

MACKENZIE[®]

MacFi-mp^e

MP3 DIGITAL AUDIO RECORDER/PLAY SYSTEM



Enhanced Version Addendum

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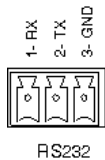
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1. MacFi-mpe ENHANCED FEATURES

The purpose of this manual is to document and explain the added features of the MacFi-mpe. In brief, these features include RS-232 (Serial) control and Synchronization Relay. These features also change some physical attributes of the original MacFi unit. These physical changes include, a 3 position Euro style connector for serial communications, a RCA type input for automated sync track encoding, a sync pushbutton for manual sync track encoding. The sync track relay populates positions 2 and 3 of Connector 2, which were previously unused.

1.1 Serial Communication(RS-232)

1.1.1. Physical Connection and Protocol



Three terminal pluggable connector. The Serial Communication port operates at 9600 / 115,200 baud with 8 data bits, 1 stop bit and No parity. This port is designed for communication with a local user or controller over a short reliable interface. No error detection scheme is implemented over this interface. All command characters and returned information are in ASCII format. When connected properly, the system prompt MFI> will be returned.

Position 1 Receive
Position 2 Transmit
Position 3 Ground

1.1.2. Toggle Baud between 9,600 and 115,200

The MacFi-mpe supports two RS-232 (Serial) port speeds, 9600 and 115200 to maintain compatibility with control systems and decrease file download times. These rates are toggled by holding the Manual Sync button during power up.

1. Remove power from the system
2. Push and hold the Manual Sync button.
3. Reapply power to the system while holding the Manual Sync button. The Status Display will show Lo or Hi or indicating the port speed of 9600 or 115200 respectively. Repeat the process to change the speed. To check the current baud rate, press and hold the Manual Sync button and the speed will show on the Status Display

1.1.3. Command List and Descriptions

At the MFI> prompt various commands may be issued to control record, playback and other functions of the MacFi-mpe. Each command and associated string must be followed by Carriage Return or <CR>.

Command List

CMD	Options	Description
BAS	[<0,+/-12>]	Set Message Bass Level.
BBT		*Memory Bad Blocks Test.
CFG		*Restore Default Configs.
DIR		Directory of Message Priority.
DEL	[<1-99>]	*Delete Message.
DLD	[<1-99>]	Download MPG Message.
DLY	[<0,+/-99>] (+=sec, -=min)	Delay Before 1st Play Start.
LST		This Commands Listing.
PAS	[<0,+/-99>] (+=sec, -=min)	Pause Between Play Repeats.
PLS	[<1-99>]	Number of Plays per Trigger.
PLY	[<1-99>,<1-99>,<0,+/-99>]	Play Message,Repeat,Delay.
PRI	[<1-99>,<E>nable/<D>isable]	Set Priority Message,Enable.
REC	[<1-99>,<1-99>,<0,+/-99>]	Record Message,Delay,Time.
RST		Warm Reset System
SHP		*Init Configs & Erase Messages.
STP		Stop Message Playback.
STS	[<0>Off/<1>On]	Display Play Status Messages.
SYS		Display System Information.
TRE	[<0,+/-12>]	Set Message Treble Level.
ULD	[<1-99>]	Upload MPG Message.

* = Confirmation Required

1.1.4. Bass- BAS

This command is to set the bass level of the MacFi-mpe.

Syntax;
BAS*value*

Where;
value = 0 or-12 to +12, (default = 0)

Example;
BAS+12<CR> sets bass level to +12dB

1.1.5. Memory Bad Blocks Test - BBT

FLASH memories have the slight possibility of developing errors. When this occurs, the user may hear a slight click in the audio where the error occurred. Generally this will not happen for at least 250,000 write/erase cycles. If this happens, the bad blocks can be mapped out by using this command. The bad blocks will be stored and not used by the recording process. WARNING - this process can take up to 20 minutes to complete, will erase messages and restore the default configuration. The system cannot perform any other function while the bad block test is operating. The user test is completed when the MFI> prompt is given to the user. All audio memory will be erased by performing this function.

Syntax;
BBT

Example;
BBT<CR> will trigger Y/N confirmation question in order to proceed with the bad block memory test.

1.1.6. Restore Default Configuration - CFG

This command restores the user configurable settings such as PAS and PLS to their default setting and sets baud rate to 9600.

Syntax;
CFG

Example;
CFG<CR> will trigger Y/N confirmation question in order to restore the default configuration.

1.1.7. Message Directory Listing - DIR

The configuration of each memory location will be displayed to the user when this command is issued. The display will show each of the 99 available message locations with either a number in the location, "XX" in the location or a "D" in front of the message number.

Example;
DIR<CR>

If a number is in the location, the message is valid and available for automatic playback. If an "XX" is in the location, the message is currently blank, and the location is available to be recorded into. If there is a "D" in front of the message number, a message exists, but it is disabled and not available for playback.

1.1.8. Delete Message - DEL

This command will delete a message from memory.

Syntax;
DEL*msgnumber*

Where;
msgnumber = 1 - 99

Example;
DEL5<CR> deletes message number 5.

1.1.9. Download an MPEG File - DLD

This command configures the MacFi-mpe to receive a MPEG 1 Layer 1, 2 or 3 (MP3) file via 1K XMODEM. The maximum MPEG data rate supported is 128kbps.

Syntax;
DLDmsgnumber

Where;
msgnumber = 1 - 99 or if left blank, downloaded file will be placed in the next empty memory location.

Example;
DLD2<CR> initiates download sequence for message 2. After command is executed, an XMODEM 1K transfer of the file should also be initiated on the controller or computer.

1.1.10. Delay before play - DLY

This command configures the delay before first play value. This setting only effects start triggers generated on Connector 1.

Syntax;
DLYvalue

Where;
value = (+) 1 thru 99 for seconds, (-) 1 thru 99 for minutes. (default = 0)

Example;
DLY+5<CR> configures delay before first play for 5 seconds.

1.1.11. Command listing- LST

This command lists the commands available to control the MacFi-mpe.

Syntax;
LST

Example;
LST<CR> displays a list of commands, values and descriptions.

1.1.12. Pause between play repeats - PAS

This command configures the pause between play repeats value. **NOTE - This setting only effects start triggers generated on Connector 1. The configuration of this value overrides the default setting of configuration switches 3 and 4 ON, 30 second delay between plays. This is helpful as the unit may be configured with a custom time via RS-232, but used in the start input remote control mode.**

Syntax;
PASvalue

Where;
value = (+) 1 thru 99 for seconds, (-) 1 thru 99 for minutes of pause
between repeats. (default = 0)

Example;
PAS-30<CR> configures pause between play repeats to be 30 minutes.

1.1.13. Number of Plays per trigger - PLS

This command configures the number of times a message will play per trigger. **NOTE - This setting only effects start triggers generated on Connector 1. The configuration of this value overrides the default setting of configuration switches 1 and 2 ON, play message 4 times. This is helpful as the unit may be configured with a custom time via RS-232, but used in the start input remote control mode.**

Syntax;
PLS*value*

Where;
value = 1 - 99 repeats. (default = 1)

Example;
PLS20<CR> configures message to play 20 times per trigger.

1.1.14. Play Message - PLY

This command is to playback messages which have been recorded into the MacFi-mpe.

Syntax;
PLY*msgnumber, repeat, pause*

Where;
msgnumber = the message location to be played<1-99>, multiple messages may be played in sequence by placing them in quotes, ie "1,2": The messages are played like a single message bound by the repeat and pause specified. Up to eight messages are supported in this mode.

repeat = the number of times to play the message<1-99>

pause = time to pause between repeats 1 - 99 seconds (+) or
1 - 99 minutes (-)

Example;
PLY6,10,+5<CR> will play message six, ten times with a five second pause between the repeats.

If no *msgnumber* is given, the system will play the next available message in memory. This defaults to message # 1 at power up. If no repeat is given, the system will play the message one time. If no pause is given, the system delays one second between subsequent message plays.

Repeat may not be entered without msgnumber being entered. Pause may not be entered without repeat being entered. **NOTE: Multiple PLY commands may be issued to the unit while it is playing. In this case the MacFi-mpe will queue the messages and play them in the order they are received. The STP command will stop playback and clear the queue.**

1.1.15. Set Message Enable - PRI

Messages can be enabled or disabled using this command. Normal conditions will warrant each message to have a "1" priority meaning they are active. If a message is set for "0", then it is considered inactive and will not be played in the sequential mode or when a PLY command is issued relating to that message number.

Syntax;
PRI*msgnumber,status*

Where;
msgnumber = the message location<1-99>
status is the priority, E for enable, D for disable.

Example;
PRI5,D<CR> will establish message five as inactive.

Each message will default with a priority of "E" or enabled after it is recorded. Disabled messages are displayed with a "D" in front of the message number when the message directory is listed. Disabled messages cannot be played until they are enabled.

1.1.16. Record- REC

This command is to used to record new messages or replace existing messages in the MacFi-mpe. The Record command can be open ended, meaning that the recording is started with this command but must be stopped using the Stop command or the time constraint.

Syntax;
REC*msgnumber,delay,time*

Where;
msgnumber = the message location to be played<1-99>
delay = the number of seconds to delay before starting the record process<1-99>
time is the duration of recording time (+) 1 thru 99 for seconds or (-) 1 thru 99 for minutes.

Example;
REC8,10,-4<CR> will record into message location eight after a 10 second delay for 4 minutes.

Disabled messages may be overwritten with the Record command. If the system runs out of memory during the record process prior to the end of the audio message, the system will stop recording and save whatever portion of the message was recorded. When the record command is received, any currently playing message will be stopped. The audio output is routed from the audio input, so that the user will hear the message being recorded. Immediately after receiving this command, the system will erase the message number called out in the command string. There is no recourse once the message is erased, the data associated with it is freed for other messages to use.

If no msgnumber is placed after the command, the incoming audio message will be placed in the first available memory location. If there is no memory slot available, the system will reject the record command. When no messages are in memory the system defaults to message # 1. Because the protocol requires that bytes two and three proceed byte one, REC<CR> will default to a one second delay time, and will allow the user to record until the end of memory. Because of the tasks the system must perform after receiving this command, the device cannot start the recording process immediately. A one second delay must be inserted after the command is received before the system can start recording audio. Any audio input to the system prior to the device being ready to record is at risk of being cutoff.

1.1.17. Reset- RST

This command causes a warm reset of the MacFi-mpe system.

Example;
RST<CR>

1.1.18. Initialize Configuration Table - SHP

This command allows the user to delete the entire contents of the memory and reset system settings to factory default. This command will erase the entire memory and reset all of the configurable settings to those specified in the Product Specification.

Example;
SHP<CR>

Because of the time required to erase FLASH memory, the system may take up to 10 seconds before becoming available to receive new commands.

1.1.19. Stop-STP

This command stops the playback or recording of messages and clears the message queue.

Example;
STP<CR>

Will stop any currently playing message, or recording message on the MacFi system. If nothing is currently playing or recording, this command will have no effect.

1.1.20. Display Status - STS

This command toggles the display of RS-232 feedback from the MacFi-mpe ON or OFF. With Status ON, the system will send a message to the RS-232 port indicating that the particular message has started/stopped. This status may be used to control other systems based on the mode of the MacFi-mpe.

Syntax;
STSvalue

Where;
value is 0 for off and 1 for on

Example;
STS1<CR> will turn display status on

1.1.21. System Information- SYS

This is a diagnostics feature for testing purposes only. Certain status information from the MacFi unit will be output to the user when this command is entered.

Example;
SYS<CR>

1.1.22. Treble- TRE

This command is to set the treble level of the MacFi-mpe.

Syntax;
TREvalue

Where;
value = 0 or -12 to +12. (default = 0)

Example;
TRE+12<CR> sets treble level to +12dB

1.1.23. Upload File - ULD

This command configures the MacFi-mpe to send a file via XMODEM 1K to another controller or computer.

Syntax;
ULDmsgnumber

Where;
msgnumber = 1 - 99.

Example;
ULD2<CR> initiates upload sequence for message 2. After command is executed, an XMODEM 1K transfer of the file should also be initiated on the controller or computer.

1.2 Synchronization

The synchronization capabilities of the MacFi-mpe allow for 100 Sync Relay outputs per message location. Sync Relay outputs may be programmed automatically or manually. Sync pulses must be at least 100mS in duration and spaced at least 100mS apart.

1.3 Sync Relay



Three terminal pluggable connector.

Position 2 Sync Relay Output, Common

Position 3 Sync Relay Output, Form A, connects to position 2 when activated

1.3.1. Sync In

Line level RCA input. This input contains an audio sensor which detects tones for synchronization. During recording the system stores a 250mS sync pulse each time a tone is detected. During playback, the Sync Relay output (normally open) will be activated at the time the tone was detected.

1.3.2. Manual Sync

Push button intended for manual or real time programming of the Sync Relay. During recording the system stores a 250mS sync pulse each time a button press is detected. During playback, the Sync Relay output (normally open) will be activated at the time the button was pressed. When the system is idle, pressing and holding the Manual Sync button will show the current baud rate on the Status Display.

1.3.3. Sync Indicator

The Sync Indicator is an LED which will activate for each synchronization pulse. This indicator will function during both automatic and manual modes of sync programming as well as during playback.

2. USING HYPERTERMINAL FOR RS-232 COMMUNICATION

Run the Hyperterminal application (typically in Start> Programs> Accessories> Communications) which is supplied with Windows.

Enter the name of your new connection, such as MacFi-mpe, and press OK.

At the "Connect to" dialog select the serial port that the MacFi-mpe is connected to in the Connect using dialog box (ex. COM 1).

At the Port Settings dialog select 9600 bits per second (or 115200 if you have toggled the baud rate on power up), 8 data bits, None parity, 1 stop bits and "None" for flow control.

Press enter to get the MFI> prompt.

Downloading a File - Follow the instructions for the DLD command. After you have executed the command and the "C" characters begin to be displayed, select Transfer> Send File from Hyperterminal. Browse to locate the file you wish to send, Select 1K Xmodem as the protocol and select Send. You should see a dialog noting the progress and success of your transfer.

Changing The Baud Rate - Disconnect the session by Selecting Call> Disconnect. Then Select File> Properties. Select Configure and modify Bits per second to be either 9600 or 115200. This setting depends on the power on rate (LO, HI) of the machine as explained in the Toggle Baud between 9,600 and 115,200 Section. Default baud rate is 9600.

3. CREATING AN MP3 FILE WITH SOUND RECORDER

Run the Sound Recorder application (typically in Start> Programs> Accessories> Entertainment) that is supplied with Windows.

Record a file from the mic or line in of your sound card by pressing the round red button, or open an existing file by selecting File> Open.

Select File> Save As. Select the Change button by Format. Select MPEG Layer-3 at the Format dialog. Select the Attributes you desire such as 32kbps, 24,000, Mono. Press OK. Modify the File Name to have the .MP3 extension then press Save. Now this file may be transferred to the MacFi-mpe via the DLD serial command.

NOTE: Sound Recorder only creates voice quality MP3 files. If you want full fidelity MP3 files, we suggest you obtain one of the many commercially available ripper or editing software packages.

Return Address

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