RADAR
TWENTY FOUR

3.10

OPERATIONS
MANUAL

R A D A R   2 4

O P E R A T I O N S   M A N U A L

Contents

Introduction

Welcome to RADAR®24, the professional's choice for multitrack hard disk recording! Although you'll probably want to get started right away, we recommend that you take a few minutes and familiarize yourself with this manual. It will prove to be a valuable resource when you need answers quickly and it will help you to get the most out of your new RADAR®24.

How to Use This Manual

The manual is broken into four sections entitled INTRODUCTION, SYSTEM SETUP, OPERATIONS AND REFERENCE. The SYSTEM SETUP section takes you through the physical placement and connection of your unit and any configuration work that may be required to integrate RADAR®24 with the rest of your system. The OPERATIONS section provides all of the information necessary to turn you into an instant RADAR®24 power user. The REFERENCE section gives you detailed descriptions of the menu structure, menu functions and the direct access keys.

Additional resources are available from the Support section of our website at www.recordingtheworld.com. While you're there make sure and join the iZ Forum. It's a dynamic group of RADAR®24 users and iZ technical support staff. You're sure to get some great information there!

Conventions

The following text conventions are used throughout this manual. This information applies to both the **Session Controller** and the **KC-24** remote keyboard.

Examples:

1. Remote keys: `ENTER`

2. Remote keys with a shifted function: `PASTE(LISTEN)`

3. Press and hold modifier keystroke: `SHIFT+PASTE(LISTEN)`

4. Menu paths: *MAIN / PROJ MENU / SAMPLE RATE*

5. Menu selections and dialogs: SAMPLE RATE: 48 KHZ

6. Object Names: **Session Controller**

7. Rear panel labels and connectors: WORDCLOCK

8. Manual references: OPERATIONS: ENTERING VALUES

Overview

RADAR®24 is a third generation, 24-track hard disk recorder known around the world for its reliability, ease of use and exceptional audio quality. Anyone with experience using a professional tape recorder will feel right at home using RADAR®24. Both the **KC-24** keyboard and the **Session Controller** professional remote provide rugged transport controls and intuitive, one key access to most RADAR®24 functions.

Features:

- Superb analog I/O. Choose from the 24-channel Classic 48 kHz, Nyquist 96 kHz or S-Nyquist 192 kHz board sets.

- 24-channel digital I/O using the iZ Technology AES/EBU, TDIF or ADAT® Lightpipe cards.

- Seamless/ gapless punch in and punch out recording on all 24 tracks.

- Non-destructive audio recording and editing with up to 99 levels of undo.

- Degradation free copy and transfer of digital audio.

- Export RADAR®24 audio to the industry standard BWF (Broadcast Wave) format.

- Integrated SVGA video output provides a heads up view of important project information, project timeline overview and high-performance real-time audio waveforms.

- Integrated Ethernet for server backup, export and file transfer.

- Factory installed backup device for archiving RADAR®24 projects.

- 2 channel AES/EBU, S/PDIF digital audio I/O

- Full compliment of professional sync options including Word Clock/Video Sync, balanced LTC and Sony® 9-pin.

RADAR®24 has a simple front panel layout due to the products remote-centric design philosophy.
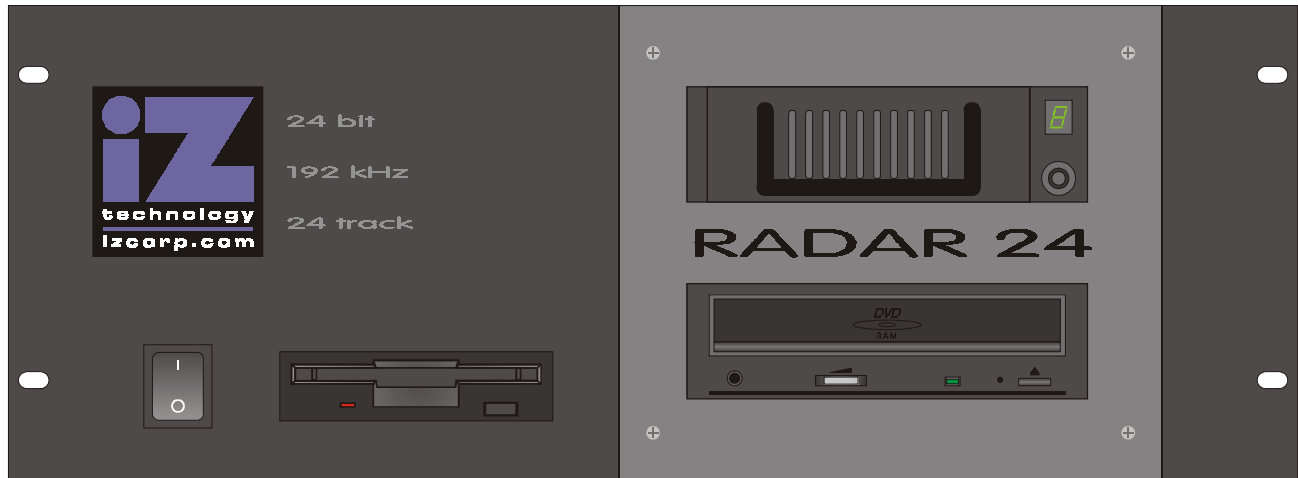
Diagram 1.0 - **RADAR®24 Front Panel Controls & Indicators** (unit shown with DVD-RAM backup device installed)

- **POWER ON/OFF SWITCH**

  It is recommended that you choose SHUTDOWN RADAR from the *MAIN MENU* prior to powering down the system using the front panel power switch.

- **FLOPPY DRIVE**

  High-density 3.5" floppy disk drive for software upgrades and of text file import/export.

- **DRIVE BAY 1**

  Holds a single high-capacity hard disk drive in a removable carrier.

- **DRIVE BAY 2**

  2X DVD-RAM or optional backup approved backup device.

! IMPORTANT NOTE: System software has been pre-installed on the internal hard disk. It is not necessary to put the supplied system software diskettes in the floppy disk drive. Please keep the supplied diskettes in a safe place in case it becomes necessary to re-install the system software in the future.

The rear panel of the RADAR®24 provides a wealth of professional sync and audio I/O options.
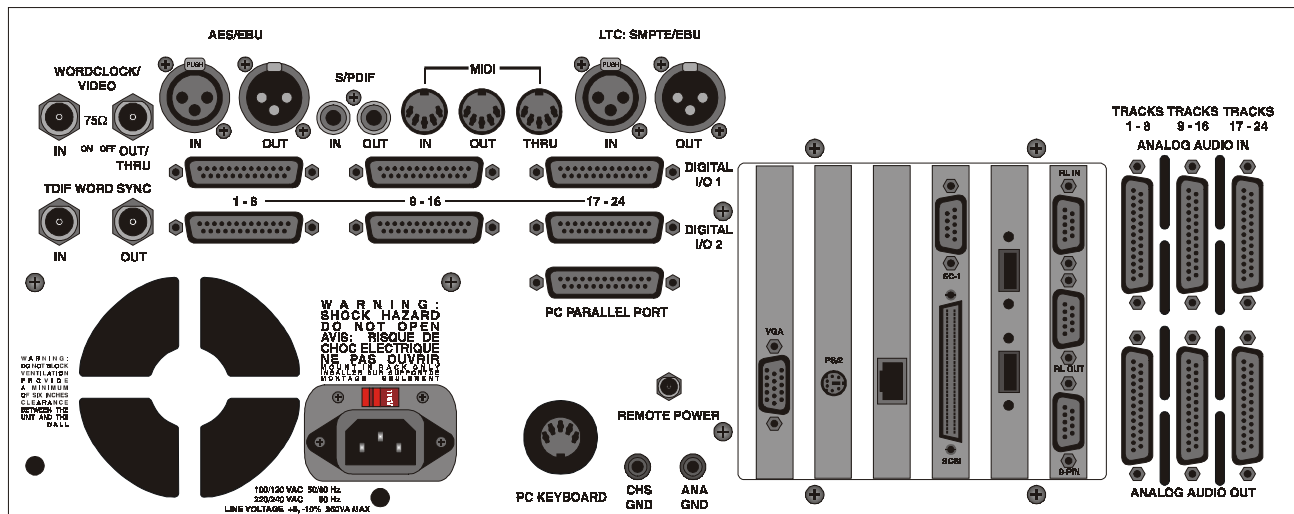
Diagram 1.1 RADAR®24 Rear Panel Labeling (unit shown with optional multi-channel AES/EBU, TDIF and analog I/O boards)

- **REFERENCE SYNC**

  Reference sync signals are input via the **WORDCLOCK/VIDEO**, **TDIF WORD SYNC**, the 2-channel **AES/EBU** connector or the connectors of any installed multi-channel digital I/O boards. See SYSTEM SETUP: CONFIGURATION: SYNC REFERENCE for detailed information.

- **DIGITAL I/O**

  All RADAR®24 units are equipped with 2 channels of digital audio I/O that can utilize either the **AES/EBU** or **S/PDIF** interface formats. Optional multi-channel I/O cards are available for the **AES/EBU**, **TDIF** and **ADAT® LIGHTPIPE** formats. See SYSTEM SETUP: CONFIGURATION: DIGITAL I/O FORMAT for detailed information.

- **POSITIONAL SYNC**

  Both **MTC** (MIDI Time Code) and **LTC** (SMPTE) can be used for positional synchronization. See OPERATIONS: CHASING TIME CODE for detailed information.

- **CARD CAGE**

  The card cage contains the Ethernet, SVGA, PS/2, USB, external SCSI, 9-pin and RADARLINK connectors. See SYSTEM SETUP: MAKING CONNECTIONS for detailed information.

- **ANALOG I/O**

  The optional analog I/O boards use six female 25-pin D-Sub connectors to provide 24 channels of balanced audio I/O. See SYSTEM SETUP: MAKING CONNECTIONS for detailed information.

System Setup

This section of the manual will help you get RADAR®24 up and running in your studio as quickly as possible.

Installation

Once you have unpacked the RADAR®24 please make sure to keep the box and all of the associated packaging materials. In the unlikely event that your unit needs to be returned for service or repair, using the original shipping box will ensure that it makes the return journey in good condition.

Make sure to consider the following before installation:

- Power supply fans and hard drives make a certain amount of noise, locating the main RADAR®24 unit outside of the control room is ideal.

- AES/EBU digital lines and the **Session Controller** extension cable can be run for about 33 meters.

- ADAT® optical and TDIF digital audio connections will limit the distance between RADAR® and the mixing console to approximately 10 meters.

- If you plan on using a monitor you will need an SVGA monitor and an SVGA extension cable if you are putting RADAR®24 in a machine room.

- Make sure that you have a reliable, properly grounded A.C. power source for the RADAR®24. An Uninterruptible Power Supply (UPS) is a fabulous idea!

Making Connections

Now that you've decided on where to place RADAR®24 in your studio, it's time to get hooked up. The exact connections you'll need will vary depending on the configuration of your unit so we've listed them all! Wiring diagrams for interfacing RADAR®24 are available at our website at www.recordingtheworld.com.

A.C. Power

Connect RADAR®24 to the A.C. mains using the supplied power cord. The power switch is located on the left side of the front panel. See DIAGRAM 1.0.

> **!** IMPORTANT NOTE: Make sure the **VOLTAGE SELECTOR** switch on the rear panel is set to the appropriate setting before applying power to the unit. Incorrect voltage settings are an electrical and fire hazard and can cause irreparable damage to your unit.

SCSI

Insure that the **Active Terminator** is attached securely to the external SCSI connector on the rear of the unit. If additional external SCSI devices are used, remove the terminator, connect the devices and place the terminator on the last device in the chain.

> **!** IMPORTANT NOTE: Make sure that the last device in the SCSI chain is terminated using the supplied active terminator. Incorrect termination can cause BAD things to happen to your audio.

Sync Reference

Sync reference is one of the keys to reliable digital audio interfacing and accurate positional synchronization.

WORDCLOCK/ VIDEO

Word clock and video sync can both be used as external clock sources for the RADAR®24. The **WORDCLOCK/ VIDEO-IN** connector accepts either a word clock or a video sync source. The current selection in *MAIN / SYNC MENU / SYNC REF* determines which of these formats will be used as the external sync source.

Word clock is a clock signal running at the same frequency as the sampling frequency of the digital audio being transferred or recorded. It enables multiple digital devices to be locked together so that audio can be reproduced, transferred and recorded without any digital noise or interference.

To slave RADAR ® to external word clock:

1. Connect a word clock source to the **WORDCLOCK/ VIDEO–IN** using a 75-ohm BNC terminated cable.

2. Use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN / PROJ MENU / SAMPLE RATE*, menu and make sure that the project sample rate matches the incoming word clock frequency.

3. Press the **SYNC/OFFSET** key on the **Session Controller** or **KC-24** or use the **MENU/PREV** key, arrow keys and **ENTER** key to go to the *MAIN / SYNC MENU / SYNC REFERENCE* menu and hit the **ENTER** key.

4. Use the arrow keys to select **SYNC REFERENCE: WORDCLK : 48 KHZ** and press the **ENTER** key.

Note: The word clock frequency value displayed in the Sync Reference dialog will depend on the sampling rate of the current project NOT the rate of the incoming word clock signal.

Video sync, also known as house sync or black burst, is used to ensure a known and accurate synchronization relationship exists between RADAR®24 and all the other devices in the studio, especially video equipment.

To slave RADAR®24 to external video sync:

1. Connect the video sync source to the WORDCLOCK/ VIDEO – IN connector using a 75-ohm BNC terminated cable. If RADAR®24 is the last device in the chain make sure to terminate the video sync connection using the 75-ohm terminator switch on the rear panel.

2. Use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / SYNC MENU / TC SETTINGS* menu and make sure that the current project time code rate matches the incoming video sync frequency.

3. Press the SYNC/OFFSET key on the **Session Controller** or **KC-24** or use the MENU/PREV key, arrow keys and ENTER key to go to the *MAIN / SYNC MENU / SYNC REFERENCE* menu and hit the ENTER key.

4. Use the arrow keys to select SYNC REFERENCE: NTSC: 29.97 and press the ENTER key.

   Note: The video sync frequency value displayed in the Sync Reference dialog will depend on the time code rate setting of the sync menu NOT the rate of the incoming video sync signal.

Word clock signal supplied to the WORDCLOCK/ VIDEO-IN can be passed on to other devices using the WORDCLOCK/ VIDEO-OUT/THRU connector. In situations where RADAR®24 should act as the clock master, word clock can also be output from the WORDCLOCK/ VIDEO-OUT/THRU connector. The function of the OUT/THRU connector can be changed in the *MAIN / SYNC MENU / SYNC REF OUTPUT* setting.

To switch between word clock out and thru:

1. Use the MENU/PREV key, arrow keys and ENTER key to go to the *MAIN / SYNC MENU / SYNC REF OUTPUT* and press the ENTER key.

2. Use the right and left arrow keys to select OUT or THRU and press the ENTER key.

SMPTE / MTC

Although SMPTE and MTC are primarily positional synchronization references, in some situations it is necessary for RADAR®24 to track less than ideal timing sources such as a 2" multitrack recorder or MIDI sequencer. In this instance RADAR®24 uses the incoming time code as a clock reference as well. When referenced to SMPTE or MTC the RADAR®24 will track any variations in the speed of the master flawlessly.

To slave RADAR®24 to SMPTE time code or MTC:

1. Connect the SMPTE time code source to the LTC: SMPTE / EBU connector using a balanced or unbalanced XLR terminated cable. Connect the MTC source to the MIDI IN using a MIDI cable.

2. Use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / SYNC MENU / TC SETTINGS* menu and make sure that the time code rate matches the incoming time code signal.

3. Press the SYNC/OFFSET key on the **Session Controller** or **KC-24** or go to *MAIN / SYNC MENU / SYNC REFERENCE* and press the ENTER key.

4. Use the arrow keys to select SYNC REFERENCE: SMPTE 30 or SYNC REFERENCE: MTC 30 and press the ENTER key.

   Note: The time code frequency value displayed in the Sync Reference dialog will depend on the time code rate setting of the Sync Menu NOT the rate of the incoming time code signal.

AES 2 - CHANNEL

The AES/EBU input on the rear panel is used for transferring digital audio. It can also be used to receive a clock signal from a master clock or another digital audio device.

To slave RADAR®24 to an external AES/EBU clock source:

1. Connect the AES/EBU source to the AES/ EBU IN connector using an XLR terminated digital audio cable.

2. Press the SYNC/OFFSET key on the **Session Controller** or **KC-24** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / SYNC MENU / SYNC REFERENCE* menu and press the ENTER key.

3. Use the arrow keys to select SYNC REFERENCE: AES 2CH SYNC and press the ENTER key.

S/PDIF 2 - CHANNEL

The S/PDIF input on the rear panel is used for transferring digital audio. It can also be used to receive a clock signal from a master clock or another digital audio device.

To slave RADAR®24 to an external S/PDIF clock source:

1. Connect the S/PDIF source to the S/PDIF IN connector using an RCA terminated digital audio cable.

2. Press the SYNC/OFFSET key on the **Session Controller** or **KC-24** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / SYNC MENU / SYNC REFERENCE* menu and press the ENTER key.

3. Use the arrow keys to select SYNC REFERENCE: S/PDIF 2CH SYNC and press the ENTER key.

AES/EBU MULTI-CHANNEL

The AES/EBU MULTI-CHANNEL inputs on the rear panel are used for transferring digital audio. They can also be used to receive a clock signal from a master clock or another digital audio device.

To slave RADAR®24 to an external AES/EBU multi-channel clock source:

1. Connect the AES/EBU multi-channel source to the desired 25-pin D-sub AES/EBU connector using the appropriate digital audio cable.

2. Press the SYNC/OFFSET key on the **Session Controller** or **KC-24** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / SYNC MENU / SYNC REFERENCE* menu and press the ENTER key.

3. Use the arrow keys to select SYNC REFERENCE: AES MULTI CH and press the ENTER key.

Note: If you do not have AES/EBU cards installed then you will get an alert dialog stating: NO AES MULTI-CH CARDS INSTALLED.

ADAT

The **ADAT** optical inputs on the rear panel can be used for transferring audio from other devices to the RADAR®24 and they can be used as a clock source.

To slave RADAR®24 to an external ADAT clock source:

1. Connect the ADAT source to the desired optical **ADAT IN** connector using a lightpipe cable.

2. Press the **SYNC/OFFSET** key on the **Session Controller** or **KC-24** or use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN / SYNC MENU / SYNC REFERENCE* menu and press the **ENTER** key.

3. Use the arrow keys to select **SYNC REFERENCE: ADAT** and press the **ENTER** key.

Note: If you do not have ADAT cards installed then you will get an alert dialog stating: NO ADAT CARDS INSTALLED.

TDIF L/R IN

The **TDIF** inputs on the rear panel can be used for transferring audio from other devices to the RADAR®24 and they can be used as a clock source. This clock is embedded in the TDIF audio signal and is a different clock than TDIF Word Sync.

To slave RADAR®24 to an external TDIF L/R clock source:

1. Connect the TDIF source to the desired 25-pin D-sub **TDIF** connector using the appropriate digital audio cable.

2. Press the **SYNC/OFFSET** key on the **Session Controller** or **KC-24** or use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN / SYNC MENU / SYNC REFERENCE* menu and press the **ENTER** key.

3. Use the arrow keys to select **SYNC REFERENCE: TDIF L/R IN** and press the **ENTER** key.

*Note: If you do not have TDIF cards installed then you will get an alert dialog stating: NO TDIF CARDS INSTALLED. You MUST use purpose built TDIF cables, pin-to-pin cables will **not** work!*

TDIF WORD SYNC

The **TDIF WORD SYNC** input on the rear panel is used to provide a more reliable clock source when transferring digital audio between devices using TDIF. This clock is similar to a word clock but differs in its phase relationship to the data signal. It should not be confused with the embedded L/R data clock in the TDIF digital audio signal.

To slave RADAR®24 to external TDIF Word Sync:

1. Connect the TDIF word sync source to the **TDIF WORD SYNC** connector using a 75-ohm, BNC terminated cable.

2. Press the SYNC/OFFSET key on the **Session Controller** or **KC**-**24** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN/SYNC MENU/SYNC REFERENCE* menu and press the ENTER key.

3. Use the arrow keys to select SYNC REFERENCE: TDIF WORD SYNC and press the ENTER key.

Note: If you do not have TDIF cards installed then you will get an alert dialog stating: NO TDIF CARDS INSTALLED.

Audio Cabling

Please always use the highest quality cables with your RADAR®24. The cables described below are available on our website and in most music and pro audio stores around the world. Additionally, wiring diagrams are available for the do-it-yourselfer at www.recordingtheworld.com.

ANALOG

Analog cables for the RADAR®24 share the same wiring scheme as analog cables for the TASCAM DA-88 and other popular modular digital multitrack recorders. The RADAR®24 end of each analog cable is a 25-pin D-sub connector that carries eight independent, balanced, line level audio signals. Altogether there are six cables required, three for input and three for output, for 24 channels of ultra-high quality analog audio I/O.

The other end of each analog cable typically breaks out to individual XLR or TRS connectors for connection to a console's Tape Inputs and Buss Outputs. Another often-used approach is to wire directly into a patch bay for the ultimate in routing flexibility.

DIGITAL

There are several digital I/O options available for RADAR®24 and each one has different cabling requirements.

AES/EBU 2-CHANNEL

The cable required for the AES/EBU 2-channel interface is an XLR terminated 110-ohm digital audio cable. One cable is required for 2 channels of input and an additional cable is required for 2 channels of output.

S/PDIF 2-CHANNEL

The cable required for the S/PDIF 2-channel interface is an RCA terminated 110-ohm digital audio cable. One cable is required for 2 channels of input and an additional cable is required for 2 channels of output.

AES MULTI-CHANNEL

The RADAR®24 AES/EBU multi-channel I/O uses the same wiring scheme as the TASCAM DA-88 and other popular modular digital multitrack recorders. Both ends of each AES/EBU multi-channel cable are terminated with 25-pin D-sub connectors. Each cable carries eight channels of input and eight channels of output. Altogether there are three cables required for 24 channels of digital I/O. Another available cabling option breaks out to 4 male (8 outputs) and 4 female (8 inputs) XLR connectors. This type of cable is necessary for connecting to some types of mixers and certain digital audio workstations.

TDIF

Audio: The RADAR®24 TDIF I/O uses the same wiring scheme as the TASCAM DA-88 and other popular modular digital multitrack recorders. Both ends of each TDIF cable are terminated with a 25-pin D-sub connector. Each cable carries eight channels of input and eight channels of output. Altogether there are three cables required for 24 channels of digital I/O.

Sync: In addition to the TDIF audio cabling requirements there is a TDIF word sync connection that may be necessary for interfacing under certain circumstances. This connection can be made using a 75-ohm, BNC terminated cable.

ADAT

Lightpipe connections can be made with any optical fiber that is approved for use with the Alesis ADAT® system. Each fiber carries eight channels of digital audio. Three input and three output Lightpipe fibers provide 24 channels of ADAT® I/O.

Time Code

You can use either SMPTE or MTC (MIDI Time Code) formats for positional synchronization reference with RADAR®24. All industry standard frame counts and frame rates are supported.

SMPTE

SMPTE, also known as LTC or Longitudinal Time Code, is connected using the XLR **LTC: SMPTE/EBU IN** and **OUT** connectors on the rear panel. The LTC inputs and outputs can be either balanced or unbalanced. The LTC input has a sensitivity ranging between 100mV and 20V. The output is 1V peak to peak. This will produce a –7 VU meter reading on a +4 device like a professional analog tape machine.

Note: When using unbalanced lines, pin 3 should be connected to the shield.

MTC

MIDI time code is input and output using the **MIDI IN** and **MIDI OUT** connectors on the rear panel of the RADAR®24.

To switch between SMPTE and MTC time code formats:

1. Press **SHIFT+CHASE(TC PREF)** on the **Session Controller** or the **KC-24** or use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN / SYNC MENU / TC SETTINGS* menu and press the **ENTER** key.

2. Use the right and left arrow keys to select **SMPTE** or **MTC** and press the **ENTER** key.

SESSION CONTROLLER

There are two connections required on the back panel of RADAR®24 to attach the Session Controller remote cable.

Power: Insert the barrel plug of the Session Controller cable into the power receptacle labeled REMOTE POWER on the rear of the unit.

Data: Attach the 9-pin D-sub connector of the Session Controller cable to the 9-pin receptacle located directly above the SCSI terminator in the card cage section of the back panel.

KC –24 KEYBOARD

The KC-24 attaches to the RADAR®24 using the keyboard's connector plug and a 5-pin DIN adaptor. The keyboard receptacle, located just to the right of the A.C. power connector, is inset in a round hole labeled PC KEYBOARD.

Monitor (optional)

Any standard SVGA monitor (800x600 resolution) can be attached directly to the RADAR®24. The monitor connection is a 15-pin D-sub connector located on the far left of the card cage section on the back panel.

RADARLINK

RADARLINK allows multiple RADAR® units to be synchronized so that they can be operated together as a single machine. The 9-pin D-sub RLINK IN and RLINK OUT connectors used for RADARLINK are located on the far right hand side of the card cage section on the rear of the unit. Connection between two units can be made using the cable supplied with a multiple unit purchase or by using any 9-pin D-sub cable that is wired pin-to-pin. These can be purchased from iZ Technology or from an electronics or computer retailer in your area.

Note: Make sure that the cable is wired pin-to-pin! Some 9-pin cables have modified pin-outs and will not work for this application.

Ethernet

RADAR®24 ships with a 10/100 Base T Ethernet card that can be used for backing up, transferring and exporting files. You can connect to an NT server or connect to a PC or a Mac in a peer-to-peer configuration. The Ethernet card is located in the card cage just to the left of the Adrenaline® card, which has the active SCSI terminator on it.

Machine Control

RADAR®24 supports two formats of machine control, Sony 9-pin (RS-422) and MMC or MIDI Machine Control. These control protocols allow RADAR®24 to be controlled from other equipment like video decks

or mixers. Sony 9-pin uses a 9-pin D-sub terminated cable to transmit transport, record status and other control information. MMC uses MIDI to transmit similar types of information.

To switch between 9-pin and MMC machine control formats:

1. Use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / SYNC MENU / MACHINE CONTROL* and press the ENTER key.

2. Use the up and down arrow keys till SELECT TYPE is displayed and press the ENTER key.

3. Use the right and left arrow keys to select 9-PIN or MMC and press the ENTER key.

To enable or disable machine control:

1. Press SHIFT+RLINK(MCH CTL) on the **Session Controller** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / SYNC MENU / MACHINE CONTROL* and press the ENTER key.

2. Use the up and down arrow keys till ENABLE/DISABLE is displayed.

3. If machine control is disabled pressing the ENTER key will enable it. If machine control is enabled pressing the ENTER key will disable it.

Configuration

Now that you have your RADAR®24 hooked up and ready to go, we can help you make sure that the system settings are configured correctly for your situation.

Operating Level

You can match the input and output levels of RADAR®24 with the input and output levels of other pieces of equipment in your studio. Although the inputs and outputs can be adjusted independently, all inputs share the same operating level. The same holds true for all of the outputs.

Because a zero meter reading on a digital recorder represents the absolute maximum level that can be recorded, a much lower nominal signal level should be specified. With analog VU meters, 0 VU represented this nominal signal level and above that there was "headroom", which allowed for dynamic surges and transients. With today's digital recorders a 0 VU signal level usually corresponds to a digital meter reading somewhere between −14 and −20. This is where the operating level of the RADAR®24 comes in. There are four different settings for input level and four different settings for output level. They are:

+24 dBu – results in a digital meter reading of −20 when a 0 VU tone is applied

+22 dBu – results in a digital meter reading of −18 when a 0 VU tone is applied

+20 dBu – results in a digital meter reading of −16 when a 0 VU tone is applied

+18 dBu – results in a digital meter reading of −14 when a 0 VU tone is applied

To set the input and output operating levels:

1. Use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / SYS MENU / AUDIO I/O LEVELS* and press the ENTER key.

2. Use the right and left arrow keys to select either AUDIO IN or AUDIO OUT.

3. Use the up and down arrow keys to select the desired operating level and press the ENTER key.

Sync Reference

The sync reference setting will vary widely depending on the application and the configuration of your system. It will also depend on whether or not RADAR®24 is the master or slave in your particular setup. You can gain instant access to the sync settings using the SYNC key on the **Session Controller** and the **KC**-**24**.

To make RADAR ®24 the digital audio sync master using the word clock output:

1. Ensure that a word clock cable is connected to the WORDCLOCK/ VIDEO – OUT/THRU connector.

2. Press the SYNC key on the **Session Controller** or **KC**-**24** or use the MENU/PREV key, arrow keys and ENTER key to go to the *MAIN / SYNC MENU / SYNC REFERENCE* menu and press the ENTER key.

3. Use the arrow keys to select SYNC REFERENCE: INTERNAL and press the ENTER key.

4. Use the MENU/PREV key, arrow keys and ENTER key to go to the *MAIN / SYNC MENU / SYNC REF OUTPUT* and press the ENTER key.

5. Use the right and left arrow keys to select OUT and press the ENTER key.

For digital audio transfers to a digital mixer or other digital audio device a reliable clock source is mandatory. Without proper data synchronization digital audio will exhibit pops, clicks and other unpleasant artifacts. In a film or video post environment video sync is usually distributed to all the video, audio and clock devices in the studio to ensure that every thing is synchronous with the video signal right down to the sample level. For synchronizing with analog tape decks that exhibit fluctuations in transport speed, RADAR®24 can even reference to the incoming SMPTE signal. In this configuration RADAR®24 will fluctuate right along with the analog master ensuring perfect synchronization at all times!

To slave RADAR ®24 to external word clock:

1. Ensure that a word clock source is connected to the WORDCLOCK/ VIDEO – IN connector. Make sure that your projects sample rate in the *MAIN / PROJ MENU / SAMPLE RATE* dialog matches the incoming word clock frequency.

2. Press the SYNC key on the **Session Controller** or **KC**-**24** or use the MENU/PREV key, arrow keys and ENTER key to go to the *MAIN / SYNC MENU / SYNC REFERENCE* menu and press the ENTER key.

3. Use the arrow keys to select SYNC REFERENCE: WORDCLCK : 48 KHZ and press the ENTER key.

If you will be passing word clock through the RADAR®24 make sure that the function of the OUT/THRU connector is set to THRU in the *MAIN / SYNC MENU / SYNC REF OUTPUT* dialog.

> *Note: The word clock frequency value displayed in the Sync Reference dialog will depend on the sampling rate of the current project NOT the rate of the incoming word clock signal.*

To slave RADAR®24 to external video sync:

1. Ensure that a video sync source is connected to the WORDCLOCK/ VIDEO – IN connector. Make sure that your projects time code rate in the *MAIN / SYNC MENU / TC SETTINGS* menu matches the incoming video sync frequency.

2. Press the SYNC key on the **Session Controller** or **KC-24** or use the MENU/PREV key, arrow keys and ENTER key to go to the *MAIN / SYNC MENU / SYNC REFERENCE* menu and press the ENTER key.

3. Use the arrow keys to select SYNC REFERENCE: NTSC: 29.97 and press the ENTER key.

> *Note: The video sync frequency value displayed in the Sync Reference dialog will depend on the time code rate setting of the sync menu NOT the rate of the incoming video sync signal.*

To slave RADAR®24 to SMPTE time code or MTC:

1. Ensure that a valid SMPTE time code source is connected to the LTC: SMPTE / EBU connector using a balanced or unbalanced XLR terminated cable. Connect an MTC source to the MIDI IN using a MIDI cable.

2. Use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / SYNC MENU / TC SETTINGS* menu and make sure that the time code rate matches the incoming time code signal.

3. Press the SYNC key on the **Session Controller** or **KC-24** or go to *MAIN / SYNC MENU / SYNC REFERENCE* and press the ENTER key.

4. Use the arrow keys to select SYNC REFERENCE: SMPTE 30 or SYNC REFERENCE: MTC 30 and press the ENTER key.

> *Note: The time code frequency value displayed in the Sync Reference dialog will depend on the time code rate setting of the Sync Menu NOT the rate of the incoming time code signal.*

To slave RADAR®24 to an external AES/EBU clock source:

1. Connect an AES/EBU source to the AES/ EBU IN connector using an XLR terminated digital audio cable.

2. Press the SYNC key on the **Session Controller** or **KC-24** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / SYNC MENU / SYNC REFERENCE* menu and press the ENTER key.

3. Use the arrow keys to select SYNC REFERENCE: AES 2CH SYNC and press the ENTER key.

To slave RADAR®24 to an external S/PDIF clock source:

1. Connect the S/PDIF source to the S/PDIF IN connector using an RCA terminated digital audio cable.

2. Press the SYNC key on the **Session Controller** or **KC-24** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / SYNC MENU / SYNC REFERENCE* menu and press the ENTER key.

3. Use the arrow keys to select SYNC REFERENCE: S/PDIF 2CH SYNC and press the ENTER key.

To slave RADAR®24 to an external AES/EBU multi-channel clock source:

1. Connect the AES/EBU multi-channel source to the desired 25-pin D-sub AES/EBU IN connector using the appropriate digital audio cable.

2. Press the SYNC key on the **Session Controller** or **KC-24** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / SYNC MENU / SYNC REFERENCE* menu and press the ENTER key.

3. Use the arrow keys to select SYNC REFERENCE: AES MULTI-CH and press the ENTER key.

Note: If you do not have AES/EBU cards installed then you will get an alert dialog stating: NO AES MULTI-CH CARDS INSTALLED.

To slave RADAR®24 to an external ADAT clock source:

1. Connect the ADAT source to the desired optical ADAT IN connector using a light pipe cable.

2. Press the SYNC key on the **Session Controller** or **KC-24** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / SYNC MENU / SYNC REFERENCE* menu and press the ENTER key.

3. Use the arrow keys to select SYNC REFERENCE: ADAT and press the ENTER key.

Note: If you do not have ADAT cards installed then you will get an alert dialog stating: NO ADAT CARDS INSTALLED.

To slave RADAR®24 to an external TDIF L/R clock source:

1. Connect the TDIF source to the desired 25-pin D-sub TDIF connector using the appropriate digital audio cable.

2. Press the SYNC key on the **Session Controller** or **KC-24** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / SYNC MENU / SYNC REFERENCE* menu and press the ENTER key.

3. Use the arrow keys to select SYNC REFERENCE: TDIF L/R IN and press the ENTER key.

Note: If you do not have TDIF cards installed you will get an alert dialog stating: NO TDIF CARDS INSTALLED. You MUST use purpose built TDIF cables pin-to-pin cables will not work!

To slave RADAR®24 to external TDIF Word Sync:

1. Connect the TDIF word sync source to the ᴛᴅɪꜰ ᴡᴏʀᴅ sʏɴᴄ ɪɴ connector using a 75-ohm, BNC terminated cable.

2. Press the sʏɴᴄ key on the **Session Controller** or **KC-24** or use the ᴍᴇɴᴜ/ᴘʀᴇᴠ, arrow keys and ᴇɴᴛᴇʀ key to go to the *MAIN/SYNC MENU/SYNC REFERENCE* menu and press the ᴇɴᴛᴇʀ key.

3. Use the arrow keys to select sʏɴᴄ ʀᴇꜰᴇʀᴇɴᴄᴇ: ᴛᴅɪꜰ ᴡᴏʀᴅ sʏɴᴄ and press the ᴇɴᴛᴇʀ key.

Note: If you do not have TDIF cards installed then you will get an alert dialog stating: ɴᴏ ᴛᴅɪꜰ ᴄᴀʀᴅs ɪɴsᴛᴀʟʟᴇᴅ.

Digital I/O Format

The digital I/O formats available for selection will depend on the type and number of digital interface options installed in your RADAR®24. All units ship with built in AES/EBU and S/PDIF 2-channel interfaces. The 24 channel digital I/O options available include: AES/EBU, ADAT and TDIF.

It is important to note that once a digital format is selected an appropriate clock source must be selected as well. Many times they are one and the same thing, but not always. For instance, an AES transfer may be required but the sync reference for all digital devices in the studio may be a word clock generator referenced to video sync. You get the picture.

Using the *MAIN / DIGIO MENU/ DIGITAL I/O ROUTING/ MULTI CH IN TRKS* menu dialog you can choose ᴀʟʟ or sᴇʟᴇᴄᴛ which tracks will use the selected digital I/O. The tracks that are not selected will use the analog I/O.

Note: When a digital input format is specified one track must always be set to digital. To return all 24 tracks to analog input select NONE. See below.

NONE

This selection disengages the digital I/O and returns all 24 inputs to analog input.

AES/EBU 2-CHANNEL

This 2-channel format uses a single cable for 2 channels of digital audio transmission. It is unidirectional so one cable is required for input and one for output.

S/PDIF 2-CHANNEL

S/PDIF also uses a single cable for 2 channels of digital audio transmission. It is unidirectional as well so one cable is required for input and one for output. It is essentially a consumer version of AES/EBU.

AES MULTI-CHANNEL

With multi-channel AES/EBU each cable carries eight channels. This format is bi-directional so only three cables are required for 24 channels of digital audio I/O.

TDIF

This format also uses three bi-directional cables carrying eight channels of audio each, for a total of 24 channels of digital I/O.

ADAT

Lightpipe optical fibers carry eight channels of digital audio. This format is unidirectional so you'll need three input and three output Lightpipe "cables" for 24 channels of ADAT® I/O.

To select a digital I/O format:

1. Make sure that all your cabling is connected properly.

2. Press the DIG IN key on the **Session Controller** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / DIGIO MENU / DIG IN FORMAT* menu and press the ENTER key.

3. Use the up and down arrow keys to select the digital format of your choice and press the ENTER key.

   Note: If you do not have a particular card installed you will get an alert dialog stating: NO _____ CARDS INSTALLED.

To select tracks for digital input:

1. Press SHIFT+DIG IN(ROUTE) key on the **Session Controller** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / DIGIO MENU/ DIGITAL I/O ROUTING* menu and press the ENTER key.

2. Use the up and down arrow keys to select MULTI-CH IN TRKS and press the ENTER key.

3. Use the right and left arrow keys to select ALL or SELECT and press the ENTER key.

To select source and destination tracks for the digital 2-channel I/O:

1. Press SHIFT+DIG IN(ROUTE) key on the **Session Controller** or use the MENU/PREV, arrow and ENTER keys to go to the *MAIN / DIGIO MENU/ DIGITAL I/O ROUTING* menu and press the ENTER key.

2. Use the up and down arrow keys to select 2 CH I/O ROUTING and press the ENTER key.

3. Use the right, left, up and down arrow keys to select IN L, IN R, OUT L or OUT R fields, enter the desired track numbers in each one and press the ENTER key.

Time Code

There are two distinct protocols of positional time code that are supported by RADAR®24: SMPTE/EBU and MIDI time code or MTC. Both support all industry standard frame counts and rates. While chasing time code it is normal practice to reference RADAR®24's clock either directly to the incoming time code signal or to an external word clock or video sync source. These clock sources are set separately in the *MAIN / SYNC MENU / SYNC REFERENCE* menu.

When slaved to an analog tape machine it is critical that RADAR®24 follow any deviation in speed introduced by the tape transport. In this scenario the incoming time code is smoothed and averaged to create a stable reference signal for the internal clock of the RADAR®24. Because the internal clock will constantly match the incoming clock source in this configuration, RADAR®24 will follow the master exactly, even if you use vari-speed!

In other applications where all the devices in a system are referenced to video sync (AKA black burst or house sync), RADAR®24 can be referenced to video sync directly or to a word clock generator that is in turn referenced to the video sync source. A system wide sync source is critical for video and film production and post-production work because it creates a known relationship between the positional time code and the timing information present in the video signal.

Note: For more information on sync reference, refer to CONFIGURATION: SYNC REFERENCE earlier in this manual.

To select time code format and frame count/rate:

1. Press `SHIFT+CHASE(TC PREF)` key on the **Session Controller** or use the `MENU/PREV`, arrow keys and `ENTER` key to go to the *MAINSYNC MENU/ TC SETTINGS/ TC FORMAT* menu and press the `ENTER` key.

2. Use the right and left arrow keys to select `SMPTE` or `MTC` and press the `ENTER` key.

3. Use the right and left arrow keys to select `24, 25, 29.97ND, 29.97DF, 30ND`, or `30DF` and press the `ENTER` key.

Networking

The RADAR®24 ships with a 10/100 Base T Ethernet card. With the appropriate hardware and properly configured software RADAR®24 can backup, restore, export and import files using an Ethernet connection to a CIFS (Windows, Unix, OS X with CIFS server) server or by using a specially wired crossover cable for a connection with a personal computer.

Networking is a very BIG topic and is far beyond the scope of this manual. Our goal is to get your RADAR®24 configured so that it can be integrated into an existing network or connected to a personal computer using peer-to-peer. For instructions on how to transfer files see OPERATIONS: FILE TRANSFER.

! DISCLAIMER: iZ Technology cannot offer advice on networking and security issues that do not directly pertain to the RADAR®24 system. For further assistance please consult a networking professional or make use of the extensive resource materials available on the Internet.

ENTERING THE SERVER OR PEER-TO-PEER NETWORK INFORMATION

Before RADAR®24 can connect via Ethernet it must be configured with information about the system it will be connecting to. For instructions on how to transfer files please refer to OPERATIONS: FILE TRANSFER.

To enter CIFS Server or Peer-To-Peer connection information:

1. Use the `MENU/PREV`, arrow keys and `ENTER` key to go to *MAIN / PREFERENCES MENU / NETWORK SETUP / SERVER PREFS* and press the `ENTER` key.

2. Use the up and down arrows to locate the CIFS SERVER IP menu item and press the ENTER key.

3. Use the numeric keypad and right and left arrow keys to enter the IP address of the computer you wish to export to and press the ENTER key.

4. Enter the host name of the computer you want to export to in the SERVER NAME dialog.

5. Enter the name of the shared folder you've created on the computer in the SERVER SHARE dialog.

6. Enter the name of the workgroup your computer belongs to in the CLIENT WORKGROUP dialog.

PEER-TO-PEER

RADAR®24 can connect to a PC or Macintosh via Ethernet with the appropriate cabling and software. For instructions on how to transfer files see OPERATIONS: FILE TRANSFER

To setup for a peer-to-peer connection with a P.C. running Windows®:

1. Use the MENU/PREV, arrow keys and ENTER key to go to *MAIN / PREFERENCES MENU / NETWORK SETUP / INTERFACE PREFS* and press the ENTER key.

2. Enter a unique name for your RADAR®24 in the HOST NAME field.

3. Enable or disable DHCP. If DHCP is enabled then the following six steps will not apply and you may proceed to step 10.

4. Use the numeric keypad and the left and right arrow keys to enter a **unique** IP address and press the ENTER key.

   The Internet Assigned Numbers Authority has set certain IP address ranges for use in private networking applications:

   ▪ Class A 10.0.0.0—10.255.255.255

   ▪ Class B 172.16.0.0—172.31.255.255

   ▪ Class C 192.168.0.0—192.168.255.255

   In a self-contained peer-to-peer network that never sees the outside world you may use any IP address range you choose. However, care should be taken when assigning IP addresses to avoid potential security risks and IP address conflicts. For further information you can visit the Internet Assigned Numbers Authority site at http://www.iana.org.

5. Unless your network requires a SUBNET MASK, use the numeric keypad and right and left arrow keys to enter a subnet mask value of 255.255.255.0 (default value) and press the ENTER key. The SUBNET MASK value must match the subnet mask value of the connected personal computer.

6. The GATEWAY entry does not apply for this application, you may leave entry blank.

7. The **DNS DOMAIN NAME** entry does not apply for this application, you may leave entry blank.

8. The **PRIMARY DNS** setting does not apply for this application, you may leave entry blank.

9. The **SECONDARY DNS** setting does not apply for this application, you may leave entry blank.

10. Although the **FTP SERVING** setting does not apply for this application, make sure it is disabled when you are not using this feature. The following menu items will only appear if **FTP SERVING** is enabled.

11. The **FTP LOGIN NAME** entry does not apply for this application, you may leave entry blank.

12. The **FTP PASSWORD** entry does not apply for this application, you may leave entry blank.

> **!** IMPORTANT NOTE: If FTP serving is left enabled and your RADAR®24 is connected to another computer or network it is possible for someone to gain unauthorized access to your machine. This would give an intruder the ability to modify or delete files on your RADAR®24.

To setup a peer-to-peer connection with a Macintosh®computer:

The Macintosh requires software that allows it to be a CIFS server. It is also possible to use FTP to transfer files from RADAR®24 to a Mac using an FTP Client; see CONFIGURATION: NETWORKING: FTP for more information. All of the RADAR®24 settings will be identical to the peer-to-peer setup for the PC. For instructions on how to transfer files please refer to OPERATIONS: FILE TRANSFER

WINDOWS SERVER

Using the TCP/IP protocol RADAR®24 can be integrated into a Windows® networking environment.

Note: In a networked environment you must be very careful about the network settings you choose. There is a real risk of causing network conflicts and/or creating security issues. Please consult your network administrator for the appropriate network settings for your RADAR® 24.

To setup RADAR®24 on a network:

1. Use the **MENU/PREV**, arrow keys and **ENTER** key to go to *MAIN / PREFERENCES MENU / NETWORK SETUP/ INTERFACE PREFS* and press the **ENTER** key.

2. Enter a unique **HOST NAME** for your RADAR®24.

3. Enable or disable **DHCP**. If **DHCP** is enabled then the following six steps will not apply and you may proceed to step 10.

4. Use the numeric keypad and right and left arrow keys to enter an IP address and press the **ENTER** key.

5. Use the numeric keypad and right and left arrow keys to enter a **SUBNET MASK** value and press the **ENTER** key.

6. The **GATEWAY** entry does not apply for this application, you may leave entry blank.

7. Enter the **DNS DOMAIN NAME** for your network.

8. Enter the **PRIMARY DNS** address for the server.

9. The **SECONDARY DNS** address only applies if there is a secondary server on the network.

10. Although the **FTP SERVING** setting does not apply for this application, make sure it is disabled when you are not using this feature. The following menu items will only appear if **FTP SERVING** is enabled.

11. The **FTP LOGIN NAME** entry does not apply for this application, you may leave entry blank.

12. The **FTP PASSWORD** entry does not apply for this application, you may leave entry blank.

FTP

RADAR®24 has a built in FTP or File Transfer Protocol server. This allows you to gain access to the internal IDE drive of the RADAR®24 using a network connection. Any files on the removable SCSI recording drive must first be exported temporarily to the IDE drive. Once on the IDE drive, any FTP client can be used to download the files into a Mac or PC for further editing. For instructions on how to transfer files please refer to OPERATIONS: FILE TRANSFER

To setup FTP access for RADAR®24:

1. Use the **MENU/PREV**, arrow keys and **ENTER** key to go to *MAIN / PREFERENCES MENU / NETWORK SETUP/ INTERFACE PREFS* and press the **ENTER** key.

2. Enter a unique **HOST NAME** for your RADAR®24.

3. Enable or disable **DHCP**. If **DHCP** is enabled then the following six steps will not apply and you may proceed to step 10.

4. Use the numeric keypad and right and left arrow keys to enter an IP address and press the **ENTER** key.

5. Use the numeric keypad and right and left arrow keys to enter a subnet mask value of 255.255.255.0 (default value) and press the **ENTER** key. The **SUBNET MASK** value must match the subnet mask value of the connected personal computer.

6. A **GATEWAY** entry is only required if you are connected to a WAN (wide area network) such as the Internet. Use the numeric keypad and right and left arrow keys to enter a gateway IP address and press the **ENTER** key.

7. The **DNS DOMAIN NAME** is only required if you are connected to a client-server network. Using the QWERTY keys enter a domain name and press the **ENTER** key.

8. The **PRIMARY DNS** address for the server is only required for connecting to a client-server network.

9. The **SECONDARY DNS** address only applies if there is a secondary server on a client-server network.

10. Use the right and left arrow keys to select **ENABLED** in the **FTP SERVING** dialog and press the **ENTER** key.

11. The **FTP LOGIN NAME** is required for accessing the RADAR®24 via FTP. Using the QWERTY keys enter a login name and press the **ENTER** key. This login name will be required by the FTP client application on the personal computer.

12. The **FTP PASSWORD** is also required for accessing the RADAR®24 via FTP. Use the QWERTY keyboard to enter a password and press the **ENTER** key. This password will be required when connecting using an FTP client application on the personal computer.

Preferences

Every time a new project is created, there a number of settings that are required by the RADAR®24: sample rate, bit depth, TC format etc. In order to save you time and effort, RADAR®24 assigns these values automatically using the current values selected in the **PREFERENCES MENU**.

To set the preferences for newly created projects:

1. Use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN / PREFERENCES MENU* and press the **ENTER** key.

2. Review and modify the settings in the sub-menus to your specifications.

Software

Although your RADAR®24 is shipped to you with the latest version of RADAR® software, you will want to make sure that you keep it up to date by downloading new versions of the software as they become available. We are constantly working to add new features and to improve the performance and reliability of our product so it is certainly worth the effort. Software updates and downloading instructions are available from our website at www.recordingtheworld.com.

To install a new version of RADAR® software:

1. Use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN / SYSTEM MENU / UPGRADE SYSTEM* and press the **ENTER** key.

2. Use the up and down arrows to select **YES** at the **SYSTEM UPGRADE PROCEED?** prompt and press the **ENTER** key.

   All projects will be converted to a special version-independent state and the disk(s) will be unmounted. If you have other disks that you wish to convert to a version independent format you can insert them at this time. To convert them simply mount them using the **MOUNT** key or **MOUNT** menu item and repeat steps 1 through 3.

3. Insert the first install floppy disk containing the new version of software and reboot the machine using the power switch.

4. Insert additional disks as prompted to complete the install.

Once the software is successfully installed RADAR®24 will automatically run. Any attached SCSI drives will be mounted and any projects on the disk will be converted from the version independent state to the new project format.

Note: Upgrade System should also be used when disks will be used on other RADAR® 24 units running different versions of software or when using a RADAR® 24 disk in a RADAR® I or II.

Operations

This section of the manual is dedicated to providing you with a quick reference that can answer questions you might have about displays, key functionality, menus, entering values, project management, backup and restore.

Overview

RADAR®24 is designed to be a robust and dependable replacement for analog multitrack tape machines or modular digital multitrack recorders. It is also designed to be easy to use. The remote interface is intuitive to anyone familiar with the operation of a tape recorder. Just arm a track and drop into record!

All aspects of RADAR®24 performance are designed to meet and exceed the performance requirements of a professional tape recorder. You will always be able to record, punch in and out, jog/shuttle and even vari-speed just like you would on a tape machine. In the section that follows, you will find all the information you need to become a certified RADAR®24 expert.

Work Flow

Without getting into details yet, the average RADAR®24 session follows a pattern similar to the following:

1. Create a new project or go to an existing one.

2. Locate your starting point.

3. Arm tracks and record audio.

4. Re-locate, arm tracks and overdub more audio.

5. Edit audio.

6. Play back the audio for mix down.

7. Archive audio to backup media.

8. Shut down RADAR®24 and go home (optional).

Display Overview

While most RADAR®24 users connect an SVGA monitor and make use of the **RADAR View** display, it is important to note that you don't *need* to use a monitor if you purchased the optional **Session Controller**. This makes RADAR®24 exceptionally portable and ideally suited for remote applications. It also lends itself to more artist focused tracking sessions. Because there's no need to stare at a glaring computer monitor in the control room, you can actually focus on the performance! Having said that; **RADAR View** is very cool.

Both the **Session Controller** and the **RADAR View** display the current position within your project. This information can be viewed in several different ways:

FEET/FRAMES

This is used for some film applications.

BARS/BEATS

The RADAR®24 tempo setting is used to calculate and display positions based on musical notation. This can be handy when working with a locked MIDI sequencer.

SMPTE

This is the default HH:MM:SS:FF plus sub-frames display.

INT/EXT SMPTE

While in **CHASE**, the **Session Controller** will display your projects current time above the master machines current time code position. The RADAR View display shows only the master machines time code position in this mode.

*Note: RADAR®24 Sub-frames are **not** SMPTE bits. Each sub-frame is a 100ᵗʰ of a frame. Sub-frames are only accessible if the* SHOW SUB-FRAMES *preference is selected in the* MAIN / PREFS MENU / SHOW SUB-FRAMES *dialog.*

To change the display mode of a project:

1. Use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN / PROJ MENU / DISPLAY MODE* selection and press the **ENTER** key.

2. Use the up and down arrow keys to select the format you want and press the **ENTER** key.

With an SVGA monitor attached, RADAR®24 gives users a heads up display of the following information (clockwise from top):

- 24 channels of metering with status and clip LED's.

- Large, easy to read positional display.

- Sync Status Display:

    o Sample rate and bit depth.

    o Current time code rate and incoming TC rate.

    o Sync status and reference sync source.

    o Chase status and TC format.

    o Sync offset.

- Transport Status Display:

    o Vari-speed indicator and percentage display.

    o Cycle, Auto Input, Auto Punch and Auto Play indicators.

    o Pre-Roll status and current value.

    o Post-Roll current value.

- Edit Status Display:

    o Crossfade value.

    o Last Edit display.

    o Undo/Redo Level setting.

- RADARLINK/ Locator Display:

    o RADARLINK ID and status.

    o Start, Mark In, Mark Sync, Mark Out, Range values.

    o Display (counter) format.

- Project Name.

- Record time remaining.

- Disk Mode.

- SCSI activity indicator.

- Track display for audio waveform data.

- Track naming area, inputs, outputs.

- Current digital format display.

Session Controller Display

The **Session Controller** has a 2 x 16 character display that is used to display the current time code position in the project, all RADAR®24 menus and dialogs. The default display shows the current time code location in the standard HH:MM:SS:FF plus sub-frames format. When menu functions are accessed using the `MENU/PREV` key or by pressing a direct access key, the display becomes the central navigation system for RADAR®24. The contents of this display are mirrored on **RADAR View** with the exception of the default display.

Indicators

Metering and other indictors are provided on the **RADAR View** display and also on the optional **Meterbridge 24** and **Meterbridge 48,** either of which can be attached to the **Session Controller** professional remote.

METERING

Input signal is displayed on 20 segment LED meters with a scale ranging from below –55 to 0, which is the maximum input level. A clip LED with variable hold time is also provided to help warn of impending digital distortion. The clip LED hold time setting can be changed in the *MAIN / PREFS MENU / CLIP HOLD TIME* dialog.

STATUS

Additional LED indicators provided on each channel of the **Meterbridge 24** and **Meterbridge 48** include:

- **ARM**

  Red-flashing LED indicators identify tracks that are armed and ready for recording.

- **INPUT**

  Steady state yellow LED indicators identify tracks currently in input monitoring mode.

- **SOLO**

  Steady state green LED indicators identify tracks that are currently soloed.

▪ **EDIT**

Red-flashing LED indicators identify tracks that are selected for the current editing operation.

View Management

There are several options for controlling the current view of the waveforms displayed on RADAR View.

SESSION CONTROLLER

The **Session Controller** has dedicated buttons for horizontal zoom, vertical zoom, scrolling and a special function key called ZOOM SOLO.

▪ HORZ ZOOM IN and HORZ ZOOM OUT

Control the amount of time currently displayed.

▪ VERT ZOOM IN and VERT ZOOM OUT

Control the number of tracks currently displayed.

▪ SCROLL UP and SCROLL DOWN

Used to view tracks when using VERT ZOOM IN.

▪ ZOOM SOLO

Used to select viewable tracks using the track arming keys. The tracks will fill the track display in groups of one, two, four, eight, twelve or twenty-four, depending on the number of tracks that you have selected.

KC–24 KEYBOARD

The **KC**-**24** uses different keystrokes for horizontal zoom, vertical zoom and scrolling. Zoom Solo is not available from the **KC**-**24**.

▪ HORZ ZOOM IN and HORZ ZOOM OUT

Hold the v key and use the + and – keys to adjust.

▪ VERT ZOOM IN and VERT ZOOM OUT

Hold the ZED key and use the + and – keys.

▪ For SCROLL UP and SCROLL DOWN

Hold the v key and use the ↑ and ↓ keys to adjust.

The **HELP** key or the *MAIN / HELP* menu launches the PDF viewer and loads either the manual or the latest release notes for viewing on the **RADAR View** display.

To launch the help viewer:

1. Press the **HELP** key on the **Session Controller** or use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN / HELP* menu and hit the **ENTER** key.

2. Select either the manual or the release notes and press the **ENTER** key.

The following table contains the keystrokes for controlling and navigating the viewer.

Action	KC24	Session Controller
Start Viewer	**H**	**HELP** or **H**
Return to RADAR View	Mouse click iZ icon	**CANCEL** or **TRK ARM 1**
Select different PDF file within Viewer	Select using RADAR View	**HELP** or **H**
Start Viewer with **FIND** active	None	**SHIFT + HELP(FIND)**
Shift Focus - Bookmarks, Text, Bookmarks	**REDO** or **SHIFT + REDO**	**MENU/PREV**
Change items in Bookmarks	↑ or ↓	↑ or ↓
Change views (Bookmarks –> Page #'s – >none)	**ALT+B, ALT+L, ALT+H**	**TRK ARM 3,4,5**
Expand Bookmark	**REDO + →**	**ENTER**
Collapse Bookmark	**REDO + ←**	**ENTER**
Zoom in Viewer	**ALT +**	**HORZ** or **VERT ZOOM IN**, **+** or **TRK ARM 18**
Zoom out Viewer	**ALT –**	**HORZ** or **VERT ZOOM OUT**, **–** or **TRK ARM 19**
Forward 10 pages	None	**F-FORWARD** or **TRK ARM 8**
Back 10 pages	None	**REWIND** or **TRK ARM 7**
Scroll page forward	↓	**SCROLL DOWN**
Scroll page backward	↑	**SCROLL UP**
Next Page	**MARK OUT**	↓ or **TRK ARM 10**
Previous Page	**MARK IN**	↑ or **TRK ARM 11**
First Page	None	**SHIFT + F-FORWARD**, **TRK ARM 6**
Last Page	None	**SHIFT + REWIND**, **TRK ARM 9**
Back in page history	**ALT + ←**	**TRK ARM 12**
Forward in page history	**ALT + →**	**TRK ARM 13**
Fit to page width	**ALT + SHUTTLE**	**TRK ARM 14**
Fit to page	**ALT + ENTER TIME**	**TRK ARM 15**
Rotate document clockwise	None	**TRK ARM 16**
Rotate document counter-clockwise	None	**TRK ARM 17**
Focus to **FIND** control	**REDO**	QWERTY Keys, **TRK ARM 20**
FIND - Search	**ENTER**	**ENTER** or **TRK ARM 21**
FIND – Search Again	**ALT + F**	**ENTER** or **TRK ARM 21**
Focus to **GOTO PAGE** control	**REDO**	Numeric Keys, **TRK ARM 22**
GOTO PAGE	**ALT + G**	**ENTER**
About Dialog	None	**TRK ARM 23**
Dismiss dialogs or popup messages	**PLAY** (with focus)	**CANCEL**

Entering Values

Numeric Keypad

The numeric keypad has several key functions important to RADAR®24 operation.

- Single keystroke recall of locates 0-9 using the numeric keys `0-9`.

- `RECALL LOC` and numeric keys `0-9` for recall of locates 10-99.

- Numeric keys `0-9` and `ENTER` for entering times and values in menu dialogs.

- The `MENU/PREV` and `ENTER` keys for menu navigation and dialog selection.

- The `ENTER TIME` key, numeric keys `0-9` and `ENTER` key for entering an address and locating to it.

- The `+` and `–` keys for incrementing or decrementing times and values in RADAR®24 dialogs.

Arrow Keys

The arrow keys are used for navigating the menu system. They also have special functions depending on the current state of the RADAR®24.

MENU MODE

- Select menus and subsequent sub-menus.

- Move between fields or selections in menu dialogs.

KEY MODE

- Certain direct key and menu dialogs use ↑ and ↓ for incrementing and decrementing values.

TRANSPORT MODE

- ← Locates directly to the `MARK IN` point.

- → Locates directly to the `MARK OUT` point.

- ↓ Auditions the audio between the selected `MARK IN` and `MARK OUT` points.

PRE ROLL MODE

- ← Locates directly to the `MARK IN` point with pre roll.

- → Locates directly to the `MARK OUT` point with pre roll.

- ↓ Auditions the audio between the selected `MARK IN` and `MARK OUT` points **without** pre roll.

Jog/Shuttle Wheel

Above and beyond its obvious purpose of providing a means for manually jogging and shuttling audio, the **Jog/Shuttle Wheel** can be used as an alternative to the numeric and arrow keys for navigation and data entry. This includes menu and sub-menu selection, selection of options and value entry.

Navigating Menus

The RADAR®24 menu system has been streamlined in software versions 3.10 and beyond. However the new menu system still relies on the same navigational techniques as previous versions of software. For complete coverage of the menu system see the section of this manual entitled REFERENCE: MENU TREE OVERVIEW and REFERENCE: MENU ITEM QUICK REFERENCE.

Menu/Prev

The MENU/PREV key is used to exit READY MODE or TRANSPORT MODE and enter MENU MODE. In this mode the display on the **Session Controller** and/or the optional **RADAR View** screen will indicate the current menu selection. The MENU/PREV key is also used to back out of dialogs, menu and sub-menu selections and will eventually exit MENU MODE and return to READY or TRANSPORT MODE once again.

Keyboard Shortcuts

Once in MENU MODE the QWERTY keyboard can be used to quickly select menu items based on the first letter of the menu name. For example in the MAIN MENU pressing the s key repeatedly will cycle between the SYSTEM MENU, SYNC MENU and the SHUTDOWN RADAR menu.

Canceling a Selection

While in the menu system, pressing the CANCEL key at any time will return the system to READY or TRANSPORT MODE. The **Session Controller** LCD will return to the default time and locate display and the menu window in the **RADAR View** display will be dismissed.

Menus

Once the MENU/PREV key is pressed and MENU MODE is active any of the navigation and/or short cut keys can be used to scroll through the available selections in the top level of the menu structure. This level is called the MAIN MENU. To return to TRANSPORT MODE press either the MENU/PREV or CANCEL keys. To make a selection, locate the desired menu item and press the ENTER key. This will take you another level down in the menu structure to the SUB-MENUS.

Sub-Menus

The SUB-MENUS are selected in a manner identical to the menus in the MAIN MENU. Each MAIN MENU item has a number of related SUB-MENUS. These SUB-MENUS may also have their own SUB-MENUS to choose from, depending on the selected item.

Dialogs

At the end of any given menu tree you will ultimately arrive at a dialog that presents you with some sort of selection or a set of fields for entering values. Values can be entered using any of RADAR®24's data entry methods including the numeric keys, arrow keys and the **Jog/Shuttle wheel**.

Direct Access Keys

Both the **Session Controller** and the **KC-24** have a wide range of keys that offer one key access to a particular function. Most of the direct access keys are short cuts to menu items but there are a few that are only accessible using the direct access keys. For complete coverage of the direct access keys see the section of this manual entitled REFERENCE: DIRECT ACCESS KEYS.

Disk Management

RADAR®24 uses SCSI hard disks in removable drive carriers for all audio recording. Hard disks are a fairly robust recording and storage medium, but just like tapes, proper care should be taken when handling, storing or transporting them.

Please take note of the following important points:

- Use only iZ approved SCSI hard drives and carriers! See the Support section of our website www.recordingtheworld.com for an up to date listing.

- Newly purchased drives must be initialized using the *MAIN / DIAG MENU /* INIT DISK menu dialog before use.

    Note: Initializing a disk erases any existing data permanently! Use with caution.

- Properly initialized external SCSI recording drives connected via the 68-pin SCSI connector on the Adrenaline®card must be connected and powered up before booting the system.

- Any valid recording drives will automatically be mounted upon boot up.

Mounting and Unmounting Disks

Before inserting and removing carriers containing recording drives you must use the RADAR®24 mount and un-mount commands.

To mount all valid recording drives:

- Press the MOUNT key on the **Session Controller** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / SYS MENU / DISK MANAGE:* MOUNT/UNMOUNT dialog and press the ENTER key.

To unmount all valid recording drives:

▪ Press `SHIFT+MOUNT(UNMNT)` key on the **Session Controller** or use the `MENU/PREV`, arrow keys and `ENTER` key to go to the *MAIN / SYS MENU / DISK MANAGE/*MOUNT/UNMOUNT dialog and press the `ENTER` key.

> **!** CAUTION: Failure to unmount recording hard drives before removing them from the system may result in permanent data loss and damage to your RADAR® system. Always unmount drives before hot swapping drives!

Show Disk Space

This menu item displays the remaining recording time left on the currently mounted recording drives in the hours, minutes and seconds format. This information is also available on the RADAR View display but the calculated recording time remaining is displayed in minutes. These values are "track minutes"; in other words, the displayed time will vary depending on the number of tracks selected using the track arming keys.

To calculate the remaining time for a given number of tracks:

1. Press the `TRACK ARM` keys to select the number of tracks to be used in the remaining time calculation.

2. Consult the `REC TIME` display on **RADAR View** to view the minutes remaining or use the `MENU/PREV`, arrow keys and `ENTER` key to go to the *MAIN / SYS MENU / DISK MANAG /*SHOW DISK SPACE dialog and press the `ENTER` key to view the same information in the hours, minutes and seconds format.

Reclaim Space

The `RECLAIM SPACE` function frees up disk space by deleting "orphaned" audio files that are no longer referenced by any RADAR®24 project play list. There is also an additional option that allows you to keep or delete any audio files that are referenced in the current undo lists.

RADAR®24 also has an `AUTO RECLAIM` feature. This feature differs from `RECLAIM SPACE` in that it only frees up orphaned files in a particular project. In other words it will not delete any audio files that were previously shared between projects. `RECLAIM SPACE` is a global function that will examine **all** projects and delete any audio files that are no longer in use for any reason. `AUTO RECLAIM` works automatically in the background to ensure the most efficient use of disk space. If you wish it can be disabled in the *MAIN / PREFS MENU /* AUTO RECLAIM dialog.

To reclaim disk space:

1. Use the `MENU/PREV`, arrow keys and `ENTER` key to go to the *MAIN / SYS MENU / DISK MANAGE/*RECLAIM SPACE dialog and press the `ENTER` key.

2. Select `YES` at the `RECLAIM SPACE?` prompt and press the `ENTER` key.

3. Select the `NO` or `YES` option to keep or lose your `UNDO LIST` audio references and press the `ENTER` key.

4. Select `YES` at the `ARE YOU SURE?` prompt and press the `ENTER` key.

Erase All Audio

The name says it all. Use ERASE ALL AUDIO to clear all of the recording drives connected to the system.

To erase all recorded audio:

1. Use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / DISK MANAGE/* ERASE ALL AUDIO dialog and press the ENTER key.

2. Select YES at the ERASE ALL AUDIO? prompt and press the ENTER key.

3. Select YES at the LOSE ALL AUDIO? prompt and press the ENTER key.

4. Select YES at the ARE YOU SURE? prompt and press the ENTER key.

Disk Mode

The DISK MODE menu is **<u>potentially dangerous</u>** and should only be used if you are absolutely sure you understand the feature completely.

Standard disk mode uses 128k clusters and records 24 tracks per disk. Custom mode allows you to choose between 32k, 64k and 128k clusters and also lets you specify the number of tracks per disk. This enables you to split tracks across multiple disks. This was sometimes necessary in the past to get the required performance from slower hard disks. Given the high performance of today's hard disks it is no longer necessary to split tracks across disks and it is recommended that you refrain from doing so unless you have a really good reason to do it.

Note: Smaller cluster sizes result in faster cueing times but may also reduce system performance.

To use custom disk mode:

1. Use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / SYS MENU / DISK MANAGE/* DISK MODE dialog and press the ENTER key.

2. Use the up and down arrow keys to select CUSTOM DISK MODE and press the ENTER key.

3. Choose the desired cluster size using the right and left arrow keys and press the ENTER key.

4. If you have additional drives connected, choose the number of tracks that you wish to group together on each disk and press the ENTER key.

Note: This number must equally divide into 24 e.g. 8, 12 etc.

5. Assign the grouped tracks to an individual disks SCSI ID by using the right and left arrow keys to select the SCSI ID and the up and down arrows or the QWERTY keyboard to select the group assignment letters. Press the ENTER key.

The following example shows three groups of 8 tracks, A, B and C, assigned to disks on SCSI ID's 1, 2 and 3. Use the letter X to denote un-assigned drive ID's.

```
SCSI IDS:   0 1 2 3 4 5 6
GROUPING: ABCXXXX
```

6. If you are really sure about the changes select YES in the CHANGE MAY LOSE AUDIO dialog and press the ENTER key.

Disk Diagnostics

RADAR®24 has a variety of diagnostic tools to help you with trouble-shooting and configuration. If you are experiencing disk troubles your first and best course of action is to call iZ Technical Support at 1-800-776-1356 or email us at support@izcorp.com .

Note: Repairing or altering a disk directory structure in any way may result in the loss of audio data! Many of the following functions should only be used under the guidance of iZ Technical Support. Exercise extreme caution when using them!

Scan SCSI Bus

The SCAN SCSI BUS menu item is not dangerous and will not alter your disk or data in any way. It simply displays all connected and recognized devices on the SCSI bus.

To scan the SCSI bus:

1. Use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / DIAG MENU / SCAN SCSI BUS* dialog and press the ENTER key.

2. Use the up and down arrow keys to view the list of detected devices.

3. Press the MENU/PREV or CANCEL keys to return to normal operation.

Initialize Disk

INIT DISK is used to completely erase a recording drive and re-write the file allocation table (FAT). Since this menu item will erase audio it must be used with extreme caution.

There are several decisions to be made when initializing a RADAR®24 disk.

Firstly, if you prefer waveforms for recorded audio to appear on the **RADAR View** display, the recording disk must be initialized for waves. This creates a special file on the disk that holds all of the waveform data for the recordings on the drive. If the disk is not initialized for waves **RADAR View** will display recorded segments as blue bars.

The second decision will determine if the drive can be used exclusively for recording audio or exclusively for archiving audio. This allows RADAR®24 to treat the drives differently and prevent accidental erasure or alteration of archived data.

To initialize a disk:

1. Use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN/DIAG MENU/*INIT DISK dialog and press the ENTER key.

2. Select the SCSI ID number of the disk that you wish to initialize.

3. When prompted with the question INIT DISK X? use the right and left arrow keys to select YES and press the ENTER key.

4. If this drive will be used for archiving select YES at the INIT FOR BACK UP? prompt, otherwise select NO and press the ENTER key.

5. If you wish to see waveforms displayed in **RADAR View** select YES at the INIT FOR WAVES? prompt, otherwise select NO and press the ENTER key.

6. Before initializing proceeds the ERASE OLD DATA? prompt appears as a last warning to ensure that you really want to perform this operation. Select YES and press the ENTER key to proceed with the initialization.

Check Disk

The CHECK DISK routine performs a check of the selected SCSI drive and reports any errors found in the file system including the FAT and directory structure of the disk. This function is safe and will not alter the data on the selected disk at all. The resulting report can be viewed in either the **Session Controller** or **RADAR View** displays and can also be output to a text file as a part of the debug file. See OPERATIONS: DISK DIAGNOSTICS: SAVE DEBUG for more details.

To check a SCSI disk:

1. Use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN/DIAG MENU/*CHECK DISK dialog and press the ENTER key.

2. Use the up and down arrow keys to select the SCSI ID that corresponds to the drive you wish to check and press the ENTER key.

3. Select YES to the CHECK DISK X? prompt and press the ENTER key.

4. The check will proceed. The disk will be un-mounted and re-mounted and a report will be generated and displayed in the DISK ERRORS: dialog. To view the details use the up and down arrow keys to scroll through the list. This information will be stored in the debug file that can be saved and sent to iZ technical support if required. See OPERATIONS: DISK DIAGNOSTICS: SAVE DEBUG for more details.

5. Press the CANCEL key to resume normal operation.

Repair Disk

The **REPAIR DISK** function will correct any inconsistencies that were found in the FAT and/or directory structure on the selected disk after using the **CHECK DISK** function. If you are experiencing trouble please call iZ Technical Support at 1-800-776-1356 or email us at support@izcorp.com before using this feature.

Note: Using this feature could result in audio data being lost so exercise caution!

To repair a SCSI disk:

1. Use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN / DIAG MENU / REPAIR DISK* dialog and press the **ENTER** key.

2. Use the up and down arrow keys to select the SCSI ID that corresponds to the drive you wish to repair and press the **ENTER** key.

3. Select **YES** at the **REPAIR DISK X?** prompt if you are sure that you want to proceed and press the **ENTER** key.

4. The repair will proceed. The disk will be un-mounted and re-mounted and a report will be generated and displayed in the **DISK ERRORS:** dialog. To view the details use the up and down arrow keys to scroll through the list. This information will be stored in the debug file that can be saved and sent to iZ technical support if required. See OPERATIONS: DISK DIAGNOSTICS: SAVE DEBUG for more details.

5. Press the **CANCEL** key to resume normal operation.

Check Project

The check project function analyzes a selected RADAR®24 project and checks for play list errors.

To check a project for play list errors:

1. Use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN / DIAG MENU / CHECK PROJECT* dialog and press the **ENTER** key.

2. Use the up and down arrow keys to select the project you wish to check and press the **ENTER** key.

3. The resulting dialog will display the overall errors if any are found. Use the up and down arrows to scroll through the results for each individual track.

4. Press the **ENTER** or **CANCEL** key to resume normal operation.

Realtime Errors

There are several different types of realtime errors that can occur during recording and playback:

READ

Indicates that requested data was not retrieved from the disk.

WRITE

Indicates that data was not written successfully to the disk.

PLAY

Indicates that a playlist error occurred during playback.

RECORD

Indicates that a playlist error was experienced during recording.

486

Indicates that the host CPU is not responding fast enough. May indicate a large quantity of error messages.

ASSERT

Indicates that a condition expected to be true is found to be false while RADAR®24 is running. These Assert errors are stored in the debug file and can be of great help to iZ Technical Support while trying to diagnose a problem. See Operations: Disk Diagnostics: Save Debug for more details on saving the debug file.

The causes of these errors can vary greatly and if they are experienced they should be diagnosed immediately by iZ Technical Support staff. Critical errors will be indicated by a red flashing SMPTE counter in RADAR View and/or a flashing !ERR! message in the **Session Controller** display.

Copy Hard Disks

This function provides a way to easily copy data from one hard drive to another.

To copy hard disk:

1. Use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN/DIAG MENU/COPY HARD DISKS* dialog and press the ENTER key.

2. Use the right and left arrow keys to switch between the SOURCE ID and the COPY ID fields. Use the up and down arrows to select the desired SCSI ID for both the source and destination drives and press the ENTER key.

3. To clone a drive, select YES in the SECTOR-BY-SECTOR COPY dialog. Selecting NO will perform a file based disk copy and press the ENTER key.

4. A final dialog will prompt ARE YOU SURE? Select YES and press the ENTER key to continue.

Note: A sector-by-sector copy will copy the entire drive whether there is audio present or not. This may take a significant amount of time with large capacity hard drives. A file-based copy will duplicate the data and directory information to the new drive but will store the data in different physical sectors on the hard disk platters. This approach can be much faster for small amounts of data.

Verify Hard Disks

The **VERIFY DISKS** function does a check of all of the sectors on the selected hard disk or hard disks. This diagnostic procedure can be very time consuming and **cannot be cancelled** so make sure you have lots of time for it to complete before your session starts!

To verify hard disks:

1. Use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN/DIAG MENU/VERIFY HARD DISKS* dialog and press the **ENTER** key.

2. Select **ALL** or the SCSI ID number of the connected disk you wish to verify using the up and down arrow keys and press the **ENTER** key to begin.

3. The changing sector address display and the percentage indicator on both the Session Controller and the RADAR View display will indicate this functions progress. Any errors will be displayed as they are encountered.

4. Press the **CANCEL** key to resume normal operation.

Configure Debug

The **CONFIGURE DEBUG** dialog allows you to filter the data that is output to the **DEBUG.OUT** file. Filtering is provided because without it the information you want to examine may be buried in a deluge of potentially unnecessary information that is logged during normal operation. SCSI data is the worst offender in this regard so only enable SCSI logging once you are sure you want to examine this information or on the recommendation of iZ technical support.

The available filtering options are:

▪   Include or exclude system data (recommended).

▪   Include or exclude SCSI data (lots of data!).

▪   Set the maximum number of lines in the debug file (default setting is 20,000 line maximum).

▪   Include or exclude sync data (optional).

To configure the debug output:

1. Use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN/DIAG MENU/CONFIGURE DEBUG* dialog and press the **ENTER** key.

2. Use the right and left arrows to move between the fields of the dialog and the up and down arrows to change the field's value. Selecting **Y** for a filtering field includes that data in the debug file output.

3. Press **ENTER** or **CANCEL** to resume normal operation.

Save Debug

The **SAVE DEBUG** dialog allows you to export the debug file to floppy disk, generally on the recommendation of iZ technical support staff.

To export the debug file to floppy:

1. Insert a formatted 1.44 Meg PC floppy disk in the floppy disk drive.

2. Use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN / DIAG MENU / SAVE DEBUG* dialog and press the **ENTER** key.

3. Name the file using the QWERTY keyboard or the arrow keys or accept the default file name.

4. You may now transfer the floppy disk to your computer and email the debug file as an attachment to support@izcorp.com

Project Management

RADAR®24 uses projects as a way to manage audio recordings. You can store up to 99 projects depending on the available hard disk storage in your system. The way you use projects is up to you. Some like to think of a project as a song or performance. Others like to think of a project as a roll of tape. You decide.

Audio data can be freely copied and pasted between projects. This opens up a lot of creative possibilities, for example, a powerful implementation of *virtual* or *comp* tracks:

To create project based virtual tracks:

1. Create a stereo or mono sub-mix of the tracks in a project.

2. Copy and paste the sub-mixed tracks into a brand new project.

3. Record multiple takes of vocals, guitars or whatever using the sub-mix as a reference.

4. Edit together a comp (composite track) of all the best overdub performances.

5. Copy the composite track or tracks back into the original project.

GoTo Project

To go to a new project:

1. Press the **GOTO PROJ** key on the **Session Controller,** the **GOTO PROJECT** key on the **KC-24** or use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN / PROJ MENU / GOTO PROJECT* menu item and press the **ENTER** key.

2. Select the project number you wish to go to using the numeric keys, the up and down arrow keys or the **Jog/Shuttle** wheel and press the **ENTER** key.

New Project

To create a new project:

1. Press the NEW PROJ key on the **Session Controller** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / PROJ MENU / NEW PROJECT* selection and press the ENTER key.

2. A new project will be created at the next available location. Type in a name for the new project and press the ENTER key. Change the sample rate and bit-depth of the project if required. See REFERENCE: PROJECT MENU for further information.

Copy Project

To copy a project:

1. Press the COPY PROJ key on the **Session Controller** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / PROJ MENU / COPY PROJECT* selection and press the ENTER key.

2. At the COPY PROJ XX TO XX? prompt press ENTER.

Delete Project

To delete a project:

1. Press the DEL PROJ key on the **Session Controller** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / PROJ MENU / DELETE PROJECT* selection and press the ENTER key.

2. Select the project number of the project you wish to delete using the numeric keys, the up and down arrow keys or the Jog/Shuttle wheel and press the ENTER key.

3. Choose YES at the DEL PROJ? prompt and press the ENTER key.

4. If you really want to do this then select YES at the ARE YOU SURE? prompt and press the ENTER key.

Name Project

To name or rename a project:

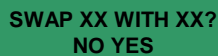1. Press the NAME PROJ key on the **Session Controller** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / PROJ MENU / NAME PROJECT* selection and press the ENTER key.

2. Use numeric keys, the up and down arrow keys or the Jog/Shuttle wheel to select the project number you wish to rename.

3. Use the right arrow key to switch to the name field and type in a new name and press the ENTER key.
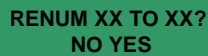
Renumber Project

To renumber a project:

1. Use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / PROJ MENU / RENUMBER PROJECT* selection and press the ENTER key.

2. Use the numeric keys, the up and down arrow keys or the **Jog/Shuttle wheel** to select the new project number and press the ENTER key

   a. If the new project number is already used for an existing project you will get a prompt similar to the following:

      ```
      SWAP XX WITH XX?
            NO YES
      ```

   b. If the new project number is unused you will get this prompt:

      ```
      RENUM XX TO XX?
          NO YES
      ```

3. Use the N / Y keys on the keyboard or the right and left arrow keys to make your selection and press the ENTER key.

Track Management

Each RADAR®24 project contains 24 discrete tracks for recording audio. Each track has its own dedicated input and output. There is no need to assign voices or assign recording directories. In fact none of the track management chores required by digital audio workstations apply at all! RADAR®24 takes care of all the details so you can get your work done quickly and easily.

Naming Tracks

If you wish you can name your tracks when using the RADAR View display.

To name a track:

1. Press the NAME TRACK key or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / PROJ MENU / NAME TRACK* selection and hit the ENTER key.

2. Use the track arming keys or the up and down arrow keys to select a track.

3. Use the right or left arrow keys to move to the name field and type in a name using the keyboard and press the ENTER key.

File Management

Since there is no need to specify recording directories for RADAR®24, file management is required only for managing the importing, exporting, backing up and restoring of files and projects.

Export

There are two ways to initiate a file export from the RADAR®24:

- Using the **EXPORT MENU**, which is available using both the **Session Controller** and the **KC-24**.

- Using the **FILE EXPORT** or **CLIP EXPORT** keys on the **Session Controller**.

To export audio in the BWF (Broadcast Wave) or .wav format using the FILE EXPORT key:

1. Press the **FILE EXPORT** key or use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN / FILE MENU/EXPORT* selection and press the **ENTER** key.

2. Use the up and down arrows to select the device you wish to use for export in the *../EXPORT TO* dialog and press the **ENTER** key. This list will include the RADAR®24 internal IDE drive, internal DVD-RAM drive, network shares and any Mac HFS or FAT 32 devices connected via the RADAR®24 external SCSI option.

3. Use one of the following methods to select a destination folder in the **SELECT FOLDER** dialog:

   - Use the up and down arrow keys to select an existing folder name and press the **ENTER** key.

   Note: When exporting you are always in a folder. The top level folder is named "!RADAR!". You'll never see it unless you are using FTP to transfer files from the internal IDE drive because you will always be inside of it or inside one of its sub-directories.

   - Select **NEW FOLDER** and press the **ENTER** key to create a new one. You will be presented with a **FOLDER NAME** dialog. Type in a name for your folder and press the **ENTER** key. You will be returned to the **SELECT FOLDER** dialog with your new folder name as the current selection. Press the **ENTER** key to accept this folder as a destination.

4. Use the right and left arrow keys to select either the **WAV** or **BWF** file format and press the **ENTER** key.

5. Select a **FILL SILENCE** option. Since the AES-31 playlist is not yet implemented, **FILL SILENCE** is a method that allows projects individual recordings to be transferred intact as a block of tracks that all share the same start and end times. This is accomplished by filling blank regions of the project with zero data and creating 24 files that span the length of the current project. This increases conversion and transfer time but it makes it a snap to position the exported files in a DAW application. Most workstations have a *strip silence* option that can be used to remove any unwanted silence between recordings. If you choose **NO** for the **FILL SILENCE** option, the directory will contain the individual recording files ordered by track and start time. These files will have to be re-positioned manually or using the spot-to-time feature found in most DAW applications. Press the **ENTER** key.

6. Select a TIME RANGE. Selecting ALL selects the entire project from the project start time to the end of recorded audio. MARK IN/OUT uses the MARK IN and MARK OUT location markers to select a range of audio for export. Press the ENTER key.

7. Select the tracks you wish to export using TRACK ARM keys 1 through 24 or by choosing the ALL option in the EXPORT TRACKS dialog and press the ENTER key.

8. The EXPORT TO DISK dialog will appear while RADAR®24 processes the files. Next a confirmation dialog displaying the size or estimated time of the export may appear asking if you wish to proceed, depending on the SHOW BACK UP SIZE setting in the *FILE PREFS* menu. Select YES and press the ENTER key to proceed. When the operation is finished the EXPORT COMPLETE dialog will appear. Press any key to dismiss the dialog and return to normal operation.

Note: You may cancel an export at any time by pressing the CANCEL key.

To export audio using the CLIP EXPORT shortcut key:

1. Press the CLIP EXPORT key on the **Session Controller**.

2. The device, folder, format and FILL SILENCE options for this export will be automatically assigned from the settings in the preferences menu.

3. Select the tracks you wish to export using TRACK ARM keys 1 through 24 or by selecting ALL in the SET TRACKS dialog. Press the ENTER key

4. The EXPORT TO DISK dialog will appear while RADAR®24 processes the files. Next a confirmation dialog displaying the size or estimated time of the export may appear asking if you wish to proceed, depending on the SHOW BACK UP SIZE setting in the *FILE PREFS* menu. Select YES and press the ENTER key to proceed. When the operation is finished the EXPORT COMPLETE dialog will appear. Press any key to dismiss the dialog and return to normal operation.

Import

Import is coming in 3.20 software. For the latest news visit our website at www.recordingtheworld.com.

Backup

PREPARING TO BACKUP

If you need to know how long a backup will take or how much space it will use, you can choose to display either the backup time or the backup size in the *PREFS MENU/ FILE PREFS/ SHOW BACKUP SIZE* dialog. With this dialog activated, RADAR®24 will prompt just before it begins the backup in case you need to make adjustments for the backup to fit into the time or space available.

If you need to reduce the size or time required for a backup you can either clear the RADAR®24 undo list or group your projects in a set. The undo list must be cleared **before** you begin backing up your project to achieve a reduction in backup size. This undo list may still reference audio that you have deleted from your project. When you remove the undo list references to deleted audio, the RADAR®24 archiving engine will

ignore it. This will save you a lot of time and disk space. If you're backing up several projects that share a lot of the same audio, you can also save space and time by backing them up as a set. This is actually a part of the backup sequence. By grouping projects as a set any shared audio is only backed up once instead of being copied fresh for each individual project. Follow the backup instructions later in this section for more details on grouping projects.

To reduce project size by clearing the undo list:

1. Make sure that you will **never** want to undo any records or edits on the material you are about to backup again!

2. Use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / PROJ MENU / UNDO LEVEL* and press the ENTER key.

3. Use the up and down arrow keys to set the undo level to zero and press the ENTER key. This will instantly wipe out all undo information and reduce the project size accordingly.

4. Immediately reset the undo level value to your usual setting and press the ENTER key. This will make sure you have an undo when you really need one!

BACKING UP A PROJECT

RADAR®24 archives projects in a high performance, proprietary storage format on a variety of industry standard media types. Once archived, RADAR®24 projects must be restored on another RADAR® system with a similar backup device. Archive compatibility between RADAR® systems is as follows:

- 16-bit - 44.1 and 48 kHz RADAR® projects can be restored on RADAR® I, RADAR® II and RADAR®24 systems.

- 24-bit - 44.1 and 48 kHz RADAR® projects can be restored on RADAR® II or RADAR®24 systems.

- 24-bit – 96 kHz and 192 kHz RADAR® projects can be restored only on RADAR®24 systems.

For the greatest level of flexibility and compatibility you can have multiple backup devices connected to the RADAR®24 simultaneously. This allows you to restore from one format and archive to another if you need to. Follow the backup instructions below for details on choosing the current archival device.

To backup a project or projects:

1. Insert the archive media and press the BACKUP key on the **Session Controller** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / FILE MENU / BACKUP* selection and hit the ENTER key.

2. Use the up and down arrow keys to select the device you wish to use for backup in the *../BACKUP TO* dialog and press the ENTER key. This list will include the RADAR®24 internal IDE drive, network shares and any SCSI backup devices connected to the RADAR®24.

3. Select a destination folder in the SELECT FOLDER dialog using one of the following methods:

    - Use the up and down arrow keys to select an existing folder name and press the ENTER key.

Note: When backing up you are always in a folder. The top level folder is named "!RADAR!". You'll never see its name listed because you will always be inside of it or inside one of its sub-directories.

- Use the up and down arrow keys to select **NEW FOLDER** and press the **ENTER** key to create a new one. You will be presented with a **FOLDER NAME** dialog. Use the keyboard to type in a name for your folder and press the enter key. You will be returned to the **SELECT FOLDER** dialog with your new folder name as the current selection. Press the **ENTER** key to accept this folder as a destination.

4. Use the up and down arrow keys to select **ALL PROJECTS**, **CURRENT PROJECT** or **SELECTED PROJS** from the **BACKUP MENU** dialog and press the **ENTER** key.

   If the **SELECTED PROJS** option is selected you can select the individual project or projects you wish to back up using the up and down arrow keys and the + and – keys on the numeric keypad. Pressing the + key adds the selected project to the archiving list and places a + sign to the right of its name. It also increments the number of selected projects in the upper right hand corner of the menu display. Pressing the – key removes the selected project from the archiving list and removes the + sign to the right of its name. It also decrements the number of selected projects in the upper right hand corner of the menu display.

5. When using either the **SELECTED PROJS** or **ALL PROJECTS** option you must also choose how the projects are organized within the backup.

   - Grouping archives by **PROJECT** means that each project will be backed up separately and can therefore be restored separately.

   - Grouping by **SET** means that all the projects you selected will be backed up as a data set. This will speed things up if you are backing up a number of projects that share a lot of audio, and it's also helpful to group projects that you want to restore as a set.

   Select **PROJECT** or **SET** from the **BACKUP MENU** dialog and press the **ENTER** key.

6. When using the **SET** option you must also choose a name for your data set. Accept the default name or use the keyboard to enter a new name in the name field of the **BACKUP MENU** dialog and press the **ENTER** key.

7. If you are backing up to a data tape or DVD, the **BACKUP MODE** dialog will appear asking if you want to **APPEND** or **OVERWRITE**. **APPEND** will add your new backup data to the existing archive. **OVERWRITE** will erase existing archive data and replace it with the new backup. If you choose to **OVERWRITE** the **ERASE EXISTING TAPE?** or **ERASE EXISTING DISK?** prompt will appear just to make sure. This prompt will also appear with **APPEND** if the tape or DVD has been used for some other purpose e.g. if it was used as an export DVD. Use the up and down arrow keys to select **APPEND** or **OVERWRITE** from the **BACKUP MODE** dialog and press the **ENTER** key.

! IMPORTANT NOTE: When you see either the ERASE EXISTING TAPE? or ERASE EXISTING disk? prompt it means that the tape or disk that you have inserted contains archive data from a previous RADAR® backup or files from some other application. Answer yes only if you are absolutely sure that you want to erase everything that is currently on the tape or disk. The overwrite option will reformat the tape or disk and there is no way to recover previous data once it has been done.

8. The **BACKUP TO DISK** dialog will appear while RADAR®24 processes the files. Next, a confirmation dialog displaying either the backup time required or the size of the export in megabytes may appear asking if you wish to proceed. This estimate is based on the typical throughput of the backup device you chose. As the backup progresses, RADAR® monitors the actual throughput and continuously updates the time and the number of megabytes remaining. If you choose yes the backup will proceed. When it is finished the **BACKUP COMPLETE** dialog will appear. Press any key to dismiss the dialog and return to normal operation.

Note: You may cancel a backup at any time by pressing the **CANCEL** *key.*

Restore

Restoring projects from DVD-RAM, tape, disk or the network couldn't be easier.

To restore a RADAR®24 project:

1. Press the **RESTORE** key on the **Session Controller** or use the **MENU/PREV**, arrow keys and **ENTER** key to go to the **MAIN/FILE MENU/RESTORE** selection and press the **ENTER** key.

2. Use the up and down arrow keys to select the device you wish to restore from in the **../RESTORE FROM** dialog and press the **ENTER** key. This list will include the RADAR®24 internal IDE drive, network shares and any connected SCSI devices.

3. Use the up and down arrow keys to select the folder containing the archive you want to restore and press the **ENTER** key.

4. Use the arrow keys to select **ALL** or **SELECTED** from the restore menu.

5. If the **SELECTED** option is currently selected you can use the up and down arrow keys in conjunction with the + and – keys on the numeric keypad to add or remove individual projects from the restore list.

6. Press the **ENTER** key. If the restore cannot fit into the remaining disk space, the **HARD DRIVE FULL** prompt will alert you.

7. When the restore is complete the display will read **RESTORE COMPLETE PRESS ANY BUTTON**.

Note: You may cancel a backup at any time by pressing the **CANCEL** *key. If you cancel when a project is partially restored you have the option to* **SALVAGE PARTIAL PROJECT.** *If you choose* **NO,** *RADAR will automatically reclaim the disk space.*

Delete Backups

Deleting unwanted archives from DVD-RAM or the internal IDE disk is sometimes necessary to free up space.

To delete a RADAR®24 archive from DVD-RAM, the internal IDE disk or network drive:

1. Use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN / FILE MENU / FILE MANAGEMENT / DELETE BACKUPS* menu item and press the **ENTER** key.

2. Use the up and down arrow keys to select the device you wish to delete from in the *../ DELETE FROM* dialog and press the **ENTER** key. This list will include the RADAR®24 internal IDE drive, any connected SCSI devices and network shares.

Note: you cannot delete an archive from a data tape.

3. Use the up and down arrow keys to select the folder containing the archive you want to delete and press the **ENTER** key.

4. If you wish to delete multiple projects you can use the up and down arrow keys in conjunction with the + and – keys on the numeric keypad to add or remove individual projects from the delete list. Press the **ENTER** key.

5. You will get a dialog **DELETE SELECTED BACKUPS?** Select **YES** to continue, **NO** to cancel and press the **ENTER** key.

6. **ARE YOU SURE?** Select **YES** to continue, **NO** to cancel and press the **ENTER** key.

7. When the operation is complete the display will read **DELETE COMPLETE PRESS ANY BUTTON**.

Note: If you accidentally delete something, DON'T DO ANYTHING. Proceed immediately to the instructions for RECOVER BACKUPS below. If you modify the archive disk again in any way your archive will be gone forever!

Recover Backups

If you have accidentally deleted archives from DVD-RAM or the internal IDE drive you have a chance to recover them. Once you've backed up to the drive again it's gone forever!

To recover deleted RADAR®24 archives from DVD-RAM, the internal IDE disk or network drive:

1. Use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN / FILE MENU / FILE MANAGEMENT / RECOVER BACKUPS* menu item and press the **ENTER** key.

2. Use the up and down arrow keys to select the device you wish to recover the deleted archive from in the *../RECOVER FROM* dialog and press the **ENTER** key. This list will include the RADAR®24 internal IDE drive, any connected SCSI devices and network shares.

3. Use the up and down arrow keys to select the folder containing the archive you want to recover and press the **ENTER** key.

4. If you wish to recover multiple projects you can use the up and down arrow keys in conjunction with the + and – keys on the numeric keypad to add or remove individual projects from the recover list. Press the **ENTER** key.

5. When the operation is complete the display will read **RECOVER COMPLETE PRESS ANY BUTTON**.

Delete Folder

If you wish to delete a folder from a network share or the internal IDE drive to free up disk space you can use **DELETE FOLDER** to do so.

To delete a folder:

1. Use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN / FILE MENU / FILE MANAGEMENT/ DELETE FOLDER* menu item and press the **ENTER** key.

2. Use the up and down arrow keys to select the device you wish to delete the folder from in the *../DELETE FROM* dialog and press the **ENTER** key. This list will include the RADAR®24 internal IDE drive, and any network shares.

Note: You cannot delete a folder from a DVD-RAM at this time.

3. Use the up and down arrow keys to select the folder you wish to delete and press the **ENTER** key.

4. Use the arrow keys to select **YES** at the prompt if you are absolutely sure that you want to delete the selected folder. Press the **ENTER** key to proceed.

Note: Deleting a folder is PERMANENT! There is no undo for this function.

5. Use the arrow keys to select **YES** at the safety prompt and press the **ENTER** key.

6. When the folder is deleted the display will read **DELETE COMPLETE PRESS ANY BUTTON**.

Macros

If you make use of the powerful RADAR®24 macro keys then these macro management features are bound to be helpful.

LOAD

The **LOAD** feature allows you to import macros from a file on a floppy disk, the internal hard drive or a connected SCSI drive.

To load a macro:

1. Use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN/FILE MENU/MACROS* menu item and press the **ENTER** key.

2. Use the right and left arrow keys to select **LOAD** from the **MACRO KEYS**: dialog and press the **ENTER** key.

3. Use the right and left arrow keys to select **FLOPPY**, **HARD** or **SCSI** in the **LOAD FROM**: dialog and press the **ENTER** key.

4. Use the arrow keys to select the macro file you wish to load in the **LOAD MACROS**: dialog and press the **ENTER** key.

5. When the load is complete the display will read **MACROS LOADED PRESS ANY BUTTON**.

SAVE

The **SAVE** feature allows you to export macros to a file on a floppy disk, the internal hard drive or a connected SCSI drive.

To save a macro:

1. Use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN/FILE MENU/MACROS* menu item and hit the **ENTER** key.

2. Use the right and left arrow keys to select **SAVE** from the **MACRO KEYS**: dialog and press the **ENTER** key.

3. Use the right and left arrow keys to select **FLOPPY**, **HARD** or **SCSI** in the **SAVE TO**: dialog and press the **ENTER** key.

4. Use the keyboard to type a name for the macro file you wish to save in the **NAME THE MACRO**: dialog and press the **ENTER** key.

5. When the save is complete the display will read **MACROS SAVED PRESS ANY BUTTON**.

DELETE

The **DELETE** feature allows you to delete macro files on a floppy disk, the internal hard drive or a connected SCSI drive.

To delete a macro:

1. Use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN/FILE MENU/MACROS* menu item and press the **ENTER** key.

2. Use the right and left arrow keys to select **DELETE** from the **MACRO KEYS**: dialog and press the **ENTER** key.

3. Use the right and left arrow keys to select **FLOPPY**, **HARD** or **SCSI** in the **DELETE FROM**: dialog and press the **ENTER** key.

4. Use the up and down arrow keys in the **DELETE MACROS**: dialog to select the macro file you wish to delete and press the **ENTER** key.

5. When the save is complete the display will read **MACROS DELETED PRESS ANY BUTTON**.

File Prefs

SHOW BACKUP SIZE

This preference allows you to choose the information displayed during a backup or export procedure.

To modify the information displayed during a backup:

1. Use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN / FILE MENU / FILE PREFS* menu item and press the **ENTER** key.

2. Use the up and down arrows to locate **SHOW BACKUP SIZE** in the **../FILE PREFS** dialog and press the **ENTER** key.

3. Use the right and left arrows to select **OFF**, **MBYTES** or **TIME** In the **SHOW BACKUP SIZE** dialog and press the **ENTER** key.

EXPORT FORMAT

This preference allows you to choose the default setting for the file format that will be used for exporting from the RADAR®24.

To select the default file format setting for export:

1. Use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN / FILE MENU / FILE PREFS* menu item and press the **ENTER** key.

2. Use the up and down arrows to locate **EXPORT FORMAT** in the **../FILE PREFS** dialog and press the **ENTER** key.

3. Use the right and left arrows to select **WAV**, **BWF** or **ASK** in the **FILE FORMAT** dialog and press the **ENTER** key. If you select the **ASK** option then RADAR®24 will prompt you to choose the file format each time you export.

EXPORT SILENCE

This preference allows you to choose the default setting for **FILL SILENCE**, which determines whether or not non-audio regions are padded with zeros to create contiguous files for export.

To select the default setting for export silence:

1. Use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN / FILE MENU / FILE PREFS* menu item and press the **ENTER** key.

2. Use the up and down arrows to locate **EXPORT SILENCE** in the **../FILE PREFS** dialog and press the **ENTER** key.

3. Use the right and left arrows to select NO, YES or ASK in the FILL SILENCE dialog and press the ENTER key. If you select the ASK option then RADAR®24 will prompt you to choose the FILL SILENCE option each time you export.

File Transfer

This section covers device specific requirements and export instructions. For more details on the export process and the export shortcut available using the EXPORT CLIP key please consult the OPERATION: FILE MANAGEMENT: EXPORT section of the manual.

DVD-RAM

Most later model DVD-ROM drives will actually read Type II DVD-RAM disks, which can removed from their cartridge, and 4.7 Gig DVD-RAM non-cartridge disks. This is a bonus for those who already own a PC or a Mac with a DVD-ROM drive installed. The capacity of DVD-RAM media that can be read by a given DVD-ROM drive will vary depending on the manufacturer, model, version etc.

Note: Once a Type II disk is removed from the cartridge it cannot be recorded on again without replacing it back in the cartridge.

MAC REQUIREMENTS:

▪ DVD-RAM Drive and Software Architects DVD-RAM Tune Up! This software provides the driver software and several other disk utilities.

PC REQUIREMENTS:

▪ DVD-RAM Drive and the appropriate driver for UDF (Universal Disk Format).

To export audio to DVD-RAM in BWF or .wav format:

1. Press the FILE EXPORT key on the **Session Controller** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN/FILE MENU/EXPORT* selection and press the ENTER key.

2. Use the up and down arrow keys to select the internal DVD-RAM drive from the ../EXPORT TO dialog and press the ENTER key.

3. Use the right and left arrow keys to select either the WAV or BWF file format and press the ENTER key.

4. Use the up and down arrow keys to select a FILL SILENCE option. Select YES to do a "track as file" type export where all exported tracks share a common start time. If you select NO for the FILL SILENCE option the target directory will contain all of the individual recording files ordered by track and start time. These files will have to be re-positioned manually or using the spot-to-time feature found in most DAW applications. Press the ENTER key.

5. Use the arrow keys to select a TIME RANGE. Selecting ALL includes the entire project from the project start time to the end of recorded audio. MARK IN/OUT uses the MARK IN and MARK OUT location markers to select a range of audio for export. Press the ENTER key.

6. Use **TRACK ARM** keys 1 through 24 to select the tracks you wish to export or select the **ALL** option in the **EXPORT TRACKS** dialog. Press the **ENTER** key.

7. The export to disk dialog will appear while RADAR®24 processes the files. Next a confirmation dialog displaying the size of the export in megabytes will appear asking if you wish to proceed. Select **YES** and the export will proceed. When it is finished the **EXPORT COMPLETE** dialog will appear. Press any key to dismiss the dialog and return to normal operation.

8. The DVD-RAM disc containing the exported files is now ready to be read by a DVD-RAM drive in your PC or Mac!

SCSI Disk

This export option requires the RADAR®24 SCSI export card option to be installed. This secondary SCSI connection is used exclusively for exporting and importing to and from HFS or FAT 32 drives and is not used for recording.

MAC REQUIREMENTS:

▪ SCSI card, cable and an internal or external receiver for a Kingston DE-100 drive carrier.

PC REQUIREMENTS:

▪ SCSI card, cable and an internal or external receiver for a Kingston DE-100 drive carrier.

To export audio to an HFS or FAT 32 formatted SCSI disk in BWF or .wav format:

1. Press the **FILE EXPORT** key on the **Session Controller** or use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN/FILE MENU/EXPORT* selection and press the **ENTER** key.

2. Use the up and down arrow keys to select the external SCSI drive from the *../EXPORT TO* dialog and press the **ENTER** key.

3. Use the right and left arrow keys to select either the **WAV** or **BWF** file format and press the **ENTER** key.

4. Select a **FILL SILENCE** option. Select **YES** to do a "track as file" type export where all exported tracks share a common start time. If you select **NO** for the **FILL SILENCE** option the target directory will contain all of the individual recording files ordered by track and start time. These files will have to be re-positioned manually or using the spot-to-time feature found in most DAW applications.

5. Select a **TIME RANGE**. Selecting **ALL** selects the entire project from the project start time to the end of recorded audio. **MARK IN/OUT** uses the **MARK IN** and **MARK OUT** location markers to select a range of audio for export. Press the **ENTER** key.

6. Use **TRACK ARM** keys 1 through 24 to select the tracks you wish to export or select the **ALL** option in the **EXPORT TRACKS** dialog. Press the **ENTER** key.

7. The export to disk dialog will appear while RADAR®24 processes the files. Next a confirmation dialog displaying the size of the export in megabytes will appear asking if you wish to proceed. Select **YES** and the

export will proceed. When it is finished the **EXPORT COMPLETE** dialog will appear. Press any key to dismiss the dialog and return to normal operation.

8. The SCSI disc containing the exported files is now ready to be removed and mounted on your PC or Mac workstation!

CIFS Server

Once the necessary server information is entered in the *MAIN / PREFS MENU / NETWORK SETUP / SERVER PREFS* dialog exporting to a directory on a server is as easy as it gets! See SYSTEM SETUP: CONFIGURATION: NETWORKING for more information.

To export audio to a CIFS server in BWF or .wav format:

1. Press the **FILE EXPORT** key on the **Session Controller** or use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN / FILE MENU / EXPORT* selection and press the **ENTER** key.

2. Use the up and down arrow keys to select the shared directory on the server from the *../*EXPORT TO dialog, locate **NET:** *YOUR SHARE NAME* and press the **ENTER** key. If this selection does not appear make sure that the server information is entered correctly in the *MAIN / PREFS MENU / NETWORK SETUP / SERVER PREFS* dialog.

3. Use the up and down arrow keys to select a destination folder in the **SELECT FOLDER** dialog and press the **ENTER** key.

4. Use the right and left arrow keys to select either the **WAV** or **BWF** file format and press the **ENTER** key.

5. Select a **FILL SILENCE** option. Select **YES** to do a "track as file" type export where all exported tracks share a common start time. If you select **NO** for the **FILL SILENCE** option the target directory will contain all of the individual recording files ordered by track and start time. These files will have to be re-positioned manually or using the spot-to-time feature found in most DAW applications.

6. Select a **TIME RANGE**. Selecting **ALL** selects the entire project from the project start time to the end of recorded audio. **MARK IN/OUT** uses the **MARK IN** and **MARK OUT** location markers to select a range of audio for export.

7. Use **TRACK ARM** keys 1 through 24 to select the tracks you wish to export or select the **ALL** option in the **EXPORT TRACKS** dialog.

8. The export to disk dialog will appear while RADAR®24 processes the files. Next a confirmation dialog displaying the size of the export in megabytes will appear asking if you wish to proceed. Select **YES** and the export will proceed. When it is finished the **EXPORT COMPLETE** dialog will appear. Press any key to dismiss the dialog and return to normal operation.

9. The exported files are now available to network devices attached to the server.

The first step is to enter the necessary server information in the *MAIN / PREFS MENU / NETWORK SETUP / SERVER PREFS* dialog. See SYSTEM SETUP: CONFIGURATION: NETWORKING for more information.

The next step is to setup the network preferences of the computer you want the RADAR®24 to export to. You may have to consult your operating systems' documentation to figure out how to do this. If you are using a small peer-to-peer network or a crossover cable, your computer will need the following information:

▪ IP address

▪ Host name

▪ Subnet mask

▪ Workgroup name

▪ A shared folder

If security is an issue, you should add a username and password for the RADAR®24 to use when it wants to connect, otherwise you can make this shared folder available to everyone.

This export option requires a special crossover network cable. These cables are available from your local computer store. Macintosh computers also require Virtual PC 4.0 by Connectix to provide Windows® networking support. We are currently evaluating other products for Mac/PC networking and will post the names of any solutions that work reliably on our website www.recordingtheworld.com .

MAC REQUIREMENTS:

▪ Ethernet crossover cable, and Virtual PC 4.0 by Connectix to provide Windows® networking support.

PC REQUIREMENTS:

▪ Ethernet crossover cable.

See SYSTEM SETUP: CONFIGURATION: NETWORKING for more information.

To export audio via Ethernet crossover cable to a Mac or PC in BWF or .wav format:

1. Press the FILE EXPORT key on the **Session Controller** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / FILE MENU / EXPORT* selection and press the ENTER key.

2. Use the up and down arrow keys to locate NET: *YOUR SHARE NAME*. Select the shared directory from the ../EXPORT TO dialog and then press the ENTER key. If this selection does not appear make sure that the server information is entered correctly in the *MAIN / PREFS MENU / NETWORK SETUP / SERVER PREFS* dialog.

3. Select a destination folder in the SELECT FOLDER dialog and press the ENTER key.

4. Use the right and left arrow keys to select either the **WAV** or **BWF** file format and press the **ENTER** key.

5. Select a **FILL SILENCE** option. Select **YES** to do a "track as file" type export where all exported tracks share a common start time. If you select **NO** for the **FILL SILENCE** option the target directory will contain all of the individual recording files ordered by track and start time. These files will have to be re-positioned manually or using the spot-to-time feature found in most DAW applications.

6. Select a **TIME RANGE**. Selecting **ALL** includes the entire project from the project start time to the end of recorded audio. **MARK IN/OUT** uses the **MARK IN** and **MARK OUT** location markers to select a range of audio for export.

7. Use **TRACK ARM** keys 1 through 24 to select the tracks you wish to export or select the **ALL** option in the **EXPORT TRACKS** dialog.

8. The export to disk dialog will appear while RADAR®24 processes the files. Next a confirmation dialog displaying the size of the export in megabytes will appear asking if you wish to proceed. Select **YES** and the export will proceed. When it is finished the **EXPORT COMPLETE** dialog will appear. Press any key to dismiss the dialog and return to normal operation.

9. The exported files are now available on your PC or Mac.

FTP

To use the **FTP SERVER** audio must first be exported to the internal IDE drive because the SCSI recording drives are not accessible directly from an external computer.

MAC REQUIREMENTS:

▪ Ethernet cable and FTP client.

PC REQUIREMENTS:

▪ Ethernet cable and FTP client.

To export audio via FTP in the time stamped BWF or .wav format:

1. Press the **FILE EXPORT** key on the **Session Controller** or use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN/FILE MENU/EXPORT* selection and press the **ENTER** key.

2. Use the up and down arrow keys to select the internal IDE drive from the *../EXPORT TO* dialog and press the **ENTER** key.

3. Select a destination folder in the **SELECT FOLDER** dialog and press the **ENTER** key.

4. Use the right and left arrow keys to select either the **WAV** or **BWF** file format and press the **ENTER** key.

5. Select a **FILL SILENCE** option. Select **YES** to do a "track as file" type export where all exported tracks share a common start time. If you select **NO** for the **FILL SILENCE** option the target directory will contain all of the

individual recording files ordered by track and start time. These files will have to be re-positioned manually or using the spot-to-time feature found in most DAW applications.

6. Select a TIME RANGE. Selecting ALL includes the entire project from the project start time to the end of recorded audio. MARK IN/OUT uses the MARK IN and MARK OUT location markers to select a range of audio for export.

7. Use TRACK ARM keys 1 through 24 to select the tracks you wish to export or select the ALL option in the EXPORT TRACKS dialog.

8. The export to disk dialog will appear while RADAR®24 processes the files. Next a confirmation dialog displaying the size of the export in megabytes will appear asking if you wish to proceed. Select YES and the export will proceed. When it is finished the EXPORT COMPLETE dialog will appear. Press any key to dismiss the dialog and return to normal operation.

9. The internal IDE disk now contains the exported files, which are now accessible to your PC or Mac via the RADAR®24 FTP SERVER.

10. Use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / PREFERENCES MENU/ NETWORK SETUP/ INTERFACE PREFS* menu and make sure that IP ADDRESS, the FTP LOGIN and FTP PASSWORD settings are entered properly and that the FTP SERVER is enabled.

11. Use the FTP client from your Mac or PC to FTP the files to your computer by entering the FTP address, login and password. Files will be stored in the subdirectory folder you created in the !RADAR! directory on the internal hard drive.

Transport Operations

For the most part, RADAR®24 operation is indistinguishable from a professional tape recorder. We've taken the best features of the time-honored tape machine auto-locator and combined them with the incredible power of non-linear digital recording. Record and playback alignment, azimuth adjustments, wow and flutter, fast-forwarding and rewinding times are all a thing of the past. Let's get started!

Transport Keys

RADAR®24 uses industry standard transport keys for both the **Session Controller** and the **KC-24** keyboard:

REWIND

Simulates the transport rewind function of a tape machine. Double keying the REWIND key enters a super-fast mode that is 3 times the current rewind speed. The default speed for rewind is 8 times normal playback speed. Fast-forward and rewind speeds can be changed in the preferences menu (see below).

FAST-FORWARD

Simulates the fast-forward transport function of a tape machine. Double keying the FAST-FORWARD key enters a super-fast mode that is 3 times the current fast-forward speed. Default fast-forward speed is 8 times playback speed. Fast-forward and rewind speeds can be changed in the preferences menu.

PLAY

Begins audio playback from current location. Pressing PLAY while recording cancels record without stopping playback. Pressing PLAY and REWIND together enters reverse play mode.

STOP

Cancels all transport operations including record and puts RADAR®24 into ready mode.

REC

Drops all record enabled tracks into record mode. There are two modes of operation for this key: REC & PLAY and REC. As the name suggests REC & PLAY requires both the PLAY and REC keys to be pressed simultaneously to enter record mode. In the REC mode pressing the REC key is all that is required.

To change fast wind speeds:

1. Use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / PREFS MENU / FFWD &RWD RATE* menu selection and press the ENTER key.

2. Use the up and down arrow keys to select a value and press the ENTER key.

To change the operation of the transport controls for recording:

1. Use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / PREFS MENU / RECORD MODE* menu selection and press the ENTER key.

2. Use the up and down arrow keys to select either REC & PLAY or REC and press the ENTER key.

> *Note: This menu also contains the Instant Record preference setting for the track arming keys. See the OPERATIONS: RECORDING: RECORD MODE section of this manual for more information on this feature.*

Jog/ Shuttle Wheel

Besides its function as an intuitive data entry device, the RADAR®24 **Jog/Shuttle** wheel provides a solid, responsive control suitable for professional audio editing.

Jogging is the equivalent of rocking recorded audiotape back and forth across the playback head of an analog tape machine to locate an edit point. Shuttling is similar but once the audio is set "in motion" with the wheel, playback will continue at its current playback speed and direction indefinitely. Try it, you'll like it!

To engage the wheel for jogging audio simply press the JOG(SHUTTLE) key located to the upper left of the jog wheel. To engage the wheel for shuttling audio press SHIFT+JOG(SHUTTLE).

Mouse Jog (KC-24 Only)

Because the **KC-24** lacks a Jog/Shuttle wheel our engineers got creative and came up with mouse jogging! To jog or shuttle with the mouse press either the JOG or SHUTTLE keys located in the numeric keypad grouping on the **KC-24** keyboard.

One of the greatest features of a professional tape recorder is the so-called Auto-Locator. The Auto-Locator provides the usual transport controls, a time code based positional display and a number of preset locations that can be cued up automatically with a couple of key strokes.

SETTING AND RECALLING

RADAR®24 provides 99 location markers that can be set or "dropped" using the MARK LOC key on both the **Session Controller** and the **KC-24**. Once set, these location markers can be recalled, allowing you to cue instantly to various points in your project. Location markers can be set and recalled in both ready mode and transport mode. READY MODE is the default state of the RADAR®24 and TRANSPORT MODE is entered when playing, recording or cueing audio. Locates cannot be set or recalled when the RADAR®24 is in MENU MODE.

The first ten locates can be accessed with a single keystroke using the numeric keypad digits 0 through 9. Locate 0 is always the project start time. The other ninety, two-digit locate points are addressable by using the RECALL LOC key, numeric keys 0-9 and the ENTER key.

To mark and recall a location using the MARK LOC key:

1. Press the MARK LOC key on the **Session Controller** or **KC-24**.

2. To recall the first ten locate markers use the 0 to 9 keys on the numeric keypad.

3. To recall locate markers 10 through 99, use the RECALL LOC key and the 0 to 9 keys on the numeric keypad to input the desired two-digit locate number. Press the ENTER key.

Editing Locate Markers

Once a locate marker has been set it can be edited in several ways using the EDIT LOC key on the **Session Controller** or the **KC-24**.

EDIT

This option is used to select the location marker you wish to edit and change its name or position in your project.

To select a location marker for editing:

1. Press the EDIT LOC key on the **Session Controller** or **KC-24**.

2. Use the right or left arrow keys to select EDIT and press the ENTER key.

3. Use the numeric keys, the up and down arrow keys, the MARK IN key, the MARK OUT key, the MARK SYNC key or the **Jog/Shuttle wheel** to select a location marker for editing.

4. At this point each attribute of the location marker can be modified. The right and left arrow keys move the cursor from field to field and any of the data entry methods can be used to change the values. Press the ENTER key to complete the edit.

5. You will be returned to the main EDIT LOC dialog. To return RADAR®24 to READY MODE press CANCEL, MENU/PREV or press the EDIT LOC key again.

DEL

The DEL option can be used to delete a single marker, a range of markers or all of the markers in a project.

To delete a single location marker:

1. Press the EDIT LOC key on the **Session Controller** or **KC-24**.

2. Use the right and left arrows to select DEL and press the ENTER key.

3. Use the right and left arrow keys in the SELECT LOCATES dialog to select ONE and press the ENTER key.

4. Use the numeric keys, the up and down arrow keys, the MARK IN key, the MARK OUT key, the MARK SYNC key or the **Jog/Shuttle wheel** to select a location marker for deleting.

5. Press the ENTER key to permanently delete the selected location marker.

6. You will be returned to the main EDIT LOC dialog. To return RADAR®24 to READY MODE press CANCEL, MENU/PREV or press the EDIT LOC key again.

To delete a range of location markers between the MARK IN and MARK OUT locate points:

1. Press the EDIT LOC key on the **Session Controller** or **KC-24**.

2. Use the right and left arrows to select DEL and press the ENTER key.

3. Use the right and left arrow keys in the SELECT LOCATES dialog to select RANGE and press the ENTER key.

4. A dialog will ask if you wish to delete all the markers between the MARK IN and MARK OUT points. Select YES and press the ENTER key to continue.

5. You will be returned to the main EDIT LOC dialog. To return RADAR®24 to READY MODE press CANCEL, MENU/PREV or press the EDIT LOC key again.

To delete all of the location markers in a project:

1. Press the EDIT LOC key on the **Session Controller** or **KC-24**.

2. Use the right and left arrows to select DEL and press the ENTER key.

3. Use the right and left arrow keys in the SELECT LOCATES dialog to select ALL and press the ENTER key.

4. A dialog will ask if you wish to delete all the markers in your project. Select YES and press the ENTER key to continue.

5. You will be returned to the main EDIT LOC dialog. To return RADAR®24 to READY MODE press CANCEL, MENU/PREV or press the EDIT LOC key again.

Note: The deletion of location markers is a permanent operation and cannot be undone!

NEW

This option can be used to create location markers for your project. Location markers can also be set on the fly using the MARK IN, MARK OUT, MARK SYNC and MARK LOC keys on the **Session Controller** or the **KC-24**. See AUTO LOCATE MARKERS: SETTING AND RECALLING for more information.

To create a new location marker:

1. Press the EDIT LOC key on the **Session Controller** or **KC-24**.

2. Use the right and left arrows to select NEW and press the ENTER key.

3. Use the numeric keys, the up and down arrow keys or the **Jog/Shuttle wheel** to enter a time for the new location marker.

4. Use the right or left arrow keys to move the cursor to the blank name field and type in a name using the keyboard. Press the ENTER key.

5. You will be returned to the main EDIT LOC dialog. To return RADAR®24 to READY MODE press CANCEL, MENU/PREV or press the EDIT LOC key again.

Auto Play

When the AUTO PLAY key is depressed RADAR®24 automatically goes into play after a locate marker is recalled. Auto play can be used in conjunction with the PRE ROLL key for automatic playback with the additional amount of pre and post roll you specify.

Auto Punch

The AUTO PUNCH key is used to enable automatic recording between the MARK IN and MARK OUT location markers. In this operational mode recording will only occur once the MARK IN location has been reached. When the MARK OUT point is reached recording is automatically terminated. For more detailed information on using this feature see RECORDING: AUTO PUNCH.

Note: When AUTO PUNCH is enabled manual recording is not possible.

Cycle

When the CYCLE key is depressed RADAR®24 automatically locates to the MARK IN location marker and goes into play until the MARK OUT location marker is reached. After a small pause this cycle will be repeated

indefinitely until cancelled by pressing one of the other transport keys. Cycle can be used in conjunction with the PRE ROLL key for automatic playback with the amount of pre and post roll you specify.

Pre Roll

The operation of the PRE ROLL key is somewhat unique because you must press it twice to engage its function. The first key press prompts you to enter the pre and post roll values you desire. Once modified, or if no change is required, a second key press will enable both pre and post roll. You can use this function in conjunction with the AUTO PLAY, AUTO PUNCH and CYCLE functions.

Foot Switches

Foot switches can be used in conjunction with the **Session Controller** for hands free play/stop, last locate and punch in and punch out operation. The foot switches should be of the normally open, momentary type.

DIAGRAM 1.0 Foot switch plugs showing wiring for Session Controller operation.

Recording

With RADAR®24 recording is as easy as using a professional tape recorder. Arm a track and press PLAY and RECORD - it's that easy! Use the following information on recording with RADAR®24 to help you get the most out of your system. You'll become a power-user in no time.

Record Mode

Because RADAR®24 is used in many different professional applications we have added several recording options to help you customize RADAR®24 operation for your specific needs.

RECORD

The first half of this dialog lets you choose either PLAY and RECORD mode or single button RECORD mode for the transport keys on the Session Controller or the KC-24.

To change the operation of the transport controls for recording:

1. Use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / PREFS MENU / RECORD MODE* menu selection and press the ENTER key.

2. Use the right and left arrow keys to move the cursor to the RECORD: field.

3. Use the up and down arrow keys to select either **REC & PLAY** or **REC** and press the **ENTER** key.

ARM TRACK

The second half of this dialog lets you choose either **REC READY** or **INST REC** modes for the track arming keys on the Session Controller or the KC-24. Instant record allows you to drop into and out of **RECORD** mode by pressing the **TRACK ARM** keys during playback.

To enable and disable instant record from the TRACK ARM keys:

1. Use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN / PREFS MENU / RECORD MODE* menu selection and press the **ENTER** key.

2. Use the right and left arrow keys to move the cursor to the **ARM TK**: field.

3. Use the up and down arrow keys to select either **INST REC** or **REC READY** and press the **ENTER** key.

Monitoring and Track Status

During tracking and overdubbing there are two sources of audio that must be referenced and managed: input and the recorded signal, also referred to as repro (reproduce) mode. RADAR®24 uses the **TRACK ARM** keys, the **AUTO INPUT** key and the **TRACK SOLO** key to create an easy to manage system for monitoring audio.

TRACK ARM KEYS

These keys are used extensively in RADAR®24 operations as track selection keys. While recording and overdubbing they are used to record enable and disable tracks 1-24 and switch them in and out of input monitoring mode.

Note: the KC-24 uses a shift key to record enable and disable tracks 13-24.

To monitor and adjust an input signal using input mode:

1. Press the desired **TRACK ARM** keys on the **Session Controller** or **KC-24**.

2. Adjust the input level to the RADAR®24 using the **Meterbridge 24/48** or **RADAR View** as a visual reference.

AUTO INPUT

AUTO INPUT allows the RADAR®24 to automatically switch between monitoring the input signal and the recorded audio when playback begins and ends. This feature should be used when performing overdubs and punches.

To enable auto input:

1. Press the **AUTO INPUT** key on the **Session Controller** or **KC-24**.

2. While stopped, the RADAR®24 will monitor the input signal on all tracks that are readied.

3. When playback begins monitoring switches to reproduce mode and all tracks playback audio from the disk.

4. Entering record mode begins recording on all armed tracks. RADAR®24 switches back to input mode for monitoring the source signal that's being recorded.

TRACK SOLO

TRACK SOLO mutes the output of all tracks except the ones selected using the TRACK ARM keys. TRACK SOLO can also be automatically engaged in tandem with the ZOOM SOLO function, which is used to visually solo a track or group of tracks on the **RADAR View** display. This preference can be set in the *MAIN / PREFS MENU / ZOOM SOLO AUDIO* dialog.

To use TRACK SOLO mode:

1. Press the TRACK SOLO key on the **Session Controller** or **KC-24**.

2. Use the TRACK ARM keys to select the tracks to solo.

SAFE (CLEAR)

SAFE(CLEAR) puts all tracks into safe mode. In this state no recording can take place under any circumstances. By pressing SHIFT+SAFE(CLEAR) all tracks with record ready status can be cleared.

To use the SAFE(CLEAR) key:

1. Press the SAFE(CLEAR) key on the **Session Controller** or **KC-24**.

2. To clear record ready status on all tracks press SHIFT+SAFE(CLEAR).

Auto Punch

The AUTO PUNCH key is used to enable automatic recording between the MARK IN and MARK OUT location markers. In this operational mode recording will only occur once the MARK IN location has been reached. When the MARK OUT point is reached recording is automatically terminated.

To use AUTO PUNCH mode:

1. Press the AUTO PUNCH key on the **Session Controller** or **KC-24**.

2. Use any locate or transport function to move to a position in the project prior to the current MARK IN point.

3. Enter record mode using the PLAY and RECORD or RECORD keys. To enable the ONE BUTTON RECORD function, use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / PREFS MENU / RECORD MODE* dialog and select REC+PLAY.

Note: When AUTO PUNCH is enabled manual recording is not possible.

Undo/Redo

The UNDO and REDO functions are a good example of the new features that non-linear digital recorders have to offer. If you accidentally erase that precious vocal take, UNDO can save the day! The undo level value set in the PROJECT MENU determines how many levels of undo are available in a project. This value may be set anywhere from 0 (**no** undo levels at all!!) to 99.

A small indicator window on the right hand side of the **RADAR View** display gives you a heads up view of the current UNDO/REDO level. Beware of high values for the undo level settings. This could cause previously deleted audio to be saved and backed up with your project. This will cause your backup files to be larger than necessary and may add significantly to your archive time. Temporarily setting this value to 0 will erase all of the undo information. In certain instances this can save significant time when archiving a project. See FILE MANAGEMENT: BACKUP: PREPARING TO BACKUP for more information.

Note: The redo levels are lost when switching to another project or creating a new one. This does not affect the undo levels, which are stored with your project.

To change the number of levels of undo:

1. Use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / PROJ MENU / UNDO LEVEL/* UNDO LEVEL dialog and select the number of undo levels that suits your needs.

2. Enter your preferred number of undo levels and press the ENTER key.

Using UNDO/REDO:

1. Press the UNDO/REDO key to undo the last record or editing operation.

2. Press SHIFT+UNDO(REDO) to redo the last record or editing operation.

Note: Not all operations are undoable! Only recording and editing operations can be undone and redone with the UNDO/REDO key.

Foot Switch (optional)

A foot switch can be used in conjunction with the **Session Controller** for hands-free punch in and punch out. The foot switch should be a normally open momentary switch. See OPERATIONS: TRANSPORT OPERATIONS: FOOTSWITCHES for more information.

Chasing Time Code

Because there are many variables when synchronizing devices in a recording studio or broadcasting facility RADAR®24 has been designed to be very flexible in this regard.

RADAR®24 can chase both SMPTE and MTC (MIDI time code) and synchronize its internal clock to video sync, word clock, active digital I/O connections or even to an incoming SMPTE or MTC signal. This makes

life a lot easier when trying to synchronize RADAR®24 with other audio recorders, video tape recorders and sequencers in the real world.

Offsets between RADAR®24 and other machines can be captured or set manually.

Note: Regardless of the offset RADAR® 24 time code output will always reflect your actual project time.

Sync / Offset

SYNC

One of the keys to accurate **positional** synchronization is **reference** synchronization. The reference sync signal provides a clock that enables RADAR®24 to lock with other devices without drifting over time. Please refer to SYSTEM SETUP: CONFIGURATION: SYNC REFERENCE for information on this important topic.

OFFSET

When synchronizing machines that have differing time code positions an offset can be calculated and set on the RADAR®24 to bring them into alignment. Offsets are in the HH:MM:SS:FF format and can be positive or negative.

To set an offset:

1. Press `SHIFT+SYNC(OFFSET)` on the **Session Controller** or `SHIFT+SYNC` on the **KC-24**.

2. Use the up and down arrow keys, the **Jog/Shuttle wheel** or the numeric keypad to enter the offset starting on the right hand side with the frames field. Use the right and left arrow keys to move between the fields.

3. Make the offset positive or negative using the + and – keys and press the `ENTER` key.

To clear an offset:

After pressing the `SHIFT+SYNC(OFFSET)` key, pressing the up and down arrow keys simultaneously will clear the offset.

Chase / TC Pref

CHASE

The main function of this key is to enable or disable chase mode on the RADAR®24. When `CHASE(TC PREF)` is pressed on the **Session Controller** or the **KC-24** the RADAR®24 will locate to the current incoming time code position, lock and then begin to play. Prior to using the chase function, make sure to check the time code settings in the preferences section.

By pressing `SHIFT+CHASE(TC PREF)` you can access the time code preferences that have a direct effect on chase operation. These preferences can also be accessed using the *MAIN / SYNC MENU / TC SETTINGS* TC FORMAT dialog.

To set RADAR®24 time code preferences for chase operation:

1. Press the `SHIFT+CHASE(TC PREF)` key on the **Session Controller** or the `SHIFT+CHASE` key on the **KC-24**. You can also access the preference settings in the *MAIN / SYNC MENU / TC SETTINGS /* TC FORMAT menu dialog.

2. Use the right and left arrow keys to select either SMPTE or MTC as the time code format and press the `ENTER` key.

3. Select a time code rate from the TC RATE dialog. The up and down arrows display the available rates on three pages:

   - **24**   **25**

   - **29.97ND**   **29.97DF**

   - **30ND**   **30DF**

   Use the right and left arrow keys to make a selection from the current dialog page and press the `ENTER` key.

TC CAP (CALC)

TC CAP (Session Controller only)

This function allows you to automatically calculate an offset for your project using the incoming time code.

Note: For exact calculations of offsets, it is important that the device supplying the incoming time code has the ability to generate a static frame location. A VITC reader, 9 pin machine control feed, static TC out from a non-linear video editor, DAW or other stand alone HDR will be required. For approximate offsets that will be tweaked, a static time code feed is not required.

To set an offset using the `TC CAP(CALC)` key:

1. Locate the time code master to a specific time code location.

2. Use any transport or locate method to position the RADAR®24 at the desired point in your project.

3. Press the `TC CAP(CALC)` key on the **Session Controller**.

4. The offset is calculated and stored as a positive or negative number in the HH:MM:SS:FF format and displayed in the **RADAR View** offset window. It can also be displayed in the **Session Controller** display by pressing `SHIFT+SYNC(OFFSET)`.

Another feature that works well in conjunction with the `TC CAP(CALC)` key is the `INT/EXT SMPTE` display mode option. In this mode the display in the **Session Controller** will show your projects time on the top line and the external time code position on the second line in place of the current locate point. A + or – sign in the display indicates a positive or a negative offset.

On the RADAR View screen only the incoming external time code will be shown on the positional display. All range and locate points will still be displayed using internal project times.

Note: The external time that is displayed is actually your project time plus the offset. This includes a sub-frame value that is not part of the incoming SMPTE signal. Since there is a small delay before RADAR® 24 drops out of chase mode there may be a slight discrepancy between the times displayed on the master and slave units.

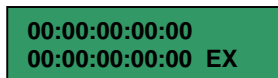**To change the display mode of a project to `INT/EXT`:**

1. Use the `MENU/PREV`, arrow keys and `ENTER` key to go to the *MAIN / PROJ MENU / DISPLAY MODE* selection and press the `ENTER` key.

2. Use the up and down arrow keys to select the `INT/EXT` option and press the `ENTER` key.

CALC (Session Controller only)

This key brings up an offset calculator that can be a big help if you need to calculate an offset from a predetermined set of time code locations like an EDL (Edit Decision List). For instance, if you know the time code location of a visual event on a VTR and the time code location of the corresponding audio event on RADAR®24 this feature can make it a breeze to calculate the offset.

To calculate and assign an offset using the `TC CAP(CALC)` key:

1.   Press `SHIFT+TC CAP(CALC)` key on the **Session Controller** to display the following dialog.

    ```
    00:00:00:00:00
    00:00:00:00:00 EX
    ```

2.   The top line will display the current position of the RADAR®24. If you wish to enter a new time code location you may do so using the up and down arrows, the **Jog/Shuttle wheel** or the numeric keypad. Use the right and left arrow keys to move between the fields.

3.   The bottom line, labeled `EX` will display an external time code value if one has been captured. This value can be modified or cleared and entered manually.

4.   Press the `ENTER` key and the offset between the two positional values will be calculated and stored as the current offset. The offset is displayed in the **RADAR View** offset window and can also be displayed in the **Session Controller** display by pressing `SHIFT+SYNC(OFFSET)` key.

Vari-Speed

`VARI-SPEED` is used to change the pitch of recording and playback by altering the sample clock. There are many uses for this feature including:

- Lowering the pitch of bed tracks during an overdub session so that a vocalist can sing in a more comfortable range.
- Thickening sounds by recording multiple tracks in altered pitches.
- Matching the tuning of recorded tracks with difficult to tune instruments such as a piano.

The RADAR®24 VARI-SPEED control can be adjusted by a percentage of deviation from normal speed or by Cents, which are equal to one hundredth of a semitone. The range is variable from minus 50% or 1199 Cents to a maximum of plus 4.16% or 71 Cents at a sample rate of 48 kHz. The VARI-SPEED feature can be used in all transport modes including record.

USING VARI-SPEED WITH DIGITAL I/O

If you are using Lightpipe, TDIF or AES/EBU digital audio interfaces in your setup there are some limitations when using the VARI-SPEED feature. Since RADAR®24 actually modifies its sample clock frequency to produce pitch changes with VARI-SPEED it is not possible to use this feature when slaved to another devices sample clock. If RADAR®24 is made the clock master however, any devices slaved to the system should slew their clock rates accordingly. VARI-SPEED with digital audio I/O can be a little tricky depending on your setup so be sure you're careful.

Sample Rate	Plus		Minus	
	%	Cents	%	Cents
192	+4.16%	71 Cents	-50.00%	1199 Cents
191.808	+4.27%	72 Cents	-49.91%	1197 Cents
176.4	+13.35%	217 Cents	-45.57%	1052 Cents
176.224	+13.49%	219 Cents	-45.50%	1051 Cents
96	+4.16%	71 Cents	-50.00%	1199 Cents
95.904	+4.27%	72 Cents	-49.91%	1197 Cents
88.2	+13.35%	217 Cents	-45.57%	1052 Cents
88.112	+13.49%	219 Cents	-45.50%	1051 Cents
48	+4.16%	71 Cents	-50.00%	1199 Cents
47.952	+4.27%	72 Cents	-49.91%	1197 Cents
44.1	+13.35%	217 Cents	-45.57%	1052 Cents
44.056	+13.49%	219 Cents	-45.50%	1051 Cents
32	+56.25%	773 Cents	-25.00%	497 Cents

Please note that this key is somewhat different due to its double keystroke operation.
- With VARI-SPEED off, the first press displays the VARI-SPEED dialog for entering a value. Immediate changes to the pitch of playback audio can be made from this dialog using either the Jog/Shuttle wheel or the up and down arrow keys. The numeric keys and the + and – keys can also be used to enter a value but the change will not be reflected in the playback audio until the ENTER key is pressed.
- The second keystroke returns the RADAR®24 to ready mode with VARI-SPEED engaged.
- With VARI-SPEED on, once again the first press displays the VARI-SPEED dialog for entering or changing a value. At this point you can return to ready mode with VARI-SPEED on using the CANCEL key or you can terminate VARI-SPEED operation by pressing the VARI-SPEED key once again.

To enter a value for `VARI-SPEED`**:**

1. Press the `VARI-SPEED` key on the **Session Controller** to display the following dialog.

   > **V-SPEED: 00.00%**
   > **UNITS: PERCENT**

2. If you wish to change the units displayed use the right and left arrow keys to move to the `UNITS` field and use the up and down arrow keys make a selection.

3. Use the right and left arrow keys to return to the `V-SPEED` field and use the up and down arrows, the **Jog/Shuttle wheel** or the numeric keypad to enter a `VARI-SPEED` value. Use the + and − keys on the numeric keypad to toggle between positive and negative speed change values.

4. Press the `VARI-SPEED` key to return to ready mode with `VARI-SPEED` enabled.

5. To disable press the `VARI-SPEED` key twice.

Note: The up and down arrow keys and/or Jog/Shuttle wheel will provide instant speed change. If you use the numeric keypad the speed change will only occur upon pressing the `ENTER` *key.*

Editing

RADAR®24 provides a powerful array of non-linear editing capabilities. All of the editing functions are laid out in a similar way making editing both easy to learn and easy to use.

RADAR®24 editing differs from many digital audio workstations as it is based on a tape paradigm and not mouse driven. With RADAR®24 you can even edit without the **RADAR View** display! While some users used to workstation style editing might find the approach a little foreign at first, once you get your bearings you'll find that editing can be done quickly and efficiently, even in the middle of a tracking session!

Overview

Generally RADAR®24 edits follow a similar pattern:

- Mark a time region for editing using the `MARK IN` and `MARK OUT` keys.

- Select an editing function using one of the editing keys or the `EDIT MENU`.

- Select the tracks to edited using the `TRACK ARM` keys.

- Follow the specialized prompts for each type of edit.

The Clipboard

The clipboard is a temporary storage area for digital audio that is used extensively in the editing process. Material on the clipboard does not take up extra disk space and it is not retained after the system is shutdown. New selections placed on the clipboard will replace any previously stored material.

Audio can be placed on the clipboard using the CUT, COPY or IMPORT editing commands. Once stored in the clipboard, audio can be auditioned, reversed and pasted in place or to a new location.

To audition the contents of the clipboard:

▪ After defining a track-region and using CUT or COPY, press SHIFT+PASTE(LISTEN) on the **Session Controller** or use the MENU/PREV, arrow keys and ENTER key to select LISTEN from the EDIT MENU. The clipboard material will be played back and displayed in the **RADAR View** display.

Editing Crossfades

When punch-ins, punch-outs and edits are performed on RADAR®24 small crossfade files are created to prevent clicks and pops from occurring at the punch/edit boundaries. The default setting is 5 milliseconds for recording and editing crossfades, but this value can be changed. The maximum crossfade time for recording and editing crossfades is 9 seconds and 999 milliseconds.

In addition to the crossfade time settings there is a menu for setting the crossfade type. There are three options for crossfade type: PRE, MID or POST. These options set the location of the crossfade point relative to the edit boundary. The default setting is MID. With this setting the crossfade straddles edit boundaries and affects audio equally on both sides. The PRE and POST settings position the crossfade before or after edit boundaries. Only MOVE, ERASE and SLIDE are affected by the CROSSFADE TYPE setting. These options were created to allow edits to be more accurate in relation to the mark points.
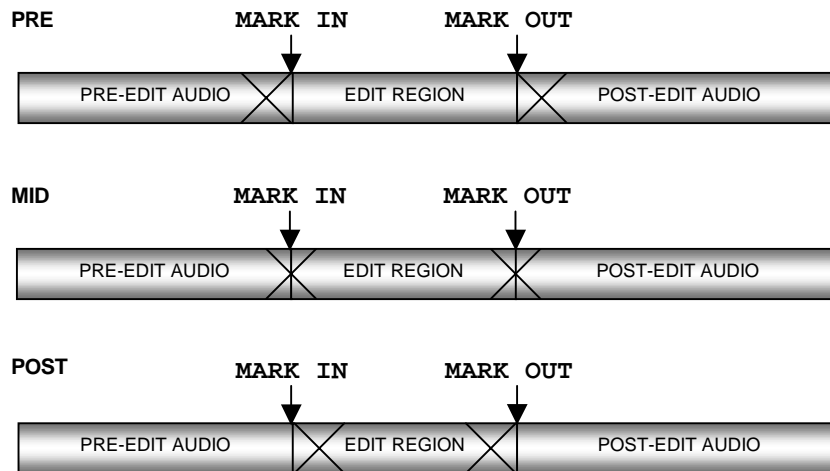
Example: Sometimes when doing an erase with the crossfade set to MID, the mark in point would have a tiny slice of audio waveform after it, which represented the last half of the MID crossfade. This can now be avoided by setting an erase edit to PRE.

To modify the record crossfade:

1. Use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / EDIT MENU / REC XFADE TIME* menu item and press the ENTER key.

2. Use the right and left arrow keys to select the IN crossfade time. Use the up and down arrow keys, the numeric keys or the **Jog/Shuttle wheel** to set the IN crossfade time.

3. Use the right and left arrow keys to select the OUT crossfade time. Use the up and down arrow keys, the numeric keys or the **Jog/Shuttle wheel** to enter the desired value and press the ENTER key.

To modify the edit crossfade:

1. Use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / EDIT MENU / EDIT XFADE TIME* menu item and press the ENTER key.

2. Use the up and down arrow keys, the numeric keys or the **Jog/Shuttle wheel** to set the edit crossfade time and press the ENTER key.
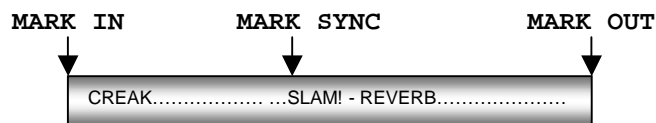
To modify the crossfade type:

1. Use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / EDIT MENU / CROSS FADE TYPE* menu item and press the ENTER key.

2. Use the right and left arrow keys to select the crossfade type and press the ENTER key.

Note: Only MOVE, ERASE and SLIDE are affected by the CROSSFADE TYPE setting.

Marking A Time Region

Time regions are selected for editing using the MARK IN and MARK OUT keys on the **Session Controller** or the **KC-24** keyboard. You may also specify a SYNC marker that defines a particular event in the audio. This SYNC marker can be used as the anchor to paste a track-region. This is very useful for pasting sound effects to spotted video locations.

Example: A door creaks as it slams and is followed by reverberation.

```
   MARK IN          MARK SYNC          MARK OUT
      ↓                 ↓                  ↓
   ┌─────────────────────────────────────────┐
   │ CREAK……………… …SLAM! - REVERB………………… │
   └─────────────────────────────────────────┘
```

To mark a region for editing:

1. Locate the IN point for your edit. Use the **Jog/Shuttle wheel** or other transport/locate functions to locate and press the MARK IN key on the **Session Controller** or the **KC-24**.

2. If required, locate the sync point for your edit. Use the **Jog/Shuttle wheel** or other transport /locate functions to locate and press the MARK SYNC key on the **Session Controller** or the **KC-24**.

3. Locate the out point for your edit. Use the **Jog/Shuttle wheel** or other transport/locate functions to locate and press the MARK OUT key on the **Session Controller** or the **KC-24**.

The time region you have just defined can now be edited using RADAR®24's powerful editing tools.

Selecting Tracks

While linear regions of project time are selected using the MARK IN and MARK OUT keys, tracks that will be affected by the edit are selected using the TRACK ARM keys.

To select the tracks that will be included in the edit:

1. After marking a time region, press the appropriate direct access key on the **Session Controller** or the **KC-24** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / EDIT MENU* and select an editing function from the EDIT MENU.

2. Use the right and left arrow keys to select either ALL, which includes all tracks or TRACK ARM, which allows you to select individual tracks to be edited using the TRACK ARM keys.

The time region and track selection that you have defined can now be used to perform an edit.

Editing Functions

Once a track selection and time region (track-region) have been established, RADAR®24 editing tools can be used to modify your project. The following editing functions are available:

CUT

CUT removes the defined track-region in the same manner as cutting a section of tape and removing it completely. Audio following the cut section will be pulled ahead to join the audio that preceded it.

Note: Edits occur on a track-by-track basis so you must use caution when cuts done on fewer than 24 tracks.


To cut audio:

1. After marking a time region, press the CUT key on the **Session Controller** or the **KC-24** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / EDIT MENU / CUT* menu item and press the ENTER key.

2. Select the tracks you wish to cut. Use the right and left arrow keys to select either ALL or TRACK ARM. Use the TRACK ARM keys to select individual tracks.

3. Press the **ENTER** key to remove the track-region from the project and place it on the clipboard where it may be modified or pasted to another location.

COPY

Duplicates the defined track-region and places it on the clipboard.
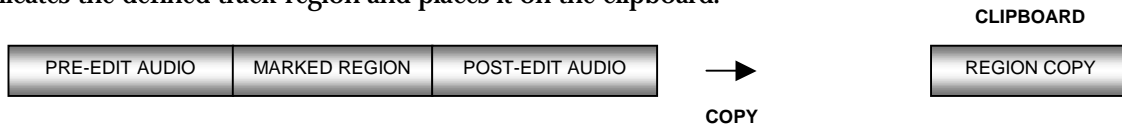

To copy audio:

1. After marking a time region, select the **COPY** function by pressing the **COPY** key on the **Session Controller** or the **KC-24** or by selecting **COPY** from the **EDIT MENU**.

2. Select the tracks you wish to copy. Use the right and left arrow keys to select either **ALL** or **TRACK ARM**. Use the **TRACK ARM** keys to select individual tracks.

3. Press the **ENTER** key to copy the track-region from the project and place it on the clipboard where it may be modified or pasted to another location.

PASTE

This editing function pastes the defined track-region from the clipboard into the project. As a default, the clipboard audio will be pasted at the current transport location. Use the transport keys, locate functions or the **Jog/Shuttle wheel** to cue to the desired paste location or enter the paste position directly using the numeric keypad and press the **ENTER** key. Alternatively you can mark a paste point or points using the **MARK IN** and **MARK OUT** keys. See **MULTIPLE PASTE** and **BACK TIME PASTE** below.

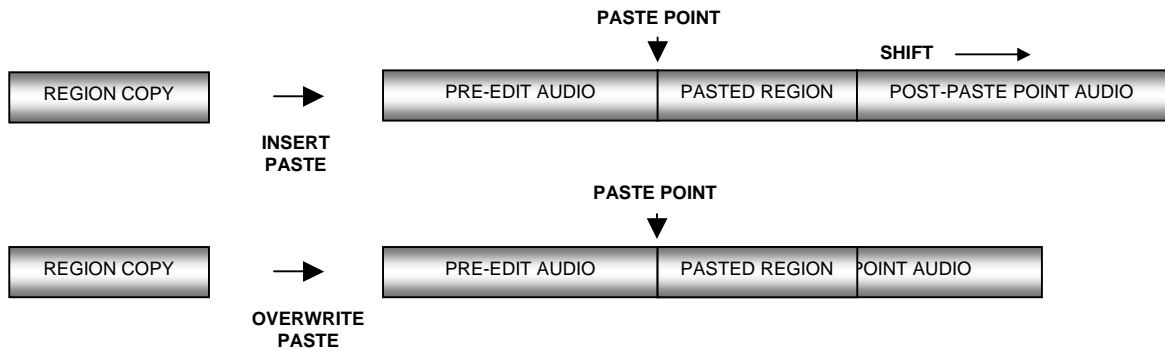There are many pasting options including:

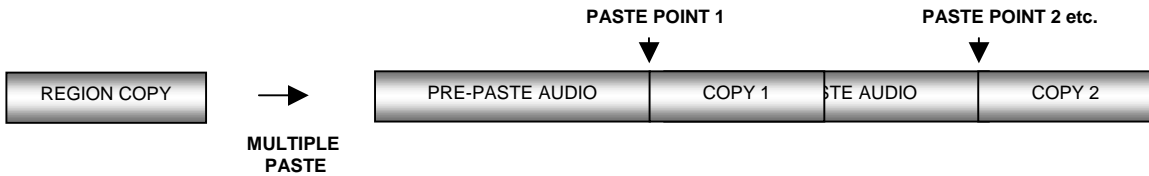▪ **Paste to the same tracks or different tracks**
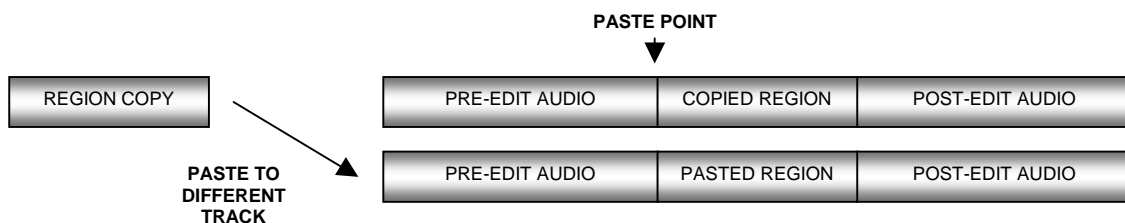
If the clipboard contains multiple tracks you must select a corresponding number of destination tracks. The destination tracks do not need to be adjacent but the pasted tracks will always be mapped to their target tracks in a lowest-to-lowest, highest-to-highest order.

Example: Track-region copies from tracks 1 and 2 can be pasted to 7 and 13. Note that you cannot paste track 1 to track 13 and track 2 to track 7 in a single operation.
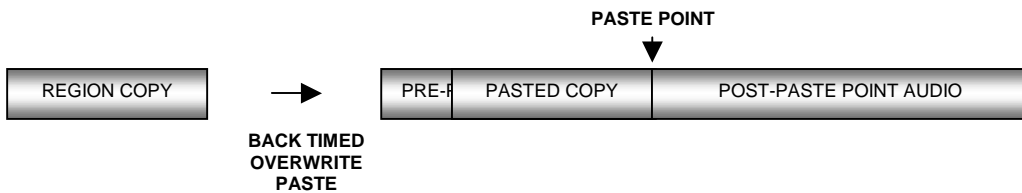
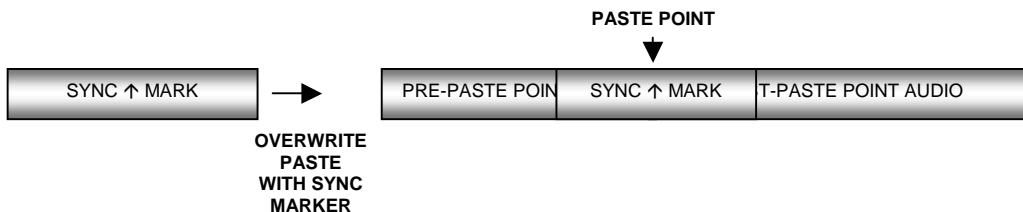- **Insert the paste or overwrite existing data**

PASTE POINT ▼   SHIFT ⟶

| REGION COPY | ⟶ INSERT PASTE | PRE-EDIT AUDIO | PASTED REGION | POST-PASTE POINT AUDIO |

PASTE POINT ▼

| REGION COPY | ⟶ OVERWRITE PASTE | PRE-EDIT AUDIO | PASTED REGION | POINT AUDIO |

- **Multiple paste points**

PASTE POINT 1 ▼   PASTE POINT 2 etc. ▼

| REGION COPY | ⟶ MULTIPLE PASTE | PRE-PASTE AUDIO | COPY 1 | STE AUDIO | COPY 2 |

- **Back Time pasting**

PASTE POINT ▼

| REGION COPY | ⟶ BACK TIMED OVERWRITE PASTE | PRE-P | PASTED COPY | POST-PASTE POINT AUDIO |

- **Sync Marker pasting (pasted region must have sync marker)**

PASTE POINT ▼

| SYNC ↑ MARK | ⟶ OVERWRITE PASTE WITH SYNC MARKER | PRE-PASTE POIN | SYNC ↑ MARK | T-PASTE POINT AUDIO |

To paste audio:

1. Press the **PASTE** key on the **Session Controller** or the **KC-24** or use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN/EDIT MENU/PASTE* menu item and press the **ENTER** key.

2. Select the tracks you wish to copy. Use the right and left arrow keys to select either **ALL** or **TRACK ARM**. Use the **TRACK ARM** keys to select individual tracks. Press the **ENTER** key.

3. Use the right and left arrow keys to select either the INSERT or OVERWRITE paste modes and press the ENTER key.

4. To set a PASTE TO: point (s) and paste the track-region select one of the following methods:

   ▪ Use any of the transport/locate functions or the **Jog/Shuttle wheel** to move to the desired location. Press the ENTER key to paste.

   ▪ For a BACK TIME PASTE, use any of the transport/locate functions or the **Jog/Shuttle wheel** to move to the desired location and press the MARK OUT key to place a PASTE TO: point. Press the ENTER key to paste. The audio will be pasted so that the end of track-region lines up with the PASTE TO: point.

   ▪ For multiple pastes, use any of the transport/locate functions or the **Jog/Shuttle wheel** to move to the desired location and press the MARK IN key to place an initial PASTE TO: point. Reposition the transport and place additional PASTE TO points by pressing the MARK IN key. Press the ENTER key to execute the multiple paste.

   ▪ For sync marker pastes, use any of the transport/locate functions or the **Jog/Shuttle wheel** to move to the desired location. Press the ENTER key to paste. Any clipboard material that contains a MARK SYNC point will automatically use it for reference and the MARK SYNC point will be aligned to the PASTE TO location.

Note: Multiple paste markers can be set during playback!

MOVE

MOVE repositions the audio defined by the track-region and it can also be used to move it to other tracks. The original audio location(s) of the track-region will be left blank just like in an erase procedure. Audio is not transferred to the clipboard during a MOVE, so clipboard material will not be replaced. Audio following the moved track-region will be affected differently depending on whether insert or overwrite is used to perform the move.
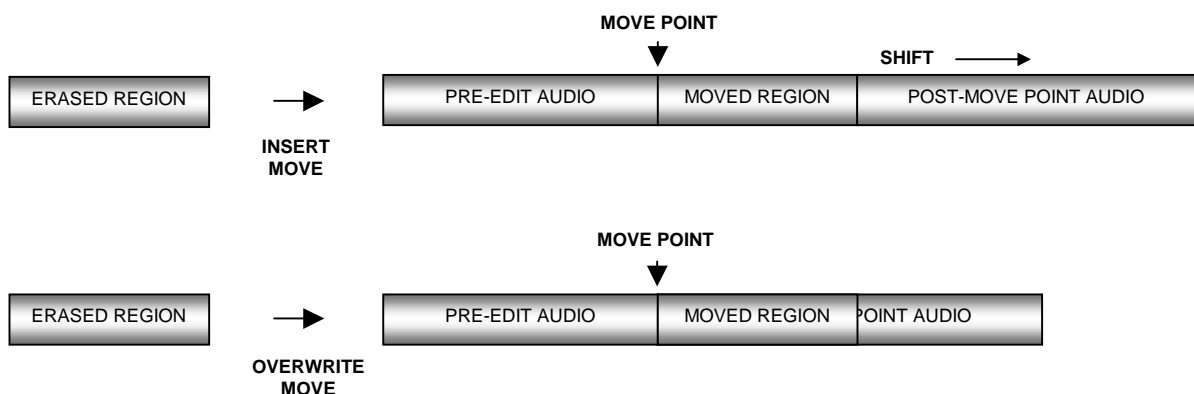
To move audio:

1. After marking a time region, pressing the MOVE key on the **Session Controller** or the **KC-24** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / EDIT MENU / MOVE* menu item and press the ENTER key.

2. Select the tracks you wish to move. Use the right and left arrow keys to select either ALL or TRACK ARM. Use the TRACK ARM keys to select individual tracks. Press the ENTER key.

3. Select the destination tracks. Use the right and left arrow keys to select either SAME or OTHER. Use the TRACK ARM keys to select tracks if you choose OTHER. Press the ENTER key.

4. Select either the INSERT or OVERWRITE move modes using the right and left arrow keys and press the ENTER key.

5. Use any of the transport/locate functions or the **Jog/Shuttle wheel** to specify the MOVE TO: location.

6. Press the ENTER key to move the track-region to the new location.

ERASE

The ERASE function completely erases the audio defined by a track-region. Audio following the moved section will not be affected by this operation.
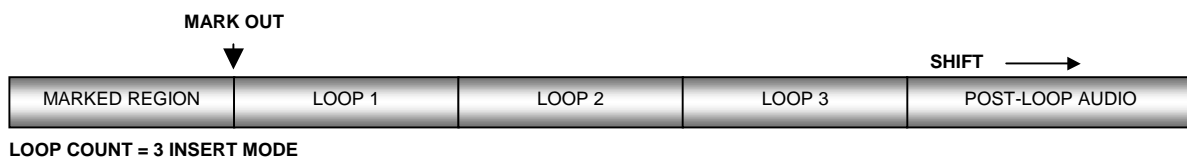
PRE- EDIT	MARKED REGION	POST-EDIT

→

PRE- EDIT	ERASED REGION	POST-EDIT

ERASE

To erase audio:

1. After marking a time region, press the ERASE key on the **Session Controller** or the **KC-24** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / EDIT MENU / ERASE* menu item and press the ENTER key.

2. Select the tracks you wish to erase. Use the right and left arrow keys to select either ALL or TRACK ARM. Use the TRACK ARM keys to select individual tracks.

3. Press the ENTER key to erase the track-region from the project.

LOOP

The LOOP function repeatedly pastes the selected track-region relative to the MARK OUT point. Audio following the looped section will moved later in time using INSERT mode (shown below) and erased when using OVERWRITE mode.

MARK OUT

SHIFT →

MARKED REGION	LOOP 1	LOOP 2	LOOP 3	POST-LOOP AUDIO

LOOP COUNT = 3 INSERT MODE

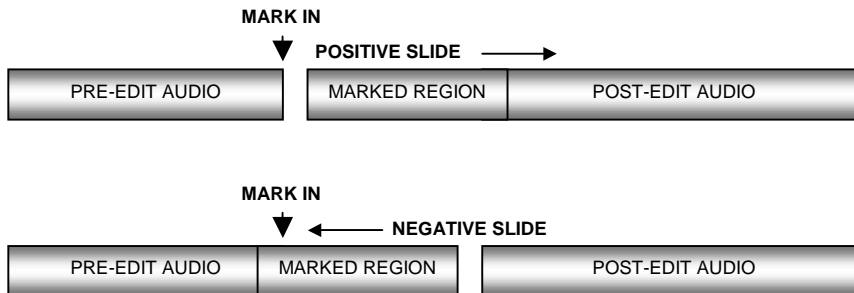**To loop audio:**

1. After marking a time region, press the LOOP key on the **Session Controller** or the **KC-24** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / EDIT MENU / LOOP* menu item and press the ENTER key.

2. Select the tracks you wish to loop. Use the right and left arrow keys to select either ALL or TRACK ARM. Use the TRACK ARM keys to select individual tracks. Press the ENTER key.

3. Use the right and left arrow keys to select either the INSERT or OVERWRITE loop modes and press the ENTER key.

4. Use the up and down arrow keys or the numeric keypad to enter the number of loops of the track-region that you would like to create.

5. Press the ENTER key to create the loops and return RADAR®24 to transport mode.

SLIDE

SLIDE repositions the audio defined by the track-region. Although similar to MOVE, SLIDE is designed for nudging audio in millisecond or SMPTE frame increments. SLIDE TIME UNITS can be set in the PREFERENCES MENU. SLIDE overwrites any previous audio data as it moves forward and backward and leaves empty space behind in its wake.

MARK IN

POSITIVE SLIDE ⟶

| PRE-EDIT AUDIO | MARKED REGION | POST-EDIT AUDIO |

MARK IN

⟵ NEGATIVE SLIDE

| PRE-EDIT AUDIO | MARKED REGION | POST-EDIT AUDIO |

To slide audio:

1. After marking a time region, press the SHIFT+MOVE(SLIDE) key on the **Session Controller** or SLIDE on the **KC-24** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / EDIT MENU / SLIDE* menu item and press the ENTER key.

2. Select the tracks you wish to move. Use the right and left arrow keys to select either ALL or TRACK ARM. Use the TRACK ARM keys to select individual tracks. Press the ENTER key.

3. Use the up and down arrow keys, the numeric keys or the **Jog/Shuttle wheel** to set the slide time and press the ENTER key.

4. Press the ENTER key to nudge the track-region to the new location.

INSERT SILENCE

The **INSERT SILENCE** function inserts a blank region into selected tracks. Audio following the moved section will be pushed out in time like any other insert type edit.

MARK IN

SHIFT ⟶

| PRE-EDIT AUDIO | INSERTED SILENCE | POST-EDIT AUDIO |

To insert a section of silence:

1. After marking the insert start point using the **MARK IN** key, press the **SHIFT+ERASE(SILENCE)** key on the **Session Controller** or use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN / EDIT MENU / INSERT SILENCE* menu item and press the **ENTER** key.

2. Select the tracks you wish to insert silence on. Use the right and left arrow keys to select either **ALL** or **TRACK ARM**. Use the **TRACK ARM** keys to select individual tracks. Press the **ENTER** key.

3. Use the numeric keys to enter the amount of silence you wish to insert in the HH:MM:SS:FF format.

4. Press the **ENTER** key to insert the region of silence into the selected tracks.

REVERSE

Audio placed on the clipboard can be reversed before being re-pasted into the project. This makes "pre-verb" and reversed solo effects very easy to accomplish.

To reverse clipboard audio:

1. After marking a time region, **COPY** or **CUT** the track-region to be reversed on to the clipboard.

2. Press the **SHIFT+LOOP(REVERSE)** key on the **Session Controller** or select **REVERSE** from the **EDIT MENU**.

3. **PASTE** the reversed audio to the desired location in the project.

GAIN/FADE

The **GAIN/FADE** functions allow you to modify the gain of recorded audio. Individual **START** and **END** values allow for flexible gain manipulation including the creation of fade ins and fade outs.

To change the gain of recorded audio:

1. After marking a time region, press the **GAIN/FADE** button on the **Session Controller** or use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN / EDIT MENU / GAIN/FADE* menu item and press the **ENTER** key.

2. Select the tracks you wish to modify. Use the right and left arrow keys to select either **ALL** or **TRACK ARM**. Use the **TRACK ARM** keys to select individual tracks. Press the **ENTER** key.

3. Use the up and down arrow keys, the numeric keys or the **Jog/Shuttle wheel** to set the START gain and press the ENTER key.

4. Use the up and down arrow keys, the numeric keys or the **Jog/Shuttle wheel** to set the END gain.

5. Press the ENTER key to calculate the new gain and return the system to READY MODE.

UNDO

Lets you undo an edit or record. Undo levels can be set anywhere from 0 to 99. For more information see to OPERATIONS: RECORDING: UNDO/REDO

REDO

Allows you to redo edits or records that were undone using the UNDO function. You may REDO as many times as you performed the UNDO function. The ability to REDO will be lost upon performing new edits entering record or switching to another project. For more information see OPERATIONS: EDITING: UNDO/REDO

MODIFY EDIT

This function provides a quick way to tweak the parameters of the previous edit without having to UNDO and REDO. In addition, MODIFY EDIT gives you the ability to change the crossfade time of certain edits for an even greater degree of control. Parameters available for modification include:

- **MARK IN**

- **MARK OUT**

- **CROSSFADE TIME**

- **ORIGINAL TRACK (S)**

- **DESTINATION TRACK (S)**

- **INSERT OR OVERWRITE**

- **SLIDE TIME**

- **LOOP COUNT ETC.**

To modify an edit:

1. Press the MODIFY EDIT key on the **Session Controller** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / EDIT MENU / MODIFY EDIT* menu item and press the ENTER key.

2. Adjust the first parameter of the edit if desired and press the ENTER key to proceed to the next parameter. Pressing the ENTER key repeatedly steps through all of the remaining parameters for the edit.

3. Press the ENTER key to re-calculate the edit and return the system to READY MODE so that you can audition the modified edit.

Macro Keys

The macro keys provide a way to memorize multiple keystrokes and recall them at the touch of a button. Macro sets can be stored and exported so you can use them on other RADAR®24 units. See OPERATIONS: FILE MANAGEMENT: MACROS for more information.

To store multiple keystrokes as a macro:

1. Press SHIFT and then press the MACRO key you wish to program on the **Session Controller**. The MACRO key will begin to flash.

2. Perform the sequence of keystrokes you wish to store and press the MACRO key once again.

3. The MACRO you stored is now ready for use.

QWERTY Keyboard

Both the **Session Controller** and **KC-24** remotes have keyboards that can make managing tracks and projects a lot easier. In addition to naming tracks, projects and other data entry tasks, the keyboard keys provide handy shortcuts to menu items. You can cycle through menu items starting with a particular letter by pressing the corresponding key on the QWERTY keyboard. This can be a real time-saver once you get used to it.

RADARLINK

RADARLINK allows multiple RADAR®24 units to be linked together and controlled from a single **Session Controller**. All slaved RADAR®24 units are locked to the internal clock of the Master RADAR so that all recordings made across multiple machines maintain a sample accurate relationship.

While in RADARLINK Mode, the following operations are available:

- All transport functions including PLAY, STOP, FAST WIND and JOG/SHUTTLE

- Cue functions including LOCATE and ENTER TIME

- Synchronization

- Editing

- System parameters and preferences

RADARLINK hookup requires standard 9-pin, male to female cables, which are available at most computer stores.

Connect units together with the 9-pin cable running from the master unit's RADARLINK OUT connector to the RADARLINK IN connector on the slave RADAR®24. If more slave connections are required connect the

RADARLINK OUT on the first slave unit to the **RADARLINK IN** connector on the second slave and so on. The **RADARLINK** connectors are located on the right side of the back panel.

Note: The entire length of cabling between the RADAR® 24 units must be less than 10 meters (30 feet.).

Software Versions

All units in a RADARLINK configuration should be running identical versions of software. It is always recommended that you use the latest versions of RADAR®24 software. You can download the latest software releases at www.recordingtheworld.com .

Note: RADAR® 24 and RADAR® II units can be linked together but due to changes and improvements in the RADARLINK protocol there may be compatibility issues between certain versions of software. Use only the latest versions of software for both machines. RADAR® 24 and RADAR® II software can be downloaded from our website www.recordingtheworld.com .

ID Numbers

All units connected using the RADARLINK protocol must have an ID number. The unit that initiates RADARLINK communication is automatically designated the master machine and assigned **M** as its RADARLINK ID. Each slave must be manually assigned a unique ID.

To assign a RADARLINK ID number to a slave machine:

1. Use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN/SYNC MENU/RADARLINK* menu and press the **ENTER** key.

2. Use the up and down arrow keys to select the **RADARLINK ID** dialog from the menu and press the **ENTER** key.

3. Use the up and down arrow keys to select a unique RADARLINK ID between 1 and 7 and press the **ENTER** key.

RADARLINK Enable/Disable

To enable or disable RADARLINK:

1. Press either the **RLINK** or **L** key on the **Session Controller** or use the **MENU/PREV**, arrow keys and **ENTER** key to go to the *MAIN/SYNC MENU/RADARLINK* menu and press the **ENTER** key.

2. Use the up and down arrow keys to locate the **ENABLE DISABLE** dialog and press the **ENTER** key.

3. Use the left and right arrow keys to select **ENABLE** or **DISABLE** and press the **ENTER** key.

4. Select **YES** at the prompt and press the **ENTER** key.

The system will respond by automatically assigning an ID of M to the master unit and scanning for the ID numbers of any connected slave units. You will be notified of any ID conflicts between slave units. ID conflicts must be resolved by changing slave ID numbers on each unit. See OPERATIONS: RADARLINK: ID NUMBERS for more information.

If RADARLINK has just been established, all slave units will cue to the current location of the master machine. If RADARLINK is re-established following a SOLO MODE operation all slaves will be cued to the current position of the last soloed unit.

Note: If there is an ID conflict you must re-enter RADARLINK mode after changing the conflicting slave ID number.

It is possible to remove just one machine from RADARLINK but it requires that a remote be connected to the unit you wish to unlink. Pