

Envoy DMSII

Digital Messaging System

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DMS II

(Digital Messaging System)

Installation Manual

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IMPORTANT

**If you experience any problems in setting up or using
this equipment**

PLEASE re-read the manual and then try again

Thank you for choosing the Digital Messaging System II from Black Box AV.

This equipment has been designed to give long life and high reliability when used correctly.

Please take a few minutes to read this manual and acquaint yourself with the machine before commencing use.

1.0 SAFETY NOTES

This appliance MUST be earthed. Only use a 1-amp fuse in the mains plug. Removing the lid of the product could expose you to electric shock. Refer servicing and maintenance to qualified personnel only.

Do not expose the equipment to liquids and when transferring from a cold to warm atmosphere, allow the unit to adjust to room temperature before operating.

Ensure the equipment is switched off before making any connections.

2.0 GENERAL DESCRIPTION

The DMS is an MP3 Audio Player. Source Data is stored in digital MP3 format and then converted into analogue audio for playback. The storage mechanism is a Multi Media Card (MMC), which are currently available from 16 to 64 Megabyte capacities. At a high quality 64 Kilobits/second-sampling rate, these can provide from 32 minutes to over 2 hours of high quality speech/music storage.

Up to 16 separate messages may be stored on a unit and each message may be replayed in one of several ways. These are referred to as Modes throughout this manual.

A message may be activated by applying a shorting contact (typically, a push to make button) across two screw terminals on the unit and depending on the play Mode allocated to it, the message may play until its end or may be interrupted with another message. The message may also be set so that it will only play while the shorting contact remains applied.

A Liquid Crystal Display (LCD) on the unit provides system information along with the track number and Mode for a track in play.

The MMC card is inserted into the unit behind a removable cover, this method has been adopted to prevent tampering with or unlawful removal of the card.

Connections to the system are primarily via screw terminals with the only controls being an on/off switch and a preset volume control.

Placing audio information on an MMC card has been relegated to a Windows based download program and a USB card reader attached to a PC. The programmed MMC card, after removal from the USB reader, is inserted into the DMS unit. When powered up, the DMS unit interrogates the card to determine the number of tracks laid down, their file lengths and their start addresses on the card.

3.0 SYSTEM INSTALLATION

The DMS unit is self contained and powered from a 240-volt a.c. supply via an IEC inlet socket. To the left of this socket is the ON/OFF mains switch. Pushing this button in will turn the unit on and the LCD display should show **BLACK BOX AV** on its top line. The bottom line of the display is used for system status information. At power up, this will show **INITIALISING** as the unit interrogates the MMC card. If a correctly programmed card has been inserted, the bottom line will change to **READY**.

If no MMC card is present, the bottom line will show **NO MMC CARD**. The unit should be switched off, a card inserted and the unit powered up again to correct this error.

If an incorrectly programmed card has been inserted, the bottom line display will show the error message **NO INDEX**.

4.0 CONNECTIONS

Push to make buttons or voltage free normally open relay contacts may be used to activate messages. These are wired into the two sets of 16 way screw terminal strips. Starting from the left, the upper strip corresponds to buttons 1 to 8, while the lower strip corresponds to buttons 9 to 16. Two adjacent terminals are allocated to each button input. Track and button numbers are the same, i.e. pushing button 1 will cause track 1 to play, etc. Tracks are always allocated from track 1 upwards, so if 10 tracks had been laid down on the MMC card, buttons 1 to 10 would be connected to play them. Buttons above the highest track number will have no effect. So, if say, button 11 were pushed in this example, it would have no effect at all.

On some smaller systems, only two buttons are used. A cover panel is fixed over the unused 16 input screw terminal locations and a 3 way screw terminal block, located at the lower, centre of the unit used instead. The left hand terminal corresponds to track 1 and the right hand terminal to track 2. The centre terminal is a common ground connection.

Audio outputs are available from a standard ¼ inch stereo jack socket (headphone usage) or via 3 spring loaded terminals. Loudspeakers of 4-ohm impedance may be connected to these terminals. The terminals are coded red for left and right hand outputs with a common black, ground terminal at the centre. There is an internal 1W stereo amplifier.

To the right of the 3way screw terminal block is a 2-way screw terminal block, which provides a 5-volt supply – this is primarily intended to operate low power Passive InfraRed (PIR) sensors and should NOT be used as an auxiliary power source.

5.0 SPECIFICATION

Mains Input	240V, 50Hz a.c. @ 1 Ampere
Inputs	Up to 16 via screw terminals
Outputs	Stereo audio from 1/4inch jack socket and Spring loaded terminals.
Amplifier	1 watt stereo.
Display	Two line LCD giving status and track information
Audio Format	MPEG layer 3 – Near CD quality
Play Duration	depending on MMC card size 16MB - 32 minutes 64MB - 2 hours, 8 minutes
Volume Setting	via preset front panel control
Size	300W x 120D x 80H (mm)
Weight	TBC

6.0 **DOWNLOAD PROGRAM**

The DigitalAnalogueAudio messaging system from Black Box AV Ltd stores messages in MPEG Layer 3 format (mp3) on a Multimedia Card (MMC). The cards range in capacity from 16 Megabytes to 64 Megabytes and up to 16 separate messages can be accessed.

A message may be replayed from the DMS unit in one of three modes.

Mode 0 (the default mode) causes a message to play uninterrupted. Message looping is achieved using this mode by linking the input selection screw terminals together. Continuous looping is only possible for one message.

Mode 1 allows a message to be interrupted. If a message set to Mode 1 is currently playing and another valid select button is pressed, the new message will be loaded and played.

Mode 2 will allow a message to play as long as its select button is held down. Once the button is released, the message will stop playing. This mode is used where say, a box lid is lifted, causing the message to play. When the lid is shut, the message ceases.

MMC cards are programmed using a Visual Basic program running on a PC. The card programmer attaches to a USB port on the PC and its driver must be installed prior to running the VB download program. A SanDisk™ USB interface module can be supplied by Black Box AV Ltd.

The MMC card is treated by a PC as a 'removable disk drive' and will typically be allocated the drive designator **D:**

All the usual Windows functions are available such as interrogating its properties, viewing its file content, etc.

The Visual Basic download program appears as a Windows style screen and anyone familiar with Windows should have little trouble navigating it. The Mouse is used to control actions by moving over an object and clicking or double clicking on it to cause an event. The program has been designed to be easy and rapid to use; in the event of a mistake being made, the simplest solution is to quit the program and then re-run it.

7.0 DMS2 MESSAGE ASSEMBLER PROGRAMME

7.1 INTRODUCTION.

The Black Box AV DMS2 Messaging System is intended to play audio messages on demand into either stereo headphones or low power external speakers.

Up to 16 messages can be held on the system and these are accessed via buttons connected to screw terminals on the unit.

The audio messages are encoded to the MP3 format using a computer running standard software, and then downloaded to a Multimedia Flash card.

The purpose of this software is to allow simple access to the MP3 files, create an index file for the firmware within the DMS2, and to facilitate the download process.

You should switch off the DMS2 before removing and reinserting the MMC card. The card can be accessed by removing the small metal plate at the rear of the DMS2.

After reprogramming the MMC card and replacing in the DMS2, you should ensure that the 'READY' message is displayed on the DMS2 a few seconds after the 'INITIALISING' begins.

7.2 THE AUDIO FILES.

The audio files used by the DMS2 must be in MP3 format, and are produced using commercially available software.

The DMS2 can accept MP3 bit rates up to 128Kbps, but 64Kbps is the recommended rate as this gives good quality audio at a reasonable file size.

At 64Kbps a 16MByte flash card can hold over 30 minutes of audio. This can be increased by using a larger card (64MBytes) or reducing the bit rate as necessary.

Each of the DMS2 messages to be loaded is assigned to an audio file. This means that the message length and audio quality is determined by the audio file alone, therefore it is possible to have different bit rates between messages on the same DMS2 should this be required.

7.3 THE MESSAGE ASSEMBLER PROGRAMME.

The main purpose of this programme is to create an INDEX file for the DMS2, which allocates audio files to message track numbers and sets the operating mode for each of the messages.

The programme also allows simple access to the source audio files and displays the selected audio files in the message number position they will have when played on the DMS2.

It is a requirement of the DMS2 firmware that no other files are present on the MMC card and so the ASSEMBLER programme assists in ensuring that all other files are removed before copying the audio files. Also all audio files are renamed on the MMC card to a format that is compatible with the DMS2 firmware.

The main screen of the programme consists of 6 areas.

Firstly, an area for selecting the source audio files (drive, folder and file select boxes). You navigate to a source MP3 file and 'double-click' the filename to add it to the message track list.

Next is an area for selecting the drive letter of the destination drive (MMC card).

Next is the message track list area showing which messages have been selected to download and which message number and operating mode they have been allocated.

There is an area for assigning an operating mode to a message (see Message Modes below).

An Edit List section contains buttons for removing files from the message list.

The main PROGRAMME command button and other status messages and help prompts are available outside the above areas. A yellow 'Guidance Box' at the bottom of the screen helps to prompt you to the next step in the process.

7.4 SELECTING THE DESTINATION DRIVE.

The programme needs to know which of the drives on your computer system is the MMC Flash card to be programmed. This is known as the 'Destination Drive'.

Black Box AV recommends the 'SanDisk SecureMate' drive for programming the MMC cards. You should ensure that this or a similar card programmer is correctly installed on your PC before attempting to use this software.

At the bottom of the main 'ASSEMBLER' screen the yellow 'Guidance Box' prompts you to the next stage of the process. When the programme is started you are prompted to select the drive letter for the destination drive.

A 'Destination Drive' select box is provided on the main 'ASSEMBLER' screen. You should use this to select the drive letter for the MMC card to programme. An information box is displayed just below this drive selector.

Since one step in the process of assembling the audio files on the MMC card involves erasing all files in the root directory of the destination drive, the destination information box will display red if the programme 'thinks' the selected destination is not an MMC card and you will not be able to proceed until a suitable destination drive is selected.

If the selected destination is a removable drive with capacity < 280MBytes then the programme will assume that it is a valid MMC card and will allow you to continue.

7.5 SELECTING THE SOURCE FILES.

First ensure you have selected a suitable destination drive and the MMC card is inserted. You should also ensure that the MMC card does not contain any sub-folders above the 'root' folder.

Use the source file selector (drive, folder and filename boxes) to select the source MP3 files. The filename box will only display files having the '.MP3' extension so you should ensure that all your message files have this extension.

It is recommended (but not essential) that you create a folder containing all the audio files you intend to use on a DMS2 system. This will help you organise your work and simplify the rebuilding of a system should it be necessary.

Audio files are assigned to the track list by 'Double-Clicking' the selected filename. The filename is then entered into the next available space in the track list with the default operating mode 0 (see message modes below).

You should ensure that you select the files in the order that you want them on the DMS2, i.e. button 1 message 1st followed by button 2 message etc.

The track list will display the filename only however the programme will remember the complete path length for each message.

7.6 THE MESSAGE TRACKS LIST.

This list displays the audio files, and their operating modes, selected for messages 1-16 of the DMS2.

The 'Track' column indicates the button number, the 'Mode' column has the operating mode for this message.

Files can be removed from the list by using the 'Edit List' buttons below.

As files are added or removed, a bar-display indicates the total message size as a percentage of the MMC card capacity.

7.7 THE MESSAGE OPERATING MODES.

The DMS2 has 3 operating modes for each message on the system. These are as follows:-

Mode 0 - This is the default mode. Uninterruptible i.e. when a DMS2 message is selected by pressing a button, then the message will play in its entirety regardless of the state of any button.

Mode 1 - Interruptible i.e. if a mode 1 message is playing, then it may be stopped and another message started if any other valid message button is pressed. This mode is mainly intended for long messages, which, if started in error, may be cancelled by starting a different message rather than wait until the long message has completed.

Mode 2 - Play While Button Is Pressed. With this mode a message can be played only while the message button is pressed, i.e. a message can be halted instantly by breaking the connection on the button input. This mode is used where say; a box lid is lifted, causing the message to play. When the lid is shut, the message ceases.

When an audio file is added to the track list, its mode is set to MODE0. The mode can be altered by clicking the desired mode set button (button is highlighted as white) and then clicking on the filename of the message in the Track List column. The mode select button remains highlighted so that all messages to be set to the new mode can be selected by clicking their filenames.

7.8 EDITING THE TRACKS LIST.

Audio files can be removed from the Tracks List either individually or totally.

To remove all files, i.e. begin a new track list, click the 'New' button. This will clear the track list and reset all parameters.

To remove individual files, click the 'Delete' button, button highlights in white, and then click on the filename in the Track List to delete. The audio file is removed from the list and all subsequent files move up 1 position. To remove other files you must click the 'Delete' button again to select the DELETE operation.

7.9 PROGRAMMING THE MMC FLASH CARD.

As mentioned previously, the card must be completely blank before copying can begin. You should have ensured that there are no 'sub-folders' existing on the card, if there are any, then run 'Windows Explorer' to delete them.

When the Track List is complete for the DMS2 you are programming, then you can click the 'Programme MMC Card' to create the INDEX and copy the files to the MMC card.

You are warned that any files in the 'Root' folder will be erased from the card and a list of any existing files is displayed. Press 'CANCEL' at this point if you do not want the files erased, otherwise press 'O.K.'

After clicking 'O.K.' any existing files in the 'Root' folder are erased and the copying begins.

Audio files are copied but renamed so that the DMS2 firmware can access them through the MMC card directory. The files are renamed as 'M00000XX.MP3' where 'XX' is the message number on the DMS2.

The progress bar indicates how much of the operation is complete. Depending on the total message size, the copy operation could take several minutes.

You are informed when the copying is completed and then prompted to remove the MMC card.

7.10 INSTALLING THE ASSEMBLER SOFTWARE

Prior to installing this programme, the SanDisk USB software (or software supplied with your MMC card drive) must be installed.

The DMS2 Assembler programme comes on 1 CDROM. Insert the Install Disc into your CDROM drive. From Windows, click START, then RUN. At the prompt, type "E:\setup" then ENTER (where E: is the drive letter for your CDROM drive). This will start the installation process.

Simply follow the on-screen instructions to complete the installation. The process should take only a few minutes. If your computer indicates that some of the files being copied are older than your existing files, then you should keep your existing files as prompted by the computer.

DMS2 6-Button Unit (Pre wired)

