

TASCAM

TEAC Professional Division

MMR-8

MMP-16

Modular Multitracks

Frequently Asked Questions

TASCAM MMR-8 & MMP-16 MODULAR MULTITRACKS

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TASCAM MMR-8 & MMP-16 Modular Multitracks

Frequently Asked Questions

What is a Digital Dubber and how does it differ from other hard disk recorders?

The TASCAM MMR-8 and MMP-16 are referred to as “Digital Dubbers” because the primary application for which they have been designed is the replacement of 35MM magnetic film dubbers for feature film post production. These units also function very well in post production applications where they can provide a random access, non-linear replacement for more traditional tape-based digital audio recorders and players. One of the primary features that sets these units apart from other hard-disk based recording and playback units is their comprehensive synchronization and remote control capabilities. This includes biphas (film tach) which allows direct synchronization to film projectors as well as SMPTE time code, serial and parallel control of track arming and transport functions and the ability to integrate seamlessly with the most popular digital audio workstation formats commonly used in post production sound editing.

Can I link multiple MMR/MMP units together?

Yes, by using the MMR sync bus connection, up to 100 MMR/MMP units can be connected together for sample accurate operation. The MMR bus uses up to four independent Sync Groups which may each run at different sample and frame rates, allowing up to four control rooms to be assigned units within the same system. Each Sync Group carries all the information a slave MMR/MMP needs to run at exactly the same speed and location as the master unit for that group. By assigning an MMR/MMP unit as master of its Sync Group, its sample position (including timecode and footage), its transport status, and its sample rate are all transmitted to other units in the same Sync Group. Any changes in the settings on the master unit are automatically relayed to the slave units. Units may be added or removed from a Sync Group while other units in the group are working without adversely affecting the operation of all the other units.

Is there a remote control unit for the MMR/MMP system?

Yes, The TASCAM MM-RC Remote Control unit allows control of up to 100 MMR or MMP units. Multiple remotes may be connected to a multiple MMR/MMP system (up to 36 total remotes are supported). Each remote can control all of the machines on a single sync group, and a system may use up to four sync groups. This allows multiple mix rooms to freely assign units and remotes as needed.

What other external controllers can be used with the MMR/MMP?

In addition to the TASCAM MM-RC, the MMR track arming and transport functions can be controlled from a variety of sources. These include: parallel track arming and transport control (GPI), serial 9-Pin track arming and transport control, MIDI Machine Control, and TimeLine Lynx Keyboard Control Unit. We are also making the remote control protocol available to other manufacturers so that third party manufacturers can add MMR/MMP remote control support to their products

What does the MMR/MMP system synchronize to?

There are different types of synchronization, so let's look at how the MMR/MMP system works with each. For synchronizing the digital sample clock, the MMR/MMP can accept an external digital word clock, or derive the sample clock from other incoming signals such as video sync, biphasic, or time code. The transport can be synchronized to SMPTE Linear Time Code, Biphasic, or Serial 9-pin (P2) time code and transport commands, as well as MIDI machine control. The time code frame edge can be synchronized to an incoming video signal (usually video black burst). The MMR Bus allows slave units to synchronize their clocks and transport controls to another MMR or MMP unit acting as system Master.

What file formats does the MMR/MMP play?

As of software release version 3.0, the MMR-8 and MMP-16 can play the following formats:

- WaveFrame Projects (16- and 24-bit)
- Digidesign Pro Tools Sessions (16- and 24-bit)
- OMF Compositions (referencing Sound Designer II media files)
- AKAI DD-8 (16- and 24-bit)
- DEVA files (Broadcast WAVE format)

Support for Sonic Solutions files is planned for Q4, 1998, as well as other formats in the future.

What file formats does the MMR-8 record?

As of software release 2.0, the MMR-8 can directly record the following formats:

- WaveFrame Projects (16- and 24-bit)
- Digidesign Pro Tools Sessions (16- and 24-bit)

Support for Sonic Solutions files is planned for Q4, 1998, as well as other formats in the future.

Does the MMR/MMP create Pro Tools waveform display files?

No, although the MMR-8 will record Pro Tools Session files directly and create the necessary audio files, session files, and folders on the Macintosh disk so that Pro Tools can recognize and load the Session, creation of Pro Tools waveform overview files is done only by the Pro Tools system, not the MMR.

Can the MMR/MMP be used to edit a project?

Yes, there is a full complement of editing features available on the MMR-8 and MMP-16. Edit choices supported are Cut, Copy, Paste, Insert, Clear, Open, Undo and Redo (10 levels). There is also a Slip In/Out command which operates as a 'nudge' function for moving selected audio on a track (or tracks) by a desired number of frames, as well as a track slip function. Editing is supported in both Pro Tools and WaveFrame formats, and all edits will update the Project or Session EDL file. The MMR/MMP jog/shuttle wheel can be used to "scrub" the audio for locating edit points.

What file format conversions are supported on the MMR/MMP?

One of the most powerful features of the MMR-8 and MMP-16 units is their support for multiple Digital Audio Workstation formats. The following chart shows the Matrix of formats supported and the various Backup, Export, and TapeMode™ Conversion operations available in Version 3.0 of the MMR and MMP.

File Compatibility Chart	T O	WaveFrame	WaveFrame TapeMode™	OMF / SDII	Pro Tools	Pro Tools TapeMode™
FROM						
WaveFrame		Backup	Convert to TapeMode	Export	Export	Convert to TapeMode
WaveFrame TapeMode™		[Change Record Mode Setting]	Backup	Export	Export	Convert to TapeMode
OMF / SDII		Export	Convert to TapeMode	Backup	Export	Convert to TapeMode
Pro Tools		Not permitted	Not permitted	Export	Backup	Convert to TapeMode
Pro Tools TapeMode™		Not permitted	Not permitted	Export	[Change Record Mode Setting]	Backup*
AKAI DD-8		Export	Convert to TapeMode	Export	Export	Convert to TapeMode
DEVA		Export	Convert to TapeMode	Export	Export	Convert to TapeMode

Table of Backup, TapeMode™ Conversion, and Export Paths

Any file format that can be played on the MMR/MMP can also be written (exported) to any written format supported by the MMR. Written formats are WaveFrame, Pro Tools, and OMF/SDII. The sole exception is that Digidesign Pro Tools files may be written as OMF files, but not as WaveFrame files (shown as *Not Permitted* in the chart above). To convert Pro Tools to WaveFrame, first export Pro Tools to OMF on the same disk, then use that OMF file for export to WaveFrame (one extra step).

**This is true only if the Mac HFS disk being copied to is formatted identically (same block size), otherwise Backup to a Mac volume with a different block size will yield a non-destructive project. In this case, use Convert to Tape Mode to insure the project remains a TapeMode project after being copied to the new disk.*

Can the MMR/MMP play more than one file format at the same time?

Yes, since the MMR/MMP can mount disk volumes which contain WaveFrame, Pro Tools, OMF, Akai, and Deva Broadcast Wave files simultaneously, any track from any of these volumes can be loaded into the MMR/MMP and played simultaneously. This means that (for example) a unit could be playing 2 WaveFrame tracks, 2 Pro Tools tracks, 2 OMF tracks, an Akai track and a Deva Broadcast Wave track all at the same time. This capability is unique to the MMR and has never been duplicated by any other system.

Can the MMR-8 record more than one file format at the same time?

Yes, the MMR-8 can record both WaveFrame and Pro Tools formats, and will record to either of these formats on a track by track basis. In other words, if WaveFrame tracks are loaded on channels 1 through 4, and Pro Tools tracks are loaded on channels 5 through 8, the MMR will record to each in its native format *simultaneously*.

Is there a Meter unit for use with the MMR/MMP?

Yes, the TASCAM MMU-16 is a 16-channel meter unit for use with the MMR-8 and MMP-16. One MMU-16 can be used to display data for two MMR-8 units, or for one MMP-16. The MMU-16 is a peak reading digital level meter which connects either directly to the remote control (UIB) port on the MMR-8 and MMP-16, or can also be connected to the Meters connector on the back panel of the MM-RC remote control unit. When used with the MM-RC, the meters will follow the machine assignments of the remote and will display meter data for the currently selected dubber.

Does the MMR/MMP have a Backup function, and how fast is it?

Yes, there is a SCSI Backup function on the MMR and MMP. The backup time is faster than real time when calculated on a track/minute basis. Our tests indicate that the backup is approximately 20 times real speed per track (depending on the drives used - optical backups are somewhat slower). In other words, with fast hard drives, 20 minutes of audio per track will back up in one minute. For 8 tracks of 20 minutes length, it would take about 8 minutes.

Can the MMR/MMP back up files to an Exabyte, DLT, or other tape drive?

It is not possible to backup from the MMR using any kind of tape drive. There are many technical reasons for this, and we do not expect this to change anytime soon. However, since the MMR uses standard DAW formats (WaveFrame and Pro Tools), and these workstations have a method for backing up to tape drives, we recommend using a WaveFrame system or a Macintosh (in the case of Pro Tools Sessions or OMF files) to back up these files to a SCSI tape drive (Exabyte, DLT, etc.). This may be done using the built-in backup utilities on the WaveFrame, or standard backup programs on the Macintosh such as Retrospect or Mezzo Archiver.

Can the MMR-8 mirror recordings to a second drive in real time?

Mirroring (RAID level one) can be accomplished only by using an external device such as the TD Systems Omniserve to act as a master SCSI controller and multiplexer for two or more external drives. For more information on this device, contact TD Systems at <http://www.tdsys.com/>, or call them at (508) 393-0861.

Can two units play from a single drive for 24 or 32 track Projects?

This can only be accomplished by using an external SCSI multiplexing device. The TD Systems Omniserve system mentioned above allows connection of a single drive to more than one MMR or MMP unit, so that Projects or Sessions with more than sixteen tracks can be played from a single drive by using multiple units. See the previous question for contact information.

Can the MMR/MMP use optical disk drives or DVD-RAM?

It is possible to use a LIM/DOW optical drive by attaching it to the external SCSI port. You should know that current LIM/DOW drives are not as fast as SCSI hard drives, and will not reliably record across all eight tracks simultaneously, especially if punching in and out in non-destructive record mode. We recommend to record no more than 5 tracks at once in 16-bit or 4 tracks in 24-bit at any one time to assure proper performance under all conditions. The next generation of LIM/DOW drives have larger capacity and may be faster, which could improve performance. We will publish test results as soon as units become available for testing. DVD-RAM drives can be used for Backup and archiving in version 3.1 and above.

Can the MMR-8 record to an external SCSI drive?

It is possible to record to as many as six external SCSI drives. In software Version 3.0 and above, there is a Setup menu item (705) for choosing the desired SCSI record drive. Also, in systems using Version 3.0 (and in all MMR-8 software Versions 1.25 and higher), you may load a track or project from the drive to which you want to record, and the MMR will automatically make any new recordings to that drive. If tracks are loaded on an individual basis, the MMR-8 can record to each track simultaneously, even if they are on different drives (up to seven total SCSI drives) or different formats (WaveFrame and Pro Tools are supported for recording in Version 2.0 and up).

Can I change the SCSI ID of the internal Kingston carrier?

You can change the SCSI ID of the internal Kingston carrier by means of a small set screw in the Kingston receiver. This is easily accessible with the Kingston drive carrier removed. See the Kingston carrier manual (included with the MMR/MMP) for more details.

Can the MMR/MMP play from more than one drive at a time?

Yes, the MMR-8 and MMP-16 units can access multiple SCSI drives simultaneously. If a project or Session was created in a manner that spread audio material across several drives, the MMR/MMP system will automatically find the audio material (provided all of the referenced drives are mounted) and play it back just as it was created on the editorial system. It is also possible to load audio at the Track level, so that material from different projects on different drives can be loaded simultaneously for playback.

Can the MMR-8 record to more than one drive at a time?

Yes - the MMR-8 will record to up to seven total SCSI devices at once. The MMR-8 can record to any WaveFrame or ProTools drive from which a project or track is loaded, whether it is internal or external. In other words, loading a project or track makes the drive from which that project or track is loaded the designated record drive for that project or track.

Can I use an Iomega Jaz drive with the MMR/MMP?

Yes, the MMR/MMP can use the Iomega Jaz drive, but users should understand that this unit does not have the same performance specifications as a hard disk drive and is not rated to reliably allow 8 channels of audio recording with punch in and out. Playback of 8 channels of audio will work fine in most cases (depending on edit density). In our experience, the 2 GB Jaz drives have noticeable better performance than the 1 GB capacity units.

Can I attach an IDE drive to the MMR/MMP?

No, the MMR/MMP is designed to work with SCSI devices only, and does not allow connection of external IDE drives. The internal IDE drive in the MMR/MMP unit is used to hold the operating system and MMR/MMP application software only, and not as a media drive.

What is TapeMode™?

TapeMode is a method of recording audio with the MMR-8 that directly overwrites any previously existing audio material whenever a recording is made. This saves disk space when the unit is being used to record mixes, since it is only the most recent recording that mixers want to keep. This exactly emulates the way mixers have worked for years with analog or digital tape machines, hence the term TapeMode. TapeMode is also more efficient in its use of system processing resources and makes repeated seamless punch operations extremely reliable.

Can LIM/DOW optical and SCSI hard drives be used simultaneously?

Yes, you can cascade LIM/DOW optical drives and SCSI Hard drives on the external SCSI. The MMR will play (and record) projects or tracks from multiple drives simultaneously, whether those drives are SCSI hard drives, LIM/DOW optical drives, Jazz drives, or other supported SCSI media. See the drive compatibility chart on the TASCAM web site for the most current list of supported media drives for the MMR/MMP.

Can the TASCAM TM-D8000 Digital Mixer control the MMR/MMP?

Yes - TM-D8000 units loaded with version 1.04 software and above can control the MMR/MMP transport using 9-pin serial control. The mixer will recognize the MMR/MMP and will show this as the name of the device. MMR/MMP version 3.0 and above have implemented MIDI Machine Control, so the MMC out of the TM-D8000 can also be used to control the MMR-8.

Does the MMR/MMP have a Biphase generator?

The original design of the MMR/MMP called for a Biphase generator mode. After much discussion and canvassing customers, it has been decided not to implement this feature. The Biphase output port will pass through any incoming biphase signal, but will not generate a biphase signal directly. This is a change in the product specification and will be removed from the list of supported features in upcoming marketing materials and manuals.

How can I toggle the Biphase board between +12 volts and +5 volts?

On the BOB (Biphase Operations Board) where the biphase connectors are located, there is a small white switch located just below the top connector. Use a "tweaker" or small screwdriver to push this switch and toggle it between +12v and +5v. A red LED at the very top of the BOB board is lit when the unit is set to +12v and not lit when set to +5 v.

Can I connect a video display monitor to the MMR/MMP to edit projects?

The MMR-8 and MMP-16 were designed originally to take the place of 35mm Mag film dubbers in professional post production applications, but not to take the place of a fully developed digital audio workstation editorial system. For this reason, the system was not designed with a graphical user interface or video monitor card built in. However, it is clear that for many users a graphical view of a project would be helpful so the mixer can quickly locate sound clips and perform basic editing tasks such as conforming sound to picture changes. TASCAM has listened to these requests and is now in the process of developing graphical user interface software for the MMR/MMP product line. This software will run on a separate Windows-based PC system and will communicate with the Dubbers via Ethernet. To use the software, the user must install an Ethernet card in the available PCI slot in the MMR-8 or MMP-16 and then connect this to the Ethernet port on the computer running the Graphical User Interface software. This software will allow control of many aspects of the entire system to which it attached, as well as providing a graphical interface for viewing projects and doing graphical editing. This software is expected to be available sometime during 1999. More information will become available as this product nears completion. Stay tuned to the TASCAM web site at www.tascam.com for updates.

How do I access the Varispeed mode?

The Varispeed mode has been implemented in the MMR/MMP version 3.0 software, and is one of the control modes accessed via Setup menu 000. The varispeed range is: +/- 12% at 44.1kHz, and +4% to -12 % at 48kHz. The + range is less at 48kHz because Varispeed works by changing the sampling rate, and there is an upper limit of around 50kHz sampling rate on the MMR/MMP D to A converters. Varispeed is used to produce a specific, reproducible audio speed & pitch change, especially for music applications.

How do I access the Serial Transport mode?

The Serial Transport mode has been implemented in the MMR/MMP version 3.0 software, and is one of the control modes accessed via Setup menu 000. This feature allows the MMR/MMP to output 9-pin Serial (P2) commands to control an external device, mirroring the transport control functions of the MMR or MMP unit to which the external device is attached.

Can I rename a Project?

Yes, in Version 3.0 and higher, one of the Backup menu selections is Rename. This allows the user to rename any WaveFrame, OMF, or Pro Tools project. This function works only with formats that can be written by the MMR-8. In Version 2.0 and higher, these are WaveFrame, OMF, and Pro Tools, with more formats planned in future versions.

Can I change the name of a Project when Exporting?

Yes, in Version 3.0 and higher, the Export menu selections allow for creating a new name for the Exported file. This allows the user to change the name of any WaveFrame, OMF, or Pro Tools project when exporting. This function works only with formats that can be written by the MMR-8. In Version 2.0 and higher, these are WaveFrame, OMF, and Pro Tools, with more formats planned in future versions.

Will the MMR record dailies from a NAGRA or other field recorder?

Yes, In Version 3.0 and higher, there is a special mode for transferring field recordings (commonly called “Dailies”) from a NAGRA or other field recorder. A special characteristic of film or TV dailies is that there is discontinuous time code on the master tape. One of the purposes of recording these into a non-linear recorder (such as the MMR) is to arrange the audio material from the dailies reel on a continuous timeline so that each recording appears at its proper time code location. The MMR-8 “Dailies Mode” allows for setting the MMR to a record ready state that causes it to automatically go into record whenever it locks to a valid incoming time code signal. This will follow the breaks in the time code coming from the dailies reel by stopping the MMR whenever a break in time code is detected and then reset the MMR to record at the new time location as soon as valid time code is registered. After transferring a recording to an MMR using this mode, the audio recordings will appear at their appropriate time code locations and can then be taken directly to a WaveFrame or ProTools system for editing.

What MIDI functions does the MMR/MMP have?

The MMR-8 and MMP-16 have MIDI In, Out, and Thru ports which can be used for MIDI Machine Control (MMC) and MIDI Time Code (MTC). The MMR/MMP will respond to MIDI Machine Control commands received at the MIDI In port. Use Setup menu 420 to set the MMR/MMP MIDI device ID number. The MMR/MMP MIDI Out port will generate MIDI Time Code (MTC) that follows the output of the MMR/MMP timecode output.

Can the MMR-8 record more than 8 tracks in a single Project or Session?

Yes, it can. Although the MMR-8 can only record eight tracks at one time, by unmounting tracks that have been recorded new tracks can now be recorded as part of same Project or Session. When this Project or Session is opened in a digital audio workstation, all of the tracks recorded will show up as tracks in the same Project or Session. This method can also be used to record up to sixteen tracks in the same Project or Session for playback on a TASCAM MMP-16.

How much audio can I get on a hard drive?

There are several variables that govern audio capacity: drive size, sample rate, word length, and number of channels. The following chart shows the audio time based on these variables.

Digital Audio Disk Time Chart												
TASCAM MMR-8 and MMP-16												
MMR-8 Record Time	48 kHz - 1 Channel						44.1 kHz - 1 Channel					
Hard Drive Capacity (GB)	2	4	9	2	4	9	2	4	9	2	4	9
Sampling Rate (kHz)	48	48	48	48	48	48	44.1	44.1	44.1	44.1	44.1	44.1
Word Length (bits)	16	16	16	24	24	24	16	16	16	24	24	24
Number of Channels	1	1	1	1	1	1	1	1	1	1	1	1
Record Time (mins.)	347	694	1562	231	462	1041	377	755	1700	251	503	1133
Record Time (hours:mins)	5:47	11:34	26:02	3:51	7:42	17:21	6:17	12:35	28:20	4:11	8:23	18:53
MMR-8 Record Time	48 kHz - 2 Channels						44.1 kHz - 2 Channels					
Hard Drive Capacity (GB)	2	4	9	2	4	9	2	4	9	2	4	9
Sampling Rate (kHz)	48	48	48	48	48	48	44.1	44.1	44.1	44.1	44.1	44.1
Word Length (bits)	16	16	16	24	24	24	16	16	16	24	24	24
Number of Channels	2	2	2	2	2	2	2	2	2	2	2	2
Record Time (mins.)	174	347	781	116	231	521	189	378	850	126	252	567
Record Time (hours:mins)	2:54	5:47	13:01	1:56	3:51	8:41	3:09	6:18	14:10	2:06	4:12	9:27
MMR-8 Record Time	48 kHz - 4 Channels						44.1 kHz - 4 Channels					
Hard Drive Capacity (GB)	2	4	9	2	4	9	2	4	9	2	4	9
Sampling Rate (kHz)	48	48	48	48	48	48	44.1	44.1	44.1	44.1	44.1	44.1
Word Length (bits)	16	16	16	24	24	24	16	16	16	24	24	24
Number of Channels	4	4	4	4	4	4	4	4	4	4	4	4
Record Time (mins.)	87	174	391	58	116	260	94	189	425	63	126	283
Record Time (hours:mins)	1:27	2:54	6:31	:58	1:56	4:20	1:34	3:09	7:05	1:03	2:06	4:43
MMR-8 Record Time	48 kHz - 8 Channels						44.1 kHz - 8 Channels					
Hard Drive Capacity (GB)	2	4	9	2	4	9	2	4	9	2	4	9
Sampling Rate (kHz)	48	48	48	48	48	48	44.1	44.1	44.1	44.1	44.1	44.1
Word Length (bits)	16	16	16	24	24	24	16	16	16	24	24	24
Number of Channels	8	8	8	8	8	8	8	8	8	8	8	8
Record Time (mins.)	43	87	195	29	58	130	47	94	213	31	63	142
Record Time (hours:mins)	:43	1:27	3:15	:29	:58	2:10	:47	1:34	3:33	:31	1:03	2:22
MMR-8 Record Time	48 kHz - 16 Channels						44.1 kHz - 16 Channels					
Hard Drive Capacity (GB)	2	4	9	2	4	9	2	4	9	2	4	9
Sampling Rate (kHz)	48	48	48	48	48	48	44.1	44.1	44.1	44.1	44.1	44.1
Word Length (bits)	16	16	16	24	24	24	16	16	16	24	24	24
Number of Channels	16	16	16	16	16	16	16	16	16	16	16	16
Record Time (mins.)	22	43	98	14	29	65	24	47	106	16	31	71
Record Time (hours:mins)	:22	:43	1:38	:14	:29	1:05	:24	:47	1:46	:16	:31	1:11

What devices will synchronize to the MMR/MMP?

The MMR/MMP units always output SMPTE timecode (LTC) when they are playing, so any device which can synchronize directly to timecode can be synchronized to the MMR/MMP. In addition, when in the serial transport mode, the MMR/MMP will output standard Sony 9-pin (P2) protocol transport commands so that any external serial device can follow the transport functions of the dubbers. The MMR/MMP units also output MIDI Time Code (MTC).

Does the MMR/MMP synchronize to VITC?

Early shipments of the MMR/MMP included a port for VITC, although this feature was not implemented in software. After much discussion and consultation with our customers, it has been decided not to support this feature. The VITC connector is no longer present on the back panel of all currently shipping units. This is a change in the product specification and will be removed from the list of supported features in upcoming marketing materials and manuals.

Can I control the MMR/MMP directly from a TimeLine Lynx KCU?

Yes, a pair of Lynx ports on the back of the MMR/MMP allows these units to be controlled directly from a Lynx Keyboard Control Unit (KCU), with the MMR/MMP appearing as a device on the Lynx bus. A separate Lynx module (or multiple modules in a chain) can also be connected to one of the ports so that other units can be addressed as part of the same system. In this case, the MMR/MMP unit behaves as if it were a Lynx module in the chain, controlling the MMR/MMP unit as its local device. The Lynx KCU can control up to six machines. A special version of the Lynx KCU software (KCU900) adds support for the following MMR function to the KCU:

- ❖ Transport Control
- ❖ Track Record Arm/Select
- ❖ Slip Track/Region
- ❖ Undo/Redo
- ❖ Goto Prev/Next Edit
- ❖ Goto Head/Tail
- ❖ Clear/Paste

How do I get software updates for the MMR-8, MMP-16, and MM-RC?

The built in floppy disk drive on the MMR-8 and MMP-16 make it easy to update the software for these units. When software updates affect the MM-RC remote, it will automatically be updated when connected to an MMR or MMP which has the new software installed. These software updates are issued periodically and are distributed via the TASCAM web site on the Internet. To download the latest software and documentation, go to the TASCAM web site at:

<http://www.tascam.com/pages/dat/mmhmpg.htm>

and then click on either the MMR or the MMP item at the top of the page (they each have their own software). You will also find instructions for downloading and uncompressing the software on this page. All software updates and documentation (in the form of Adobe Acrobat files) are posted on this web page as soon as they become available. Registered owners are notified via email whenever a new version is posted.

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