factory Defaults

WARNING: THE SETTING OF FACTORY DEFAULTS MAY RESULT IN THE UNIT NOT OPERATING AS INTENDED.

See System defaults, Table 14: System default settingsfor details of the functions that are reset and their default values.

From System Options – Set Factory Defaults:

Press <ENTER> to display: Set Factory Defaults – Press ENTER to Set.

IF YOU ARE SURE THAT YOU WISH TO SET FACTORY DEFAULT:

Press <ENTER>, otherwise press <ESCAPE> to abort.

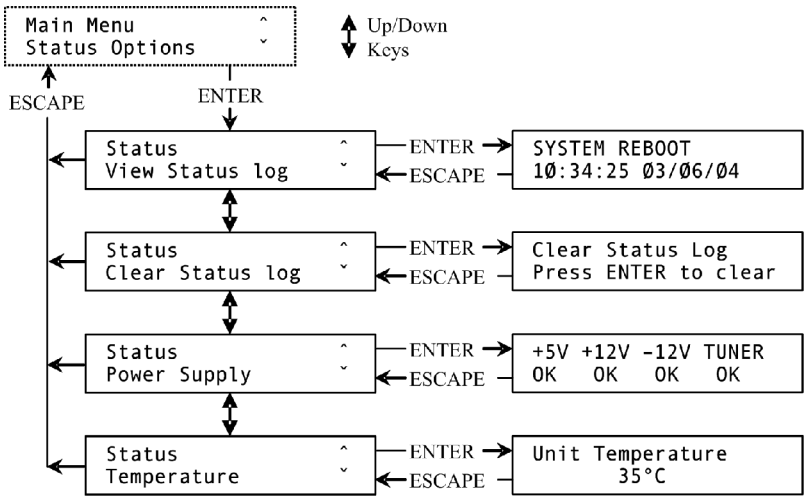
Press <ESCAPE> <ESCAPE> to return to DEFAULT.

Status Options Menu

This option is not available on certain Showman 1000 variants.

The main Status Options menu item is View Status Log. This provides a time-stamped history of events that have occurred within the unit. A Clear Status Log menu item is also provided. Other menu items report the internal temperature of the unit and that the main power supplies are within operational limits.

Figure 13: Status Options menu



To enter the Status Options menu from DEFAULT:

Press <ENTER> ▲ <ENTER>

Press ▲ or ▼ to cycle the display through the following Status Option items:

View Status Log

From Status – View Status Log:

Press <ENTER>

The LCD will display the most recent time-stamped event.

Press ▲ or ▼ to view other previously recorded events.

Press <ESCAPE> <ESCAPE> to return to DEFAULT.

Clear Status Log

From Status – Clear Status Log:

Press <ENTER> to display: Clear Status Log – Press ENTER to clear

IF YOU ARE SURE THAT YOU WISH TO CLEAR THE LOG:

Press <ENTER>, otherwise press <ESCAPE> to abort.

Press <ESCAPE> <ESCAPE> to return to DEFAULT.

Power Supply

From Status – Power Supply:

Press <ENTER>

The LCD will display the status of the main power supplies.

Press <ESCAPE> <ESCAPE> to return to DEFAULT.

Temperature

From Status – Temperature:

Press <ENTER>

The LCD will display the internal temperature of the unit.

Note: If the temperature is outside the limits +10ºC to +70ºC, the front panel ALARM LED will be lit.

Press <ESCAPE> <ESCAPE> to return to DEFAULT.

Remote Operation

This section describes how to remotely control the Showman 1000 over an RS232 connection using the Command-Line Interface (CLI).

The CLI may be used for configuration, monitoring and control. It also facilitates scripting as an entry point for integration into existing software systems. The CLI may be accessed with a standard terminal emulation program such as HyperTerminal running on a PC.

The RS232 connector is a 9-pin sub miniature D-type with female contacts.

Note: See the Installation chapter for connector information and pin-out.

Connecting or disconnecting cables whilst the unit is powered on can result in damage to interface circuits.

Serial port protocol

Before initiating remote control set the PC serial port as follows:

Speed:	9600, 19200 or 38400 baud (must match Showman setting)
Decoder protocol:	1 start bit, 8 data bits, no parity, 1 stop bit
Interface:	RS232
Handshaking:	RTS/CTS or NONE (must match Showman setting)

Command syntax

The remote control commands use the standard ASCII character set and are split into two types: Set and Get.

Set - send from PC

Set commands are used to modify the Showman 1000 Receiver settings. The Set command format is as follows:

Set command format:

Set Command:	<Command> = <Setting> c/r
Where:	<Command> is the command string
	= is ASCII character 61
	<Setting> is the value to be set
	c/r is ASCII character 13

One of two responses is returned to a Set command:

OK:	Command implemented successfully
COMMAND ERROR:	Command was not recognized

e.g. To set frequency to 663.25 MHz the command format is:

Command:	FREQ=663.25c/r
Reply:	OKc/r

Get - reply from Showman

Get commands return information about the Showman 1000 Receiver.

The Get command format:

Get Command:	<Command> ? c/r
Where:	<Command> is the command string
	'?' = ASCII character 61
	c/r is ASCII character 13

The reply format to the Get command is as follows:

Reply:	<Command> : <Value> c/r
Where:	<Command> is the command string
	':' is ASCII character 58
	<Value> is the setting
	c/r is ASCII character 13

e.g. To get control setting the command format is:

Command:	FREQ?c/r
Result:	FREQ:663.25c/r

Remote Command Descriptions

The following remote control commands appear in alphabetical order.

AFC

Sets or requests the AFC setting.

Request

Command:	AFC?
Returns:	AFC: ENABLED
	AFC: DISABLED

Set

Command:	AFC=
Parameter:	ENABLED or DISABLED
Returns:	OK if command valid, COMMAND ERROR if command invalid

Examples

Command:	AFC?
Returns:	AFC: DISABLED
Command:	AFC=ENABLED
Result:	AFC is enabled

AUDPREF

Sets or requests Audio output 1 or 2 preference setting.

Request

Command:	AUDPREFX?
	X – 1 for audio output 1
	X – 2 for audio output 2
Returns:	AUDPREFX= <Std> <Left> <Right>

Set

Command:	AUDPREFX=
	X – 1 for audio output 1
	X – 2 for audio output 2
Parameter:	0-5 (see Table 6, Table 7 and Table 8)
Returns:	OK if command valid, COMMAND ERROR if command invalid

Examples

Command:	AUDPREF1?
Returns:	AUDPREF1: BTSC Mono Mono
Command:	AUDPREF2=2
Result:	AUDPREF2 preference set to L-Dual B, R-Dual B (assuming FM table selected)

Note: For S-Variants, when a BTSC channel table is selected, command AUDPREF2 is not valid. In this instance command AUDPREF1 is used to set the Audio preference on both audio outputs according to

Table 7: Audio Preference Settings (BTSC for S-Variant). The length of the request reply string is always the same and the relative positions of the 3 components in the reply do not vary.

Table 6: Audio Preference Settings (Nicam/FM)

Parameter	L	R
0	Mono	Mono
1	Stereo	Stereo
2	Dual A	Dual A
3	Dual A	Dual B
4	Dual B	Dual B

Table 7: Audio Preference Settings (BTSC for S-Variant)

Parameter	L	R
0	Mono	Mono
1	Stereo	Stereo
2	Mono	SAP
3	SAP	SAP

Table 8: Audio Preference Settings (BTSC for P-Variant)

Parameter	Audio 1		Audio 2	
	L	R	L	R
0	Stereo	Stereo	Stereo	Stereo
1	Mono	SAP	Mono	SAP
2	Mono	Mono	SAP	SAP
3	SAP	SAP	Mono	Mono
4	Mono	Mono	Mono	Mono
5	SAP	SAP	SAP	SAP

CHANNEL

Sets or requests the channel setting.

Request

Command:	CHANNEL?
Returns:	CHANNEL: E39

Set

Command:	CHANNEL=
Parameter:	Channel name.

Note: The channel entered must match a channel in the selected channel table (See the Channel Tables chapter). If the User Channel Table is selected the range is 01 to 99.

Returns:	OK if command valid, COMMAND ERROR if command invalid

Examples

Command:	CHANNEL?
Returns:	CHANNEL: E39
Command:	CHANNEL=E66
Result:	Unit tuned to channel E66

CHROMA

Sets or requests the Chroma level.

Request

Command:	CHROMA?
Returns:	00 (minimum level) – 23 (maximum level)

Set

Command:	CHROMA=
Parameter:	00 - 23
Returns:	OK if command valid, COMMAND ERROR if command invalid

Examples

Command:	CHROMA?
Returns:	CHROMA: 15
Command:	CHROMA=20
Result:	Chroma level set to 20

CLRPROG

Deletes individual or all program settings.

Set

Command:	CLRPROG XX= XX = 01 to 99 CLRPROG=
Parameter:	None
Returns:	OK if command valid, COMMAND ERROR if command invalid

Examples

Command:	CLRPROG 10=
Result:	Program 10 has been deleted
Command:	CLRPROG=
Result:	All Programs have been deleted

CLRTAB

Deletes the user configured table.

Set

Command:	CLRTAB=
Parameter:	None
Returns:	OK if command valid, COMMAND ERROR if command invalid

Examples

Command:	CLRTAB=
Result:	User defined channel table has been deleted

DATE

Sets or requests the unit date (Showman 1000, P-Variant only).

Request

Command:	DATE?
Returns:	DATE: DD/MM/YY

Set

Command:	DATE=
Parameter:	DD/MM/YY
Returns:	OK if command valid, COMMAND ERROR if command invalid

Examples

Command:	DATE?
Returns:	DATE: 19/05/04
Command:	DATE=19/05/04
Result:	Unit date set to 19th May 2004

Note: The date format for set and request depends on the setting of the date mode (UK DD/MM/YY or US MM/DD/YY)

DEF

Restores the unit to factory defaults.

Set

Command:	DEF=
Parameter:	(none)
Returns:	OK if command valid, COMMAND ERROR if command invalid

Example

Command:	DEF=
Result:	Unit set to factory defaults

DMOD

Sets or requests the unit date display mode (Showman 1000 P-Variant only).

Request

Command:	DMOD?
Returns:	US or UK

Set

Command:	DMOD=
Parameter:	US or UK
Returns:	OK if command valid, COMMAND ERROR if command invalid

Examples

Command:	DMOD?
Returns:	DMOD: US

Command:	DMOD=UK
Result:	Unit date display mode set to UK format i.e. DD/MM/YY

FREQ

Sets or requests the channel frequency.

Request

Command:	FREQ?
Returns:	FREQ: 600.25

Set

Command:	FREQ=
Parameter:	Channel frequency 045.00MHz to 863.25MHz in 250KHz steps
Returns:	OK if command valid, COMMAND ERROR if command invalid

Examples

Command:	FREQ?
Returns:	FREQ: 560.50
Command:	FREQ=658.25
Result:	Frequency set to 658.25 MHz

GROUP

Sets or requests the Group Delay setting.

Request

Command:	GROUP?
Returns:	ON
	FLAT

Set

Command:	GROUP=
Parameter:	ON
	FLAT
Returns:	OK if command valid, COMMAND ERROR if command invalid

Examples

Command:	GROUP?
Returns:	GROUP: ON
Command:	GROUP=FLAT
Result:	Group Delay set to flat

INPUT

Sets or requests the Input Signal source (Showman 1000 P-Variant only).

Request

Command:	INPUT?
Returns:	INPUT=IF
	INPUT=RF

Set

Command:	INPUT =
Parameter:	IF or RF
Returns:	OK if command valid, COMMAND ERROR if command invalid

Examples

Command:	INPUT?
Returns:	INPUT: RF
Command:	INPUT=IF
Result:	IF Input source selected

LCD

Sets or Requests the LCD contrast setting.

Request

Command:	LCD?
Returns:	LCD: <contrast> 00-31

Set

Command:	LCD=
Parameter:	00 – 31
Returns:	OK if command valid, COMMAND ERROR if command invalid

Examples

Command:	LCD?
Returns:	LCD: 20
Command:	LCD=15
Result:	LCD contrast set to 15

LOG

Requests a single status log entry or clears status log (Showman 1000 P-Variant only).

Request

Command:	LOG X? where X is 0 to 5 0 – Returns log entry 0 (latest) 5 – Returns log entry 5 (oldest)
Returns:	Log entry consisting of log entry number, time and date when log entry was made and log entry description (See Table 9).

Set

Command:	LOG= (Clears status log)
Returns:	OK if command valid, COMMAND ERROR if command invalid

Examples

Command:	LOG 5?
Returns:	LOG 5: 18:14:06 05/08/04 +5V SUPPLY FAILURE
Command:	LOG=
Result:	Status log cleared

Table 9: Status log entry messages

Status log entry	Description
LOG ENTRY CLEAR	No log entry
SYSTEM REBOOT	Unit power cycled
SELF-TEST FAILURE	Unit failed power on test
TEMPERATURE FAILURE	Unit exceeded operating temperature range
TEMPERATURE OK	Unit has returned to operating temperature range
SYNC LOCK LOST	Sync lock has been lost
SYNC LOCK REGAINED	Sync lock has been regained
RF LEVEL LOW	Input level fallen below RF alarm level
RF LEVEL OK	Input level restored above RF alarm level
NICAM ERROR FAILURE	NICAM BER exceeded threshold
NICAM ERROR OK	NICAM BER returned below threshold
+12V SUPPLY FAILURE	+12V supply has fallen below threshold
+12V SUPPLY OK	+12V supply returned above threshold

Status log entry	Description
+5V SUPPLY FAILURE	+5V supply has fallen below threshold
+5V SUPPLY OK	+5V supply returned above threshold
TUNER SUPPLY FAILURE	+30V tuner supply has fallen below threshold
TUNER SUPPLY OK	+30V tuner supply returned above threshold
-12V SUPPLY FAILURE	-12V supply has fallen below threshold
-12V SUPPLY OK	-12V supply returned above threshold

MODEL

Requests the unit model (variant) number

Request

Command:	MODEL?
Returns:	MODEL: SHOWMAN 1000S
	MODEL: SHOWMAN 1000P

Example

Command:	MODEL?
Returns:	MODEL: SHOWMAN 1000S

MUTE

Sets or requests the Video Mute option.

Request

Command:	MUTE?
Returns:	MUTE=ENABLED
	MUTE=DISABLED

Set

Command:	MUTE=
Parameter:	ENABLED or DISABLED
Returns:	OK if command valid, COMMAND ERROR if command invalid

Examples

Command:	MUTE?
Returns:	MUTE: DISABLED
Command:	MUTE=ENABLED
Result:	Video Output will mute on Loss of Sync

NICALM

Sets or requests the Nicam BER alarm level.

Request

Command:	NICALM?
Returns:	Nicam BER Alarm level in e-notation

Set

Command:	NICALM=
Parameter:	00 to 13 (See Table 10)
Returns:	OK if command valid, COMMAND ERROR if command invalid

Examples

Command:	NICALM?
Returns:	NICALM: 2.50e-04
Command:	NICALM=03
Result:	Nicam BER alarm level set to 7.50e-05

Table 10: Nicam BER Alarm Levels

Parameter	Alarm Level
00	0.00e+00
01	2.50e-05
02	5.00e-05
03	7.50e-05
04	1.00e-04
05	2.50e-04
06	5.00e-04
07	7.50e-04
08	1.00e-03
09	2.50e-03
10	5.00e-03
11	7.50e-03
12	1.00e-02
13	2.50e-02

NICAM

Requests the current NICAM BER measurement

Request

Command:	NICAM?
Returns:	NICAM: <ber>
	Nicam BER measurement in e-notation

Examples

Command:	NICAM?
Returns:	BER: 4.78e-03
Note:	If no Nicam signal is present the command will return "NOT AVAILABLE"

PHONESRC

Sets or requests the headphone source.

Request

Command:	PHONESRC?
Returns:	PHONESRC:1
	PHONESRC:2

Set

Command:	PHONESRC=
Parameter:	1 or 2
Returns:	OK if command valid, COMMAND ERROR if command invalid

Examples

Command:	PHONESRC?
Returns:	PHONESRC: 2
Command:	PHONESRC=1
Result:	Headphone output set to Audio 1 source

PHONEVOL

Sets or requests the headphone audio level.

Request

Command:	PHONEVOL?
Returns:	00 (minimum level) – 56 (maximum level)

Set

Command:	PHONEVOL=
Parameter:	00 - 56
Returns:	OK if command valid, COMMAND ERROR if command invalid

Examples

Command:	PHONEVOL?
Returns:	PHONEVOL: 15
Command:	PHONEVOL=40
Result:	headphone level set to 40

PROGRAM

Sets or requests the program setting.

Request

Command:	PROGRAM?
Returns:	PROGRAM: 10

Note: The unit is not necessarily set to this program. The command returns the latest or default program setting.

Set

Command:	PROGRAM=
Parameter:	01 - 99.
Returns:	OK if command valid, COMMAND ERROR if command invalid

Note: If the program selected has not been configured COMMAND ERROR will be returned.

Examples

Command:	PROGRAM?
Returns:	PROGRAM: 10
Command:	PROGRAM=05
Result:	Unit set to program 5.

RFALM

Sets the RF alarm level.

Set

Command:	RFALM=
Parameter:	None
Returns:	OK if command valid, COMMAND ERROR if command invalid

Examples

Command:	RFALM=
Result:	RF alarm level is set to the current signal level

SERIAL

Requests the unit serial number.

Request

Command:	SERIAL?
Returns:	SERIAL: <Serial Number>

Example

Command: SERIAL?
Result: SERIAL: SM01S0001

SETPROG

Configures a program according to current settings

Set

Command: SETPROG=
Parameter: 01 - 99
Returns: OK if command valid, COMMAND ERROR if command invalid

Example

Command: SETPROG=10
Result: Program 10 is set to the current unit configuration

STANDARD

Requests the current video and audio standard.

Request

Command: STANDARD?
Returns: STANDARD: <video> <audio>

Example

Command: STANDARD?
Returns: STANDARD: M/N M BTSC

Note: Possible Video/Audio standards are detailed in **Error! Reference source not found.**. The video standard is dependent on the currently selected channel table. If no audio standard has been detected or if a search is currently in progress the message "None Found" or "Searching" is returned as appropriate.

Table 11: STANDARD Command, Video and Audio standards

Video	Audio	
M/N	B/G FM	D/K1
B	B/G Nicam	D/K2
B/G	I	D/K3
D/K	M Japan	L Nicam
L	M Korea	D/K Nicam
L'	M BTSC	
I	L AM	

SYNC

Requests the unit sync lock status.

Request

Command: SYNC?
Returns: SYNC: NOT LOCKED

SYNC: LOCKED

Example

Command: SYNC?
Returns: SYNC: LOCKED

TABLE

Sets or requests the channel table setting.

Request

Command:	TABLE?
Returns:	Channel table description (see Table 12)

Set

Command:	TABLE=
Parameter:	00 to 22 (See Table 12)
Returns:	OK if command valid, COMMAND ERROR if command invalid

Note: If the user defined table is selected and no user channels have been defined COMMAND ERROR will be returned.

Examples

Command:	TABLE?
Returns:	TABLE: Europe (Air)
Command:	TABLE=05
Result:	Channel table New Zealand (Air) selected

Table 12: TABLE Command, Video and Audio standards

Parameter	Table
00	Australia (Air)
01	Europe (CATV)
02	Europe (Air)
03	Italy (Air)
04	Morocco (Air)
05	New Zealand (Air)
06	China (PR) (Air)
07	Africa (Air) (Std I)
08	Africa (Air) (Std K1)
09	OIRT (Air)
10	Europe (Air) (Std G)
11	Europe (Air) (Std I)
12	Europe (Air) (Std K)
13	Europe (Air) (Std L)
14	Ireland (Air)
15	France (Air) (Std L')
16	France (Air) (Std L)
17	Japan (Air)
18	USA (Air)
19	USA (STDCATV)
20	USA (HRCCATV)
21	USA (IRCCATV)
22	Korea (Air)
23	User Defined Table

TEMP

Requests the unit temperature (°C) (P variant only).

Request

Command:	TEMP?
Returns:	TEMP: 27

TIME

Sets or Requests the unit time (24 hour clock). (P variant only).

Request

Command:	TIME?
Returns:	TIME: HH:MM:SS

Set

Command:	TIME=
Parameter:	HH:MM:SS
Returns:	OK if command valid COMMAND ERROR if command invalid

Examples

Command:	TIME?
Returns:	TIME: 13:03:49
Command:	TIME=17:10:15
Result:	Unit time set to 17:10:15

TUNEMOD

Requests the tuning mode, i.e. whether the unit is tuned by channel or by frequency.

Request

Command:	TUNEMOD?
Returns:	TUNEMOD: CHAN TUNEMOD: FREQ

Examples

Command:	TUNEMOD?
Returns:	TUNEMOD: CHAN

VERMPU

Requests the unit main microprocessor firmware number and revision.

Request

Command:	VERMPU?
Returns:	VERMPU: FW0816 V01

VIDLEV

Sets or requests the video level.

Request

Command:	VIDLEV?

Returns: 00 (minimum level) – 31 (maximum level)

Set

Command:	VIDLEV =
Parameter:	00 - 31
Returns:	OK if command valid, COMMAND ERROR if command invalid

Examples

Command:	VIDLEV?

Returns: VIDLEV: 15
Command: VIDLEV=20
Result: Video level set to 20

VOL

Sets or requests the audio level.

Request

Command: VOLX? where X is 1 or 2
1 – Get Audio Output 1 volume
2 – Get Audio Output 2 volume
Returns: 00 (minimum level) – 32 (maximum level)

Set

Command: VOLX= where X is 1 or 2
1 – Set Audio Output 1 volume
2 – Set Audio Output 2 volume
Parameter: 00 – 32
Returns: OK if command valid, COMMAND ERROR if command invalid

Examples

Command: VOL1?
Returns: VOL1: 10
Command: VOL2=25
Result: Audio 2 level set to 25

USERSTD

Sets or Requests the user channel table video standard.

Request

Command: USERSTD?
Returns: USERSTD: <videostd>

Set

Command: USERSTD =
Parameter: 0 – 7 (See Table 13)
Returns: OK if command valid, COMMAND ERROR if command invalid

Examples

Command: USERSTD?
Returns: USERSTD: D/K
Command: USERSTD=4
Result: User defined channel table standard set to L

Table 13: USERSTD, Table Video standards

Parameter	Video Standard
0	M/N
1	B
2	G
3	D/K
4	L
5	L’
6	I

System defaults

Table 14 lists user definable items along with their default setting.

An asterisk (*) against an Item indicates the factory Default. Selecting Set Factory Defaults from the System Options menu does *not reset subsequent user changes of these items*.

Table 14: System default settings

Item	Default setting
Input Source	RF
Channel	E21
Frequency	471.25MHz
Channel Table	Europe Air (UHF Std. I)
Tuning Mode	By Channel
Audio 1 Preference	L: Stereo R: Stereo
Audio 2 Preference	L: Mono R: Mono
Audio 1/2 Volume	0dBm Nominal (asterisk displayed on LCD)
Headphone Source	Audio 1 outputs
Headphone Level	Minimum
Video Level	1V p-p Nominal
Chroma Level	300mV Colour Burst Nominal
Tuner Gain	Normal
AFC Control	Off
Nicam Alarm Setting	1.00e-04
Video Low Signal Mute	Disabled
Serial Baud Rate*	19200
Serial Flow Control*	None
LCD Contrast	13 (Range 0 to 31)
Time and Date*	Factory Set
Status Log*	Clear

Note: Current settings are restored after power off.

Channel Tables

Appendix F: Channel Tables

Table 15: Europe (Air) UHF Standards G, I, K and L

Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)
E21	471.25	E34	575.25	E47	679.25	E60	783.25
E22	479.25	E35	583.25	E48	687.25	E61	791.25
E23	487.25	E36	591.25	E49	695.25	E62	799.25
E24	495.25	E37	599.25	E50	703.25	E63	807.25
E25	503.25	E38	607.25	E51	711.25	E64	815.25
E26	511.25	E39	615.25	E52	719.25	E65	823.25
E27	519.25	E40	623.25	E53	727.25	E66	831.25
E28	527.25	E41	631.25	E54	735.25	E67	839.25
E29	535.25	E42	639.25	E55	743.25	E68	847.25
E30	543.25	E43	647.25	E56	751.25	E69	855.25
E31	551.25	E44	655.25	E57	759.25		
E32	559.25	E45	663.25	E58	767.25		
E33	567.25	E46	671.25	E59	775.25		

Table 16: Ireland (Air) VHF Standard I

Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)
IA	45.75	ID	175.25	IG	199.25		
IB	53.75	IE	183.25	IH	207.25		
IC	61.75	IF	191.25	IJ	215.25		

Table 17: France (Air) VHF Standard L'

Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)
A	47.75	B	55.75	C1	60.5	C	63.75

Table 18: France (Air) VHF Standard L

Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)
1	176	3	192	5	208		
2	184	4	200	6	216		

Table 19: Japan (Air) VHF/UHF Standard M

Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)
1	91.25	17	495.25	33	591.25	49	687.25
2	97.25	18	501.25	34	597.25	50	693.25
3	103.25	19	507.25	35	603.25	51	699.25
4	171.25	20	513.25	36	609.25	52	705.25
5	177.25	21	519.25	37	615.25	53	711.25
6	183.25	22	525.25	38	621.25	54	717.25
7	189.25	23	531.25	39	627.25	55	723.25
8	193.25	24	537.25	40	633.25	56	729.25
9	199.25	25	543.25	41	639.25	57	735.25
10	205.25	26	549.25	42	645.25	58	741.25
11	211.25	27	555.25	43	651.25	59	747.25
12	217.25	28	561.25	44	657.25	60	753.25
13	471.25	29	567.25	45	663.25	61	759.25
14	477.25	30	573.25	46	669.25	62	765.25
15	483.25	31	579.25	47	675.25		
16	489.25	32	585.25	48	681.25		

Table 20: USA (AIR) VHF/UHF Standards M/N

Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)
2	55.25	19	501.25	36	603.25	53	705.25
3	61.25	20	507.25	37	609.25	54	711.25
4	67.25	21	513.25	38	615.25	55	717.25
5	77.25	22	519.25	39	621.25	56	723.25
6	83.25	23	525.25	40	627.25	57	729.25
7	175.25	24	531.25	41	633.25	58	735.25
8	181.25	25	537.25	42	639.25	59	741.25
9	187.25	26	543.25	43	645.25	60	747.25
10	193.25	27	549.25	44	651.25	61	753.25
11	199.25	28	555.25	45	657.25	62	759.25
12	205.25	29	561.25	46	663.25	63	765.25
13	211.25	30	567.25	47	669.25	64	771.25
14	471.25	31	573.25	48	675.25	65	777.25
15	477.25	32	579.25	49	681.25	66	783.25
16	483.25	33	585.25	50	687.25	67	789.25
17	489.25	34	591.25	51	693.25	68	795.25
18	495.25	35	597.25	52	699.25		

Table 21: USA (STD CATV) VHF/UHF Standards M/N

Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)
2	55.25	31	265.25	65	469.25	104	673.25
3	61.25	32	271.25	66	475.25	105	679.25
4	67.25	33	277.25	67	481.25	106	685.25
5	77.25	34	283.25	68	487.25	107	691.25
6	83.25	35	289.25	69	493.25	108	697.25
95	91.25	36	295.25	70	499.25	109	703.25
96	97.25	37	301.25	71	505.25	110	709.25
97	103.25	38	307.25	72	511.25	111	715.25
98	109.25	39	313.25	73	517.25	112	721.25
99	115.25	40	319.25	74	523.25	113	727.25
14	121.25	41	325.25	75	529.25	114	733.25
15	127.25	42	331.25	76	535.25	115	739.25
16	133.25	43	337.25	77	541.25	116	745.25
17	139.25	44	343.25	78	547.25	117	751.25
18	145.25	45	349.25	79	553.25	118	757.25
19	151.25	46	355.25	80	559.25	119	763.25
20	157.25	47	361.25	81	565.25	120	769.25
21	163.25	48	367.25	82	571.25	121	775.25
22	169.25	49	373.25	83	577.25	122	781.25
7	175.25	50	379.25	84	583.25	123	787.25
8	181.25	51	385.25	85	589.25	124	793.25
9	187.25	52	391.25	86	595.25	125	799.25
10	193.25	53	397.25	87	601.25	126	805.25
11	199.25	54	403.25	88	607.25	127	811.25
12	205.25	55	409.25	89	613.25	128	817.25
13	211.25	56	415.25	90	619.25	129	823.25
23	217.25	57	421.25	91	625.25	130	829.25
24	223.25	58	427.25	92	631.25	131	835.25
25	229.25	59	433.25	93	637.25	132	841.25
26	235.25	60	439.25	94	643.25	133	847.25
27	241.25	61	445.25	100	649.25	134	853.25
28	247.25	62	451.25	101	655.25	135	859.25
29	253.25	63	457.25	102	661.25		
30	259.25	64	463.25	103	667.25		

Table 22: USA (HRC CATV) VHF/UHF Standards M/N

Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)
2	54	30	258	64	462	103	666
3	60	31	264	65	468	104	672
4	66	32	270	66	474	105	678
1	72	33	276	67	480	106	684
5	78	34	282	68	486	107	690
6	84	35	288	69	492	108	696
95	90	36	294	70	498	109	702
96	96	37	300	71	504	110	708
97	102	38	306	72	510	111	714
98	108	39	312	73	516	112	720
99	114	40	318	74	522	113	726
14	120	41	324	75	528	114	732
15	126	42	330	76	534	115	738
16	132	43	336	77	540	116	744
17	138	44	342	78	546	117	750
18	144	45	348	79	552	118	756
19	150	46	354	80	558	119	762
20	156	47	360	81	564	120	768
21	162	48	366	82	570	121	774
22	168	49	372	83	576	122	780
7	174	50	378	84	582	123	786
8	180	51	384	85	588	124	792
9	186	52	390	86	594	125	798
10	192	53	396	87	600	126	804
11	198	54	402	88	606	127	810
12	204	55	408	89	612	128	816
13	210	56	414	90	618	129	822
23	216	57	420	91	624	130	828
24	222	58	426	92	630	131	834
25	228	59	432	93	636	132	840
26	234	60	438	94	642	133	846
27	240	61	444	100	648	134	852
28	246	62	450	101	654	135	858
29	252	63	456	102	660		

Table 23: USA (IRC CATV) VHF/UHF Standards M/N

Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)
2	55.25	30	259.25	64	463.25	103	667.25
3	61.25	31	265.25	65	469.25	104	673.25
4	67.25	32	271.25	66	475.25	105	679.25
1	73.25	33	277.25	67	481.25	106	685.25
5	79.25	34	283.25	68	487.25	107	691.25
6	85.25	35	289.25	69	493.25	108	697.25
95	91.25	36	295.25	70	499.25	109	703.25
96	97.25	37	301.25	71	505.25	110	709.25
97	103.25	38	307.25	72	511.25	111	715.25
98	109.25	39	313.25	73	517.25	112	721.25
99	115.25	40	319.25	74	523.25	113	727.25
14	121.25	41	325.25	75	529.25	114	733.25
15	127.25	42	331.25	76	535.25	115	739.25
16	133.25	43	337.25	77	541.25	116	745.25
17	139.25	44	343.25	78	547.25	117	751.25
18	145.25	45	349.25	79	553.25	118	757.25
19	151.25	46	355.25	80	559.25	119	763.25
20	157.25	47	361.25	81	565.25	120	769.25
21	163.25	48	367.25	82	571.25	121	775.25
22	169.25	49	373.25	83	577.25	122	781.25
7	175.25	50	379.25	84	583.25	123	787.25
8	181.25	51	385.25	85	589.25	124	793.25
9	187.25	52	391.25	86	595.25	125	799.25
10	193.25	53	397.25	87	601.25	126	805.25
11	199.25	54	403.25	88	607.25	127	811.25
12	205.25	55	409.25	89	613.25	128	817.25
13	211.25	56	415.25	90	619.25	129	823.25
23	217.25	57	421.25	91	625.25	130	829.25
24	223.25	58	427.25	92	631.25	131	835.25
25	229.25	59	433.25	93	637.25	132	841.25
26	235.25	60	439.25	94	643.25	133	847.25
27	241.25	61	445.25	100	649.25	134	853.25
28	247.25	62	451.25	101	655.25	135	859.25
29	253.25	63	457.25	102	661.25		

Table 24: Australia (Air) VHF/UHF Standard B

Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)
0	46.25	28	527.25	43	632.25	58	737.25
1	57.25	29	534.25	44	639.25	59	744.25
2	64.25	30	541.25	45	646.25	60	751.25
3	86.25	31	548.25	46	653.25	61	758.25
4	95.25	32	555.25	47	660.25	62	765.25
5	102.25	33	562.25	48	667.25	63	772.25
5A	138.25	34	569.25	49	674.25	64	779.25
6	175.25	35	576.25	50	681.25	65	786.25
7	182.25	36	583.25	51	688.25	66	793.25
8	189.25	37	590.25	52	695.25	67	800.25
9	196.25	38	597.25	53	702.25	68	807.25
9A	203.25	39	604.25	54	709.25	69	814.25
10	210.25	40	611.25	55	716.25		
11	217.25	41	618.25	56	723.25		
12	224.25	42	625.25	57	730.25		

Table 25: Europe (CATV) VHF/UHF Standards B/G

Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)
E2	48.25	S16	266.25	S41	463.25	E45	663.25
E3	55.25	S17	273.25	E21	471.25	E46	671.25
E4	62.25	S18	280.25	E22	479.25	E47	679.25
S2	112.25	S19	287.25	E23	487.25	E48	687.25
S3	119.25	S20	294.25	E24	495.25	E49	695.25
S4	126.25	S21	303.25	E25	503.25	E50	703.25
S5	133.25	S22	311.25	E26	511.25	E51	711.25
S6	140.25	S23	319.25	E27	519.25	E52	719.25
S7	147.25	S24	327.25	E28	527.25	E53	727.25
S8	154.25	S25	335.25	E29	535.25	E54	735.25
S9	161.25	S26	343.25	E30	543.25	E55	743.25
S10	168.25	S27	351.25	E31	551.25	E56	751.25
E5	175.25	S28	359.25	E32	559.25	E57	759.25
E6	182.25	S29	367.25	E33	567.25	E58	767.25
E7	189.25	S30	375.25	E34	575.25	E59	775.25
E8	196.25	S31	383.25	E35	583.25	E60	783.25
E9	203.25	S32	391.25	E36	591.25	E61	791.25
E10	210.25	S33	399.25	E37	599.25	E62	799.25
E11	217.25	S34	407.25	E38	607.25	E63	807.25
E12	224.25	S35	415.25	E39	615.25	E64	815.25
S11	231.25	S36	423.25	E40	623.25	E65	823.25
S12	238.25	S37	431.25	E41	631.25	E66	831.25
S13	245.25	S38	439.25	E42	639.25	E67	839.25
S14	252.25	S39	447.25	E43	647.25	E68	847.25
S15	259.25	S40	455.25	E44	655.25	E69	855.25

Table 26: Europe (Air) VHF Standard B

Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)
2	48.25	5	175.25	8	196.25	11	217.25
3	55.25	6	182.25	9	203.25	12	224.25
4	62.25	7	189.25	10	210.25		

Table 27: Italy (Air) VHF Standard B

Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)
A	53.75	D	175.25	G	201.25	H2	224.25
B	62.25	E	183.75	H	210.25		
C	82.25	F	192.25	H1	217.25		

Table 28: Morocco (Air) VHF Standard B

Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)
M4	163.25	M6	179.25	M8	195.25	M10	211.25
M5	171.25	M7	187.25	M9	203.25		

Table 29: New Zealand (Air) VHF Standard B

Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)
1	45.25	4	175.25	7	196.25	10	217.25
2	55.25	5	182.25	8	203.25		
3	62.25	6	189.25	9	210.25		

Table 30: China PR (Air) VHF/UHF Standard D/K

Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)
1	49.75	16	495.25	31	655.25	46	775.25
2	57.75	17	503.25	32	663.25	47	783.25
3	65.75	18	511.25	33	671.25	48	791.25
4	77.25	19	519.25	34	679.25	49	799.25
5	85.25	20	527.25	35	687.25	50	807.25
6	168.25	21	535.25	36	695.25	51	815.25
7	176.25	22	543.25	37	703.25	52	823.25
8	184.25	23	551.25	38	711.25	53	831.25
9	192.25	24	559.25	39	719.25	54	839.25
10	200.25	25	607.25	40	727.25	55	847.25
11	208.25	26	615.25	41	735.25	56	855.25
12	216.25	27	623.25	42	743.25	57	863.25
13	471.25	28	631.25	43	751.25		
14	479.25	29	639.25	44	759.25		
15	487.25	30	647.25	45	767.25		

T Table 31: Africa (Air) VHF Standard I and K1

Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)
2	52.25	5	183.25	8	207.25	11	231.25
3	60.25	6	191.25	9	215.25	12	239.25
4	175.25	7	199.25	10	223.25	13	247.13

Table 32: O.I.R.T. (Air) VHF Standard D

Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)	Chan.	f_v (MHz)
R1	49.75	R4	85.25	R7	183.25	R10	207.25
R2	59.25	R5	93.25	R8	191.25	R11	215.25
R3	77.25	R6	175.25	R9	199.25	R12	223.25

Specification

Parameter	Min	Typical	Max	Units
RF Input				
Tuning Range	45.25	-	863.25	MHz
Tuning Increments	-	0.25	-	MHz
Level	46 (0.2)	66 (2)	80 (10)	dBµV (mV)
Impedance	-	75	-	Ω
Return Loss Ratio (VSWR)	-	9.5 (2)	4.5 (4)	dB (Ratio)
Aerial/Antenna Radiation	-	-	46	dBµV
Tuner Noise Figure	-	6	9	dB
Tuner AGC Range	40	50	-	dB
Image rejection	50	60	-	dB
IF Rejection	56	70	-	dB
IF Input				
Frequency (Vision Carrier)	-	38.9	-	MHz
Level	–35 (4)	–27 (10)	-7 (100)	dBm (mV)
Impedance	-	50	-	Ω
Return Loss Ratio (VSWR)	-	30 (1.07)	-	dB (Ratio)
IF Output				
Frequency (Vision Carrier)	-	38.9	-	MHz
Peak Sync TIP Power (RF IN >60dBµ/1mV$_{rms}$)	-	-7	-	dBm
Typical 8MHz Channel Power (RF IN >60dBµ/1mV$_{rms}$)	-	-10	-	dBm
Impedance	-	50	-	Ω
Return Loss Ratio (VSWR)	-	30 (1.07)	-	dB (Ratio)
Noise (Unified Weighting, Black & Burst Video)	-49	-53	-	dB$_{rms}$
Video Output				
Video Level (Adjustable)	-	1	-	V$_{pp}$
Impedance	-	75	-	Ω
Differential Phase	-	1.5	-	°$_{p-p}$
Differential Gain	-	3.5	-	%$_{p-p}$
Chroma Level (Adjustable)	-	300	-	mV
K-2T	-	1.5	-	%
K-PB	-	1.5	-	%
Chrominance-Luminance Delay	-	35	-	nS
Bar Line Time Distortion	-	0.2	-	%
Bar Line Time Tilt	-	0.2	-	%
Noise (Unified Weighting, Black & Burst Video)	-49	-53	-	dB

Parameter	Min	Typical	Max	Units
SIF Output				
Frequency (PAL I, FM Carrier)	-	6.0	-	MHz
Average Power (RF IN >60dBµ/1mV$_{rms}$)	-	-9	-	dBm
Impedance	-	50	-	Ω
Return Loss Ratio (VSWR)	-	30 (1.07)	-	dB (Ratio)
Audio Output				
Audio Levels (Adjustable)	-	0	-	dBm
Quasi-Peak Detectors Attack Time	-	1.3	-	mS
Quasi-Peak Detectors Decay Time	-	37	-	mS
Alarm/Status Port Relays:				
Voltage	-	-	50	V dc
Current	-	-	500	mA dc

Connectors	Connector
Mains Input	IEC Inlet
RF IN	75Ω BNC Female
IF IN	50Ω BNC Female
IF OUT	50Ω BNC Female
SIF OUT	50Ω BNC Female
RS232	9-Way D-Type Female
RESET/STATUS	9-Way D-Type Female
AUDIO	3-Way PSC
Headphone	6.3mm (¼") Stereo Jack Socket

Power	Description
Line Voltage Ranges	90 to 264 VAC
Power Consumption	50 W Maximum
Line Frequency	60/50 Hz
Fuse	T1.6 AH 250V (20 mm ceramic)

Environmental	Description
Operating Temperature	0 °C to 50 °C
Storing Temperature	-20 °C to 70 °C
Operating Altitude	2000 meters maximum (6500 feet)

Physical	Description
Height	44 mm (1.75 inches)
Width	483 mm (19.0 inches)
Depth	345 mm (13.4 inches)
Weight	Net Weight: 3kg (6.5 pounds)

Conformity & Compliance	Description
EC Declaration of Conformity – EMC	Meets intent of Directive 89/336/EEC and 92/3EEC for Electromagnetic Compatibility. Compliance was demonstrated to the following specifications as listed in the Official Journal of the European Communities: EN50081-1 Emissions: [1] BS EN55022: Class B radiated and conducted emissions BS EN55013: Emissions standard for Broadcast Equipment EN50082-1 Immunity: [1] BS EN61000-4-2 ESD Requirements BS EN61000-4-3 Radiated susceptibility BS EN61000-4-4 Electrical Fast Transient Burst requirement BS EN61000-4-5 Surges requirement BS EN61000-4-6 Conducted susceptibility BS EN61000-4-11 Voltage Dips and Interruptions BS EN55103-2 Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. [1]High-quality shielded cables must be used to ensure compliance.
FCC Compliance	Emissions comply with FCC Code of Federal Regulations 47, Part 15, Subpart B, Class A Limits[1] [1]High-quality shielded cables must be used to ensure compliance.
FCC Information	This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. WARNING: The user must install the system as per manufacturers instructions, to comply with the requirements of FCC.

Safety Certification	Description
Temperature (Operating)	0 °C to +50 °C
Altitude (maximum operating)	2000 meters (6500 feet)
Relative Humidity (maximum operating)	80% for temperatures up to 31 °C, decreasing linearly to 40% at 50 °C
Equipment Type	Test and Measuring
Safety Class	Class I (as defined in IEC 61010-1, Annex H) – grounded product
Over-Voltage Category	Over-Voltage Category II (as defined in IEC 61010-1, Annex J)
Pollution Degree	Pollution Degree 2 (as defined in IEC 61010-1) Note: Rated for indoor use only

Safety standards	
U.S. Nationally Recognised Testing Laboratory Listing:	UL3111-1, standard for electrical measuring and test equipment
Canadian Certification:	CAN/CSA 22.2 No. 1010.1 Safety requirements for electrical equipment for measurement, control and laboratory use.
European Union Compliance:	Low Voltage Directive 73/23/EEC, amended by 93/68/EEC IEC 61010-1 Safety requirements for electrical equipment for measurement, control and laboratory use.

Ordering information

Showman 1000 Variants

Model	**Description**
Showman 1000-S	A basic multi-standard S_Variant
Showman 1000-P	An enhanced P-Variant with alarm/monitoring and IF I/O