



 **DISC MAKERS[®]**
ReflexPro User Guide

Version 1.1



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REVISION HISTORY

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1.0	10/31/2003	Updates by Disc Makers Technical Staff

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Congratulations on the purchase of your Disc Makers Reflex duplication system. This sturdy unit has been professionally designed and manufactured under strict quality guidelines to provide you with years of dependable and trouble-free operation. Please be sure to read this instruction guide thoroughly before operating the unit.

TECHNICAL SUPPORT

Disc Makers backs your duplicator purchase with free lifetime technical support. Tech support hours are from 9:00 a.m. to 6:00 p.m. EST Monday through Friday at **1-888-800-4041**. Or you can email our tech support team at: **techsupport@discmakers.com**. For FAQs, downloadable manuals, product updates, and warranty registration, go to: www.discmakers.com/support.

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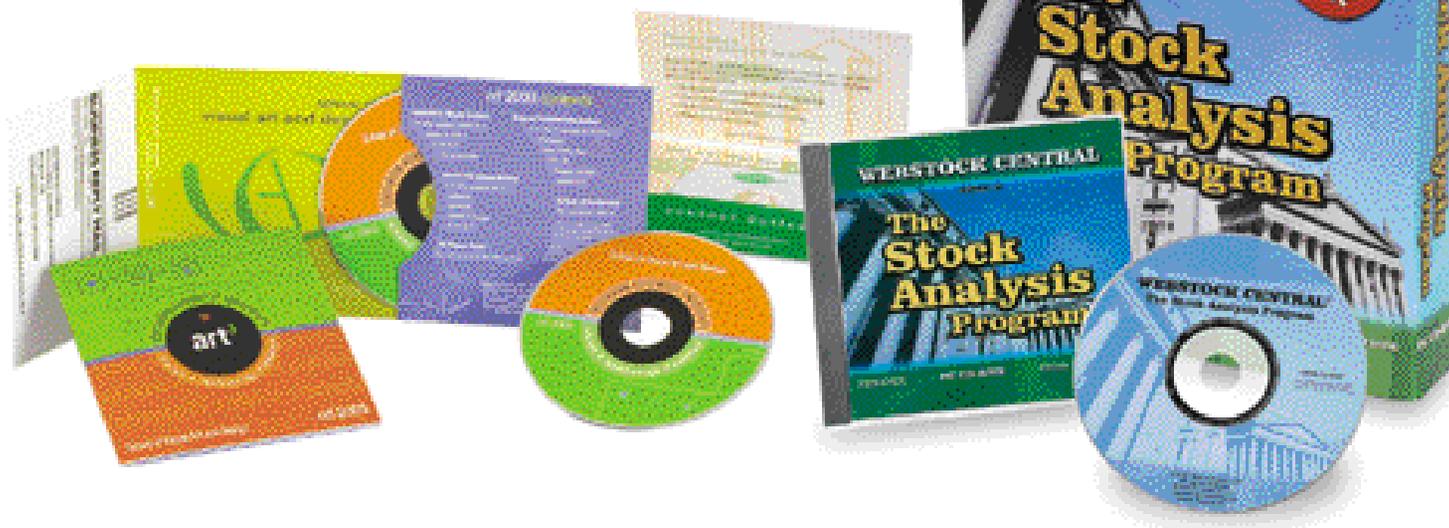
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The ReflexPro is a high performance CD-R disc duplicator designed for both the novice and professional user. It is designed for a variety of applications that require the exchange of audio, video or data content. The following is a User Guide that outlines the menu commands of the unit and immediate functions of the unit. For additional technical support please call 888-800-4041.

