MP3-DSP

MP3 Subsystem Player

For Jukeboxes, Wallboxes and Home Automation Systems

- **Works with all laptop/notebook HDD's**
- **Supports all layer-III (MP3) encodings**
- **Variable or fixed bit rates to 320 Kbps**
- **Detects master/slave drive setting**
- **Automatic power down on no activity**
- **Can also be used as a portable player**

The MP3-DSP is a series of hard disk drive MP3 players designed to simulate CD changers used in jukeboxes, wallboxes, home automation systems and other personal entertainment products. The player works with any 44-pin ATA/IDE 2.5 inch hard disk drive from 2 to 60GB having a maximum height of 9.5mm, uses the FAT32 filesystem and supports both long and short filenames.

The MP3-DSP incorporates an adaptable interface that provides easy integration into existing audio systems. The various model configurations include a connector cable or adapter cable specific to the application. In most cases, a different cable is all that is needed for a new application. In addition, the MP3-DSP employs a 9600-baud serial port interface offering direct control from any processor-based system.

The player supports all layer-III (MP3) encodings at fixed and variable bit-rates up to and including 320 kbits/s. A 24-bit DAC provides 96dB of audio dynamic range. Stored audio control settings include a 12-step digital bass enhance control (0..+18 dB), a 12-step tone attenuation (0..-18 dB), a 12-step treble enhance control (0..+18 dB), a 96-step digital primary volume control (0..-96 dB), and a 96-step secondary volume control (0..-96 dB for the Rowe CD Combo).

The kit versions come with a USB downloader circuit board and the MP3-DSP digital subsystem player circuit board. The USB downloader adds a drive letter to your computer and is used to transfer MP3 files onto your disk drive. It can also be used as an external USB hard drive. The MP3-DSP is the actual MP3 player and CD changer simulator allowing emulation of up to 256 discs, each having up to 99 tracks.

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MP3-DSP Kit Contents

Your kit comes with a USB downloader circuit board, MP3-DSP digital music player / CD emulator circuit board, PC connector cables, enclosure, power supply and a storage pouch.

Depending on your model type, additional cables and/or adapters will also be included.
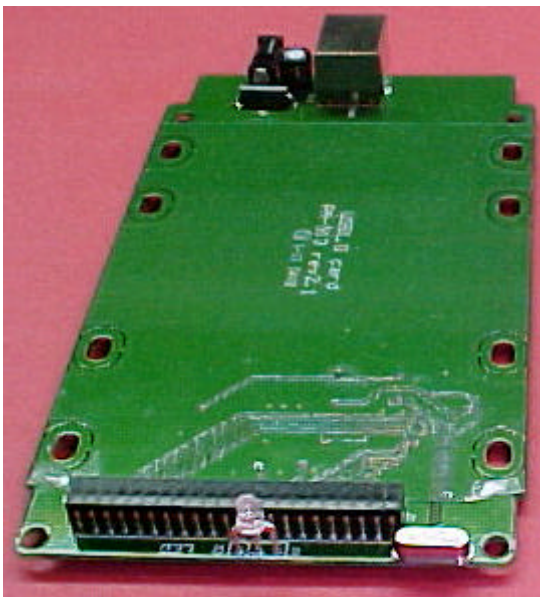
This is your USB downloader circuit board. When assembled with your disk drive and plugged into the USB port, it will add a drive letter to your computer and allow you to copy music files between your PC and the disk drive. It can also be used as a portable disk drive to store all your computer files.

Using Windows Explorer, you would create new folders for your disc numbers then drag & drop MP3 files for each song track.
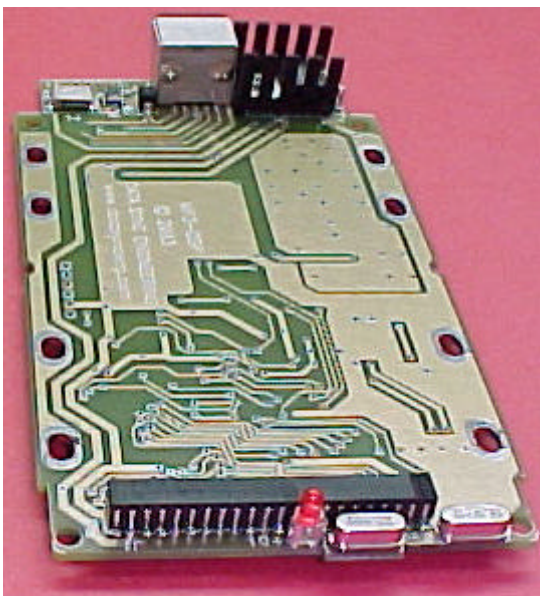
This is your MP3 digital subsystem player circuit board. When assembled with your disk drive, you have a complete music player system.

The MP3-DSP provides CD changer emulation of up to 256 discs, with each having up to 99 tracks, limited only by the storage capacity of the disc drive.

Cables or adapters provide seamless installation of this player into your audio application.
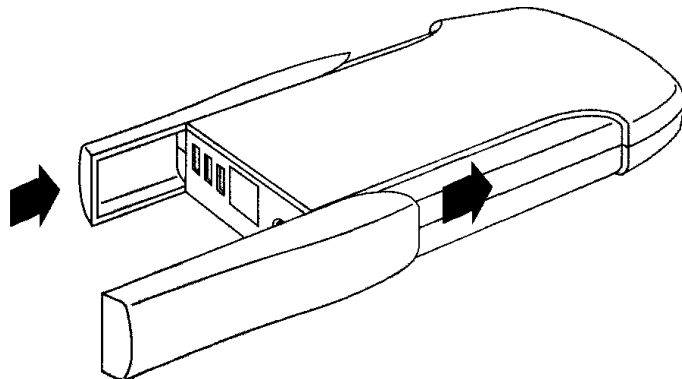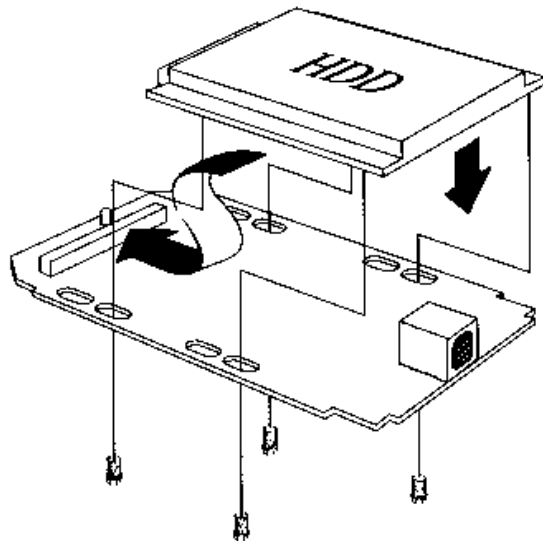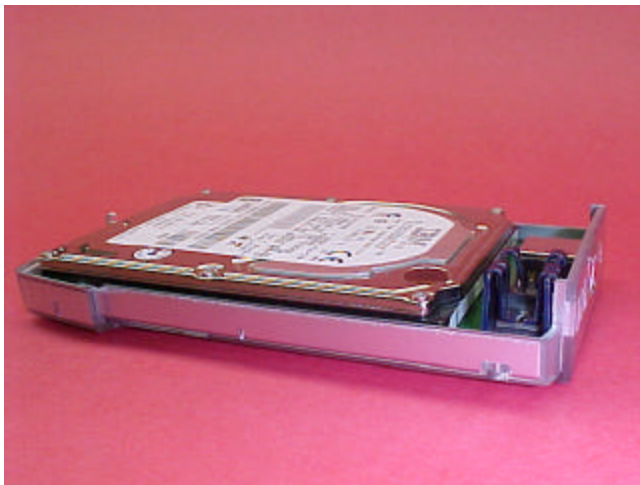
Assembling The Hard Disk Drive

The hard disk drive has two sets of connector pins.
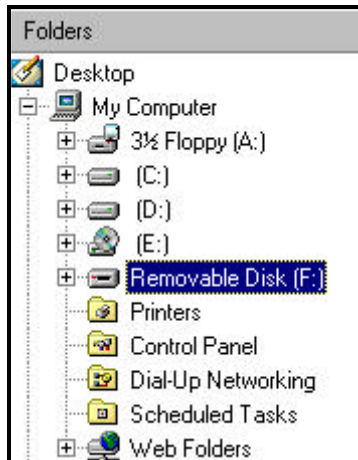43-pins on the left side and 4-pins on the right.

Position the disk drive onto the circuit board then align the left
side pins with the connector.

Slide the disk drive forward into the connector. The 4-pins on the
right are not used.

Creating New Folders for Disc Numbers

Assemble your disk drive to the USB downloader board.

Open **Windows Explorer**

Connect your keyboard power supply plug to the USB downloader then plug the USB cable into your computer.

Within a few moments, a new disk drive letter should appear.
For this example we see "Removable Disk F:"

If you did not see a new disk drive letter, follow the instructions in your USB manual about setting up your new disk drive.
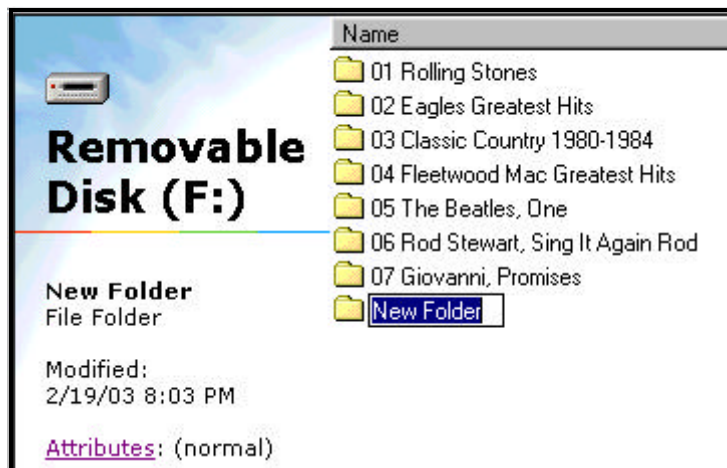
To create a new folder …

Single click the new drive letter to hi-lite,
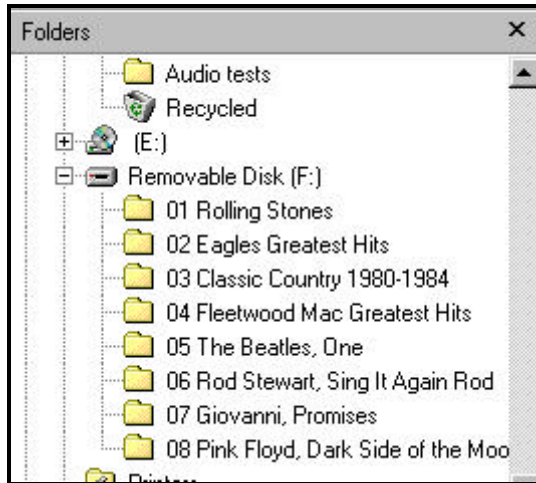Click **File | New**
Then click on **Folder**

You should see a **New Folder** name.

Change the name …

The first two letters must be your disc number from 01 to 99. The following letters can be any text you choose.

Drag & Drop Your MP3 Song Files

Select the disk and directory for your source of MP3 song files then click the **+** at "Removable Disk (F:)" to expand the folders.

If you wish to copy the entire set of songs, click on the first song at the top, scroll down to the last song, hold down the SHIFT key then click the last song. The entire list should be hi-lighted. Move your mouse over the list then hold down the left mouse button and drag the list to your F: drive folder "The Beatles".

If you wish to move a single song, place your mouse over the song then hold down the left mouse button and drag it to your F: drive folder.

Previously, folders were numbered to identify disc positions, here, MP3 song names must be numbered to identify their track position. Most MP3 "rippers" or "extractors" will provide this track numbering feature for you. The common standard for naming MP3 song files is to separate each field using " - " (space dash space). This allows MP3 players to properly arrange the text fields on their display. The example above shows the "Artist Name" followed by the "Song Title". You will also see these fields reversed "Song – Artist". Either method is fine as long as the fields are separated by "space dash space".

After creating your song disk, you should clean up your disk drive to eliminate excessive seeking.
Click **Start** | **Programs** | **Accessories** | **System Tools** | **Disk Defragmenter**

If you need to change or add the track position number of a song, place the mouse over the song then right click and select **Rename**.

Position your mouse to the start of the song name then left click. You should see a blinking cursor waiting for you to edit.

Connector & Cable Description

Mini Din Plug CUI MD-90

DC POWER

AUDIO

```
5 4 3 2 1
9 8 7 6
```
DSUB9F
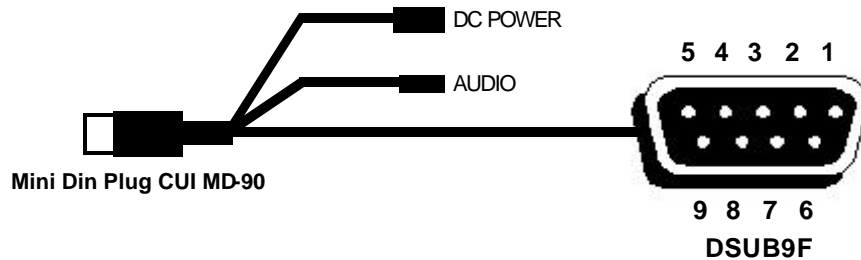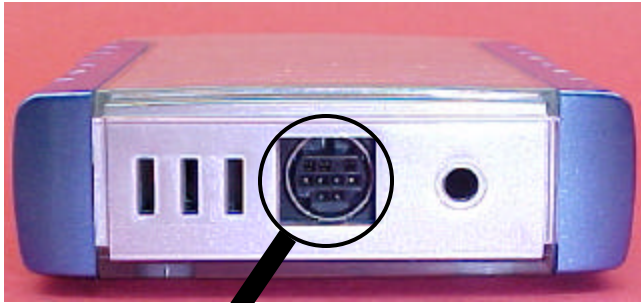
Pin	Signal
1	*Right Channel Out*
2	*Left Channel Out*
3	*+5 VDC Out*
4	*Analog Ground*
5	*Power Ground*
6	*+7.5 VDC In*
7	*Serial Data Out*
8	*Control Signal In*
9	*Serial Data In*

DC Power Connector
Barrel type 2.1mm x 5.5mm, Center pin positive

Audio Connector
3.5mm Stereo (1/8"), Tip is right-channel audio

Pin	Signal
1	
2	*Serial Data Out*
3	*Serial Data In*
4	
5	*Power Ground*
6	
7	
8	*+5 VDC Out*
9	*Control Signal In*

Quick Test of the MP3-DSP Player

Connect your disk drive to the MP3-DSP digital music player board. Apply the adhesive foam pad to the top half of the enclosure, above the DIN connector. Assemble enclosure. Plug in the 9-pin mini DIN connector (arrow or notch facing up). The audio output of the MP3-DSP has enough signal to connect directly to a headphone or connect it to your amplifier. Attach the supplied test plug onto the DSUB9F connector. Insert the DC power connector then plug in your power supply.

After a few moments, the red LED will start blinking and your songs will play. This is the "auto play" mode which will play every song in every folder, non-stop. If you unplug the power supply then plug it back in, the MP3-DSP will continue from the last song that was played.

Upgrade Your ROWE/AMI CD Combo Jukebox

The MP3-DSP V02 kit was designed to upgrade your ROWE/AMI Combo Jukebox to play MP3 music files from a hard disk drive. Any combo jukebox that uses the 4-07773-xx Central Control Computer can be upgraded. This includes models R-90, R-91, R-92, R-93 and R-94. The player automatically adapts to your jukebox offering support of 6 discs with each having up to 99 tracks. Most non-combo jukeboxes can also be upgraded by replacing the CCC EPROM program with a combo support version.

Hooking Up The MP3 Player To Your Jukebox

Attach your disk drive to the MP3-DSP digital music player board. Apply the adhesive foam pad to the top half of the enclosure, above the DIN connector. Assemble enclosure. Plug in the 9-pin mini DIN connector (arrow or notch facing up). Position the 5-pin CCC connector through the cable clamps then plug into P5 "DATA" connector on the Central Control Computer.
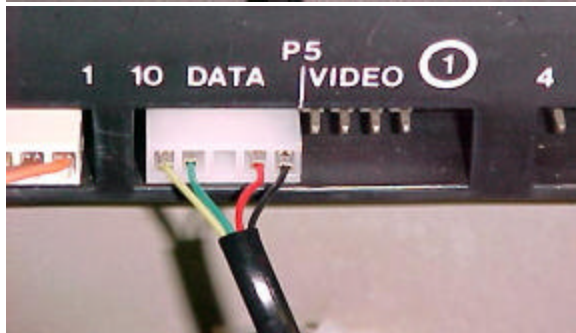
Connect the red 5-pin audio cable to the "aux" input on the amplifier. If your jukebox has a light display, plug that connector onto the extended pins. Plug the other end of the cable to the MP3-DSP audio connector.

Plug in the DC power connector from the AC adapter then plug the adapter into the SERVICE outlet on your jukebox power supply. Turn on your jukebox.
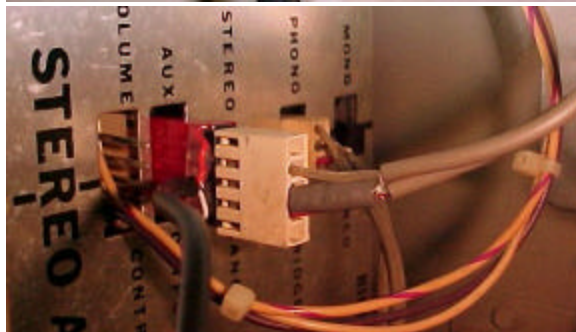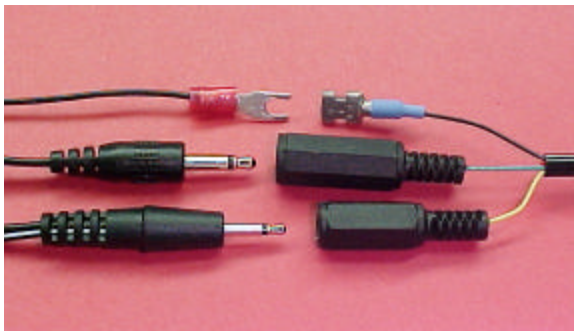
CD Initialization

To perform the CD initialization, place the jukebox service switch into the SERVICE position then enter 777 on the keypad. When initialization starts, four dashes will appear on the CCC display. When the initialization is complete, the CCC display will go blank.

Playing MP3 Songs

On a combo jukebox, CD's are selected by entering a four digit number. The first digit is always "5" for CD selections. The second digit is the disc # less one. To select disc "1", you would enter "0". The last two digits are the track # of the song you wish to play. For example, if you wanted to play disc 3, track 9, you would enter "5209" on the keypad.

Hooking Up The MP3 Player To Your WP200e

After setting up your MP3 song files, remove the disk drive from the USB downloader and attach your disk drive to the MP3-DSP digital music player board. Apply the adhesive foam pad to the top half of the enclosure, above the DIN connector. Assemble enclosure. Plug in the 9-pin mini DIN connector (arrow or notch facing up).

Plug in the WP200e's control connectors, insert the ground terminal into the female disconnect. Connect your audio cable and plug in the DC power connector from the AC adapter.

If the WP200e has never been programmed or needs to be re-programmed, plug in its AC adapter first. Wait until the LED stops blinking then plug in the MP3-DSP power supply.

A short time after powering up the MP3-DSP, you will see the WP200e LED blinking as your wallbox adapter is being programmed. The MP3-DSP clears your song memory to allow letter keys for the disc selection and number keys for the track selection. "A" = disc 01, "B"=02, "C"=03 and so on. Programming can take a few minutes depending on how many features you selected, however, after your WP200e has been programmed and tested, you should delete the TXT file. This will turn off the WP200e programming mode and allow the player to be ready for song selections quicker.

#	Feature Selected
1	Enable 50 Hz line frequency operation
2	Enable Auto-Play feature
3	Multiple Unit Mode
4	Disable 9-minute guard
5	Enable wallbox pulse view

Setting Up To Program Your WP200e Wallbox Adapter

You would create a text file and place it in any of your disc folders. The name of the text file will contain the setup information. For example, if you want to hook up a Seeburg 3W1 wallbox and turn on the "auto-play" feature; open NOTEPAD then save the file as "WP32.TXT". It doesn't matter what you type in for text, only the filename is looked at. When the MP3-DSP is powered up, it searches for MP3 and TXT files. Each TXT filename is examined. If the first two letters are "WP" then this is a WP200e setup filename. The third character is the wallbox type, which is "3" for Seeburg 3W1. Following this, you can have up to five feature select digits. In this case, the numeric "2" selects the auto-play feature.

You will need to have a disc number folder for each wallbox letter key and each folder should have an MP3 file for each wallbox number key. If you choose to use the Auto-Play feature, then you will need 20 disc folders with 10 MP3 song files in each folder. The WP200e will randomly select 1 song out of 200. The Seeburg 3W1 is a 100 select wallbox that has 10 letter keys and 10 number keys. This corresponds to 10 disc folders with each having 10 MP3 song files. A 2GB or higher disk drive should provide plenty of storage for a 200 select wallbox.