GETTING STARTED

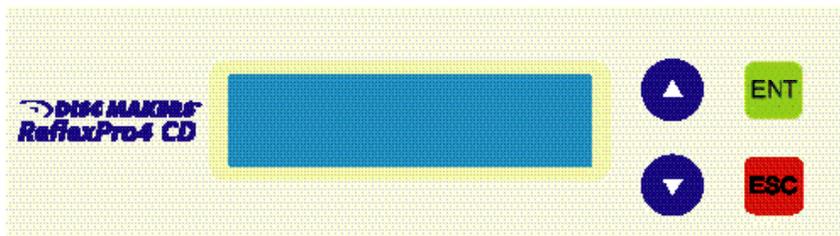
Carefully remove the CD-R duplicator from its shipping container. Please inspect the contents and verify them against the packing slip. Be sure to report any errors in shipping immediately to Disc Makers.

Packing materials: Please save the original box and packaging in the event the unit requires future service or you need to move the unit from one location to another. This will help reduce the possibility of damage in transit.

Please Note: Any item that needs to be returned for a warranty repair must be returned in original packaging.

INSTALLATION AND SETUP

1. Unpack the ReflexPro to a clean and cool work area. Keep the external packaging for future storage and transportation.
2. Place the ReflexPro on a flat, clean and dust free surface.
3. Connect the power cord from the back of the unit to an electrical outlet. Do not bypass the Ground.
4. The Front panel should appear as below.



MODES AND COPYING

MODES

The ReflexPro is able to duplicate in two different modes: hard drive to disc and disc to disc. The unit is factory preset to hard drive to disc. This mode is efficient for duplicating large numbers of discs. The hard drive to disc copies the master to the hard drive and then copies the data to each of the drives. This insures an exact copy of the original master to every disc.

The disc to disc mode will copy whatever is in the source [Src] drive to blank media in the other drives in the unit. This mode is most effective for making quantities of discs less than the number of drives in the unit. For the ReflexPro4 if the need is for three discs or less, use the disc to disc mode. For the ReflexPro7 if the need is for six discs or less, use the disc to disc mode.

Only slight changes will occur in the functions of the unit when the different modes are chosen. When the unit is in the hard drive to disc mode 'P: A' will appear at the right side of the first line of the LED. 'P' indicates the master disc will be written to the hard drive and the next letter indicates which partition will be written to.

HARD DRIVE TO DISC COPYING

Upon powering up the ReflexPro the LCD screen should appear as below:



1. Copy the master to the hard drive by using the 'Image' function. Press the down arrow until you see "9. Image" then press the 'ENT' button you should see:

```
9-01. Image      P:A
Load
```

2. Load the top drive with the master disc and press the 'ENT' button. The master disc will be copied to the hard drive and the display will read "Image Load OK"
3. Press the 'ESC' key two times until "9. Image" appears in the LCD display and then use the up arrow to return to "1. Copy."
4. Load the drives with high quality optical media and press the "ENT" button. The duplication process will begin and when completed the ReflexPro will eject the successfully copied discs. When the copy is complete the LCD will read:

```
1. Copy          P:A
OK: 04
```

Appearing next to OK will be the number of successful copies. In the this example 4 copies were successfully created.

DISC TO DISC COPYING

The ReflexPro is factory preset to do hard drive to disc copying. The unit can be changed to disc to disc mode relatively easily.

1. From the "1. Copy" screen press the down arrow until "8. Select Source" appears in the LED window.

2. Press the 'ENT' button and the following window will appear:

```
SRC: hard drive
00 IDE0 Master
```

3. Press the down arrow once for "Src: CD-RW 01 IDE1 Slave" press the 'ENT' key and the new source will be the top CD recorder drive. The LCD will display "CD-RW selected!"
4. Press the up arrow to return to "1. Copy", notice that "P: A" is no longer displayed in this screen. This is how to tell if your unit is operating in the disc to disc copy mode or the hard drive to disc mode. The hard drive to disc mode will always show the "P:.." at the right side of the screen and what partition of the drive is being used.
5. To begin the duplication operation, load the top drive (the Src drive) with the master disc. Load the other recorders, one or as many as needed, with high quality CD-R media.
6. Press the "ENT" button to begin duplicating. The unit will automatically analyze the master disc, and begin duplicating at the maximum recording speed.
9. The LCD will show the progress and display OK when the duplication is complete. Upon successful duplication, all copied discs will be ejected, if any disc fails the duplication it will remain in the bottom drive.

The LCD will display:

```
1. Copy
OK: 03
```

In this example three discs were successfully copied.

The same duplication job may be continued by reloading the recorder drives

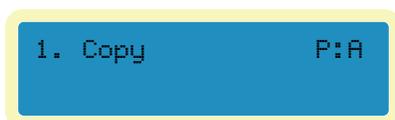
and pressing 'ENT' button.

To start a new job, place a new master disc in the top drive, the SRC drive. Then load as many recorders as needed.

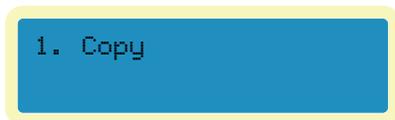
FUNCTIONS

1. COPY

The copy function is the primary place to duplicate optical media. In the Hard drive to disc mode (the default setting) the LCD will display:



The copy is being made from the hard drive and specifically from partition A. In the Disc to disc mode the LCD will display:



Notice there will be nothing to the right of "1. Copy." Pressing the 'ENT' button will initiate a copy operation.

2. TEST

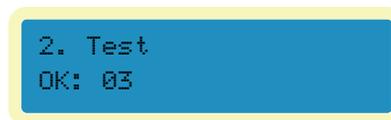
The test function is used to check whether a disc will successfully copy. It simulates the copying process, when concluded no data will be written to the writer drives. This function operates in both hard drive to disc and disc to disc mode.

1. Select the function using the up and down arrows.
2. In the hard drive to disc mode: load the drives with high quality blank CD-R

media and press the 'ENT' button to start the process. The unit will analyze the master on the hard drive, and then any disc in the recorder drives. A message will be displayed regarding the results.

3. In the disc to disc mode: Load the top drive (Src) with the master disc and load the recorder drives with high quality blank CD-R media. Press the 'ENT' button to start the process, the unit will analyze the master on the (Src) drive, and then any disc in the recorder drives. A message will be displayed regarding the results.

Upon successful testing the following will display on the LCD. In this example three discs were successfully tested. Also, any disc that passed the test will be ejected from the drives.



If the target disc has already been written to, or is damaged and cannot be written to, the disc will not be ejected. If the data on the master CD will not fit on the target disc then the disc will not be ejected also.

3. TEST AND COPY

The test and copy function incorporates the first two functions into one operation. It is used to check whether a disc will successfully copy and then goes on to do the copy. First, the copy process is simulated and then the data is actually copied to the blank media.

1. Select the function using the up and down arrows.
2. In the hard drive to disc mode: load the drives with high quality blank CD-R media and press the 'ENT' button to start the process. The unit will analyze the master on the hard drive, and then any disc in the recorder drives. The LCD will display number of discs that passed the test and then go directly to doing the copy.
3. In the disc to disc mode: Load the top drive (Src) with the master disc and

load the recorder drives with high quality blank CD-R media. Press the 'ENT' button to start the process, the unit will analyze the master on the {Src} drive, and then any disc in the recorder drives. The LCD will display number of discs that passed the test and then go directly to doing the copy. Upon doing a successful test and copy the following will display on the LCD.

```
3. Test and Copy
OK: 02
```

In this example two discs were successfully tested and copied. If the target CD-R has already been written to, or is damaged and cannot be written to, the drive for this disc will not open. Likewise, if the data on the master CD will not fit on the blank target CD the drive will remain closed.

4. VERIFY

The verify function is used to confirm that the master and the copy read the same. Again this function operates similarly in both the hard drive to disc and the disc to disc mode

1. Select the function using the up and down arrows.
2. In the hard drive to disc mode: load the drives with the copied discs. The unit will analyze the master on the hard drive, and then compare that to any disc loaded in the recorder drives. The LCD will display the number of discs that verified correctly and the number that failed the verification. Those that verified correctly will be ejected from the recorders. All failures will remain in the drives.
3. In the disc to disc mode: Load the top drive {Src} with the master disc and load the recorder drives with the previously written media. Press the 'ENT' button to start the process, the unit will analyze the master in the {Src} drive, and then any disc in the recorder drives. The LCD will display the number of discs that verified and the number that failed. Those that verified correctly will be ejected from the recorders. All failures will remain in the drives.

```
4. Verify          F->
OK: 03            Fail: 01
```

In this example, three discs verified correctly and one disc failed the verification.

The "F->" indicates that by pressing the 'ENT' button the failed disc(s) will be ejected from the recorders. Please be careful to remove the correctly verified disc(s) before pressing 'ENT' again.

To verify more duplicated discs simply fill the recorders and press 'ENT', again.

5. COMPARE

The compare function takes the verify function one step farther, it gives details about the master and copied disc. It also, ejects the disc upon a successful comparison.

1. Select the function using the up and down arrows.
2. In the hard drive to disc mode: load the drives with the copied discs. The unit will analyze the master on the hard drive, and then compare that to any disc loaded in the recorder drives. The LCD will display the number of discs that compared correctly and the number that failed. Those that passed the comparison will be ejected from the recorders. All failures will remain in the drives.
3. In the disc to disc mode: Load the top drive {Src} with the master disc and load the recorder drives with the previously written media. Press the 'ENT' button to start the process, the unit will analyze the master on the {Src} drive, and then any disc in the recorder drives. The LCD will display the number of discs that compared correctly and the number that failed. Those that passed the comparison will be ejected from the recorders. All failures will remain in the drives.

Upon completion of this test the following will display on the LCD.



In this example three discs compared successfully and 1 was different. The successful disc will be ejected.

Pressing the 'ENT' button will identify the source for the comparison and the size of the source in MB. Pressing 'ENT' again will display the first (topmost recorder) drive and the condition of the comparison, "Identical" is any passed disc. Pressing the 'ENT' button will cycle through all the recorder drives and give the condition.

Press the 'ESC' key to return to the main menu.

The failed conditions are: TOC not match, Cannot read TOC, or Read disc error.

6. PRESCAN

The prescan function only looks at the master CD. If the ReflexPro is in hard drive to disc mode the data in the partition is examined. If the disc to disc mode is current any disc in the source (Src) drive will be examined. This is used to verify that the master can be read correctly without errors

In the hard drive to disc mode: Select the loaded master to analyze and press the 'ENT' button. The unit will analyze the master on the hard drive and a message will be displayed "Prescan OK!"

In the disc to disc mode: Load the top drive (Src) with the master disc press the 'ENT' button to start the process, the unit will analyze the master on the (Src) drive, and then a message will be displayed regarding the results.

7. DISC INFO

The disc info function only looks at the master CD. To use this function it is necessary to change to the disc to disc mode, see Step 8 (Select Source). It will

display the session and tracks on the CD, total time of the CD and size of the CD.

1. Select the function using the up and down arrows.
2. Load the Src drive with the master disc.
3. Press the 'ENT' button to start the process. Pressing the up and down arrow will scan through the information.

8. SELECT SOURCE

This function is used to select the mode the ReflexPro will operate under. When the hard drive is chosen as the source (Src) the unit will be in hard drive to disc mode. Choosing any recorder drive as the source (Src) will cause the unit to copy in disc to disc mode.

1. Select the function using the up and down arrows.
2. Press the up and down arrow to cycle through the available sources.
Typically the sources are "Src: hard drive 00 IDE0 Master" and "Src: CD-RW 01 IDE1 Slave" The CD-RW drives are numbered from 01 to 07 with the top drive being 01 and the bottom drive being 07.
3. Press the 'ENT' button to select the source in view on the LCD. The display will say the source and "... selected!"
4. Press the arrow keys to move to another function.

9. IMAGE

This function is used to manipulate images on the hard drive. There are six sub functions that can be done.

9.01 Load: use this sub-function to load an image of the CD master onto the hard drive

1. Press the down arrow until you see "9. Image" then press the 'ENT' button, you should see "9-01. Image P: A Load"
2. Load the top drive with the master disc and press the 'ENT' button. The master disc will copy to the hard drive and the display will read "Image Load OK."

9.02 Delete Image: use this sub-function to delete an image from the hard drive

1. Press the down arrow until you see “9. Image” then press the ‘ENT’ button you should see “9-01. Image P: A Load” Press the down arrow to display “9-02. Image P: A Delete Image”
2. Press the ‘ENT’ button and “Delete Image in Partition A?Yes” will display in the LCD window. Pressing the ‘ENT’ button will delete the image in the A partition. The message will show “Partition : A Image is deleted” Press the ‘ESC’ key to return to the Image submenu.

9.03 Image Info: use this sub-function to show the number of sessions and tracks on the currently selected partition of the hard drive.

1. Press the down arrow until you see “9. Image” then press the ‘ENT’ button you should see “9-01. Image P: A Load” Press the down arrow to display “9-03. Image P: A Image info”
2. Press the ‘ENT’ key and the number of sessions and tracks will be displayed, pressing the up and down arrow will display total time of the image, total MB of the image, and the tracks and the track size. Note: data tracks will not display and time length.

9.04 Compare Image: use this sub-function to compare the image to a CD in the source recorder for the hard drive.

1. Press the down arrow until you see “9. Image” then press the ‘ENT’ button, you should see “9-01. Image P: A Load”, press the down arrow to display “9-04. Image P: A Compare Image”.
2. Load the top drive (source recorder for the hard drive) with the disc to be compared and press the ‘ENT’ button. When the process is finished the same screens will be displayed as in the full function (5. Compare) but the disc will not be ejected.

9.05 Select Image: use this sub-function to select which partition on the hard drive will be used.

1. Press the down arrow until you see “9. Image” then press the ‘ENT’ button you should see “9-01. Image P: A Load”, press the down arrow to display “9-05. Image P: A Select Image”.
2. Press the ‘ENT’ key and the LCD will display “Select Working Partition - A”.

Pressing the up and down arrows will cycle through the partitions on the hard drive. At the desired partition press the ‘ENT’ key and “Set Partition to ...” will be displayed to confirm that the partition is selected.

The ReflexPro unit is equipped with an eighty GB hard drive. Each partition is approximately 1 GB. The partitions are arranged alphabetically, A through Z, AA through AZ, and BA through BW

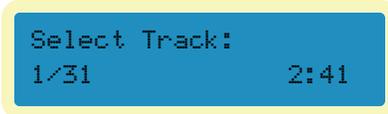
9.06 Image Source Drive: use this sub-function to select which recorder is used as the source reading a CD to the hard drive. The ReflexPro is defaulted to use the top recorder drive in the unit.

1. Press the down arrow until you see “9. Image” then press the ‘ENT’ button you should see “9-01. Image P: A Load”, press the down arrow to display “9-06. Image P: A Image Src Drive”.
2. Press the ‘ENT’ key and the LCD will display “Select Img Src: 01 IDE1 CD-RW N”. Pressing the up and down arrows will cycle through the recorder drive from 01 at the top to 04 at the bottom, 07 on ReflexPro7. At the desired drive press the ‘ENT’ key and “Load image from Drive ID - 0...” will be displayed to confirm the change in source recorder.

10. EDIT TRACK

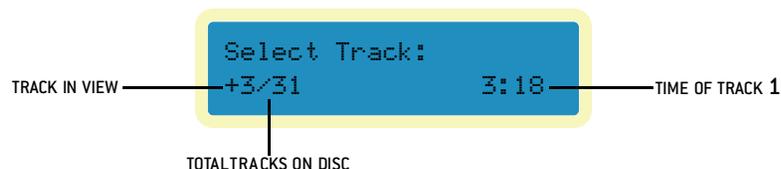
The ReflexPro can be used to create custom audio CDs. This function allows the user to take audio tracks from different CDs and compile them to a single CD. This function is only available in the disc to disc mode.

1. Set the ReflexPro to disc to disc mode (see page 9), then select the “Edit Track” function using the up and down arrows.
2. Load the top drive (Src) with the master disc. Press the “ENT” button once to see the main screen for this function, “10-01 Edit Track CD to CD Edit.” Press the ENT button again to see the following screen:



Select Track:
1/31 2:41

3. Press the up or down arrow to change the track in view. To select a track to copy to the blank disc press the ENT key, a + will appear next to the track in view. In the following example track 3 is in view and is selected for copying.



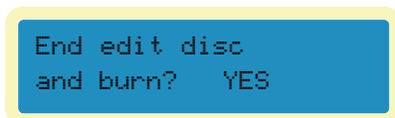
More than one track can be chosen from a CD but they will be recorded to the destination in the order in which they are on the original CD. To change the order of play, copy each track individually.

4. After selecting a track (or tracks) to copy press the up arrow until "End" appears. In this example one track is selected and the time for this track is 2:41.

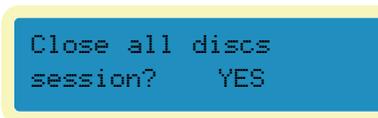


If four tracks were selected the screen would show "4 Trk" and give the total time for all four tracks.

5. Load the other recorders, one or as many as needed, with high quality CD-R media.
6. Press the ENT button and the ReflexPro will ask if all the selections are made for this CD. Use the up or down arrow to change between Yes and No. Pressing ENT with No on the LCD will take the user back to Select Track. Pressing ENT with Yes on the screen will start the copying of the track (or tracks) to the target CD.



7. When the copying ends the unit will display "Burn Complete! OK: 01". Press the ENT button. The LCD will display "Continue edit next Disc? NO". To change to another CD, Load the top recorder drive (Src) with another master disc, press the up arrow to change the "No" to "Yes" and press ENT. This will take you to the screen from step 3. Repeat steps 3 through 6 to add more tracks on the compilation.
8. When there are no more tracks to write to the compilation leave the "Continue edit next Disc? NO" set to "No" and press the ENT key again. The following screen will appear:



Press ENT and the ReflexPro will close the CD.

The LCD will display "Close Complete OK: ... Fail: ..." the number of discs closed successfully will be next to OK and they will be ejected, any failures will remain in the recorder drives.

The ReflexPro can compile to the hard drive as well, in step 2 use the down arrow to select "10-02. Edit Track CD to hard drive Edit" and press enter. Steps 3 and 4 will be the same to select the tracks to copy. It is not necessary to load any media. Step 6 will load the selected track(s) to the hard drive. The last few steps will be as follows:

7. When the copying ends the unit will display "Image load OK", pressing 'ENT' will display "Continue edit next Disc? NO" Leaving this set to "No" and pressing 'ENT' the screen will display "Burn or Move to partition? Burn". Use the down arrow to change the "Burn" to "Move" then press 'ENT'. "Select Partition A" will be displayed. Use the down arrow to select a partition to copy to and press 'ENT'. You will see "Moving to P: ..." and then "OK!" to confirm the writing to the hard drive. Pressing 'ENT' will return to the Edit Track main menu.

8. Press 'ESC' to return to the main menu and use the up arrow to change to "8 Select Source." Change to the hard drive for the source (see page 9) and then use the arrows to go to "9. Image", press 'ENT' then use the down arrow to get to "9-05 Select Image" to select the partition (see page 9) of the hard drive that the compilation was moved to. Go to "1.Copy" and make the CD from the hard drive.

11. Setup

This function allows the user to specify specific parameters for copying CDs. There are 16 sub items. From the main menu screen pressing "ENT" will show the sub heading, pressing the up and down arrows allows the user to move between the settings.

11.01 Language: allows the user to set English or Spanish as the display language.

11.02 Burn Speed: allows the user to change the speed at which the unit burns a CD. By pressing the 'ENT' button the current setting will be displayed, the user can then press the up and down arrows to change to the desired speed. Pressing the 'ENT' button will set the speed. Press 'ESC' to go back to the main menu.

11.03 Read Speed: allows the user to change the speed at which the unit reads a master CD. By pressing the 'ENT' button the current setting will be displayed, the user can then press the up and down arrows to change to the desired speed. Pressing the 'ENT' button will set the speed. Press 'ESC' to go back to the main menu.

11.04 Auto Start Drive set to 'On' will start a copy function as soon as blank media is detected in the writer drive. The default setting is 'Off'.

11.05 Startup Menu allows the user to have the ReflexPro start up to any of the first seven options in the main menu. The default setting is 'Copy'.

11.06 Auto Verify set to 'On' will do a verify after every copy is made. The default setting is 'Off'.

11.07 Auto Compare set to 'On' will do a comparison after every copy is made. The default setting is 'Off'.

11.08 Auto PreScan set to 'On' will do a prescan on every CD placed in the reader drive. The default setting is 'Off'.

11.09 Eject Disc allows the user to choose what will happen at the end of function. The three choices are: Eject Good Only, Eject All Disc, and Do Not Eject. The eject option is only available on the Copy, Test and Copy, Verify, and Compare functions. The default setting is "Eject Good Only".

11.10 Burn on the Fly allows the user to burn an image of the master to the hard drive then to blank media. The difference between this and loading an image is that with "Burn On The Fly" set to 'off' the image will be immediately erased after the write to the blank media. Set to 'On' the ReflexPro will write directly from disc to disc without sending an image to the hard drive first. With "Burn On The Fly" set to 'off' Safe will appear in the upper right of the LCD display. The default setting is 'On'.

11.11 Burn Mode allows the user to choose Disc at Once or Track at Once for the burn function. The default setting is 'DAO' Disc at Once.

11.12 Button Sound set to 'On' will cause any pressing of the control buttons to make a sound. The default setting is 'On'.

11.13 Device Info has information on the writer and reader drives.

11.14 System Info has information on the controller of the ReflexPro.

11.15 Quick Erase erases the TOC of CD-RW discs.

11.16 Full Erase erases all the data on a CD-RW disc.

GLOSSARY

CD: Short for compact disc, an optical disc storage format developed by Philips and Sony.

CD Duplication: The process of making one or more copies of a compact disc.

CD+G: CD+Graphics. Audio, text and graphics used in the same application. This type of disc is usually used for Karaoke machines.

CD-DA: Compact Disc-Digital Audio. A CD-DA disc contains tracks with audio sectors only. In 1982 Philips and Sony introduced the necessary technology for storing digital audio signals on a compact disc, and introduced the CD-Digital Audio.

CD-R [Disc]: An acronym for compact disc-recordable which is a type of media that allows you to record information using a CD Recorder.

CD-Recordable: CD-Recordable technology allows production of CD-ROMs on the desktop ('one-offs'). It requires a PC, a CD-R recorder or drive, appropriate software, and 'recordable' media. The reduction of prices for this hardware and software, and their ease of use, has helped the growth of CD-ROM production in-house. The 'one-off' is very different from the mass-reproduced or 'hot-pressed' CDs. It is sold pre-grooved, in 63 or 74 minute capacities, and it involves a layered structure--with a sensitive chemical recording layer, and almost always with a gold reflective layer. Once recorded, the CD-R disc (one-off) performs in the same way as the mass-reproduced CDs.

CD-ROM: Compact Disc-Read Only Memory. A standard for compact disc to be used as a digital memory medium for personal computers. The specifications for CD-ROM were first defined in the Yellow Book.

CD-ROM Disc: A CD-ROM disc contains only data sectors as defined in the Yellow Book.

CD-ROM Drive: A peripheral device attached to a computer which allows it to read/play a CD-ROM disc. All CD-ROM players can also play back audio CDs, but you need external headphones or speakers to hear them.

Compact Disc: CD stands for compact disc which is a general term for all formats of CD media. CD formats available on the market now include CD Audio, CD-ROM, CD-ROMXA, Video CD, CD-I and others.

Compact Disc Formats: During the last two decades several Compact Disc formats were developed to serve different purposes and uses. Starting with the CD-DA format in 1980, as a way to distribute high quality music in a compact and convenient format, the first compact disc standard was formulated. Then, the idea of storing computer data on the same media, more than 10 years ago, lead to a new format: the CD-ROM (along with CD). In the last few years, the desire to store a whole new generation of multimedia contents(audio, video, games, pictures etc.) demanded new formats: CD-I, CD-XA, Photo-CD, Video-CD, CD+ etc. were invented.

Digital Audio: Although digital audio can have a variety of sampling rates and quantization, the Red Book specifies CD-Digital Audio as being sampled at 44.1KHz, and quantized at 16 bits/sample, for high quality stereo sound (65,536 values). Therefore, sound of different quality, even if it is placed in a CD, is not Red Book Digital Audio.

Digital Audio Extraction (DAE): The process of copying CD-DA audio tracks digitally from your CD-writer or another CD-ROM drive, to a hard disk or to a recordable CD. Not all CD-ROM drives support this.

Disc Read Head-Disc Write Head: Storage drives (magnetic and optical) have a head or heads that float over the recorded area to read and write. Obviously, CD-ROM drives have only a read head, which involves a low-intensity red laser diode (a.k.a. infrared laser diode), lenses that focus the laser on the track, and others that redirect the reflections to one of the photodiodes for appropriate decoding. Some Write-Once and Rewritable optical drives involve two heads (to write and read), while other drives, including CD-Recordable, use only one head to do both--using a high-intensity blue argon laser for the write function. For mass replication of CD-Audio, CD-ROM, and DVDs, the glass master is produced by encoders that have special recording heads.

Disc-At-Once (DAO): A method of writing in which one or more tracks are written in a single operation. The laser will not stop until the whole disc recording is finished and the disc is closed - hence no no clicks between audio tracks. Disc-at-Once has only been added/available with the recent generation of CD recorders and recent firmware upgrades.

Emulate: To test the function of a disc on a computer after formatting a complete disc image.

Enhanced CD: A CD-ROM disc contains only data sectors as defined in the Yellow Book.

Hard Drives: Originally known as Winchester drives, these magnetic storage devices have one or more non-removable solid platters--as opposed to the floppy-disk drives. Hard drives come in various types, different capacities and configurations--and are connected to the bus through a controller or interface card. There are removable hard drives, which allow removal of the component that contains the platters--a workable option for users with security concerns.

HD CD: High-definition Compatible Digital. A proprietary method of enhancing audio on CDs.

Hz: Hertz. A unit of frequency measurement. The number of cycles (repetitions) per second.

Karaoke: Literally, empty orchestra. The social sensation from Japan where people sing along to a music track. Karaoke was largely responsible for the success of laserdisc in Japan, thus supporting it elsewhere.

Master: The metal disc used to stamp replicas of optical discs. The tape used to make additional recordings.

Mode: Under the ISO 9660, a CD-ROM sector can be Mode 1 or Mode 2.

Mode 1 allocates 2048 bytes for user data, plus a third layer of error detection and error correction codes. This is the Mode that provides the highest integrity for computer data.

Mode 2 allocates 2336 bytes for user data, and no third layer of error detection and error correction. This mode is considered appropriate for segments of music, graphics and video, especially in CD-ROM-XA and CD-I implementations.

Multimedia: Information in more than one form, such as text, still images, sound, animation, and video. Usually implies that the information is presented by a computer.

Track-At-Once: With Track-at-Once writing mode, a CD-Recorder will record one track at a time. In between every two tracks (unless you are only recording a single track). The CD-Recorder laser will stop while the hard disc prepared for the contents of the next track. Each time the laser is stopped, it writes Run-Out blocks. When starting again, it writes Run-In blocks (a total of 7 blocks). These are ignored by CD-ROM readers and so do not disturb data transmission, but in some audio players you might hear a click between tracks. This is why disc-at-Once recording is preferable for audio discs.

Wave: A Wave file (.WAV) is a type of sound file which stores digitized analog signals.

Yellow Book: The book which sets out the standard developed by Philips and Sony for the physical format of compact discs to be used for information storage (CD-ROM).

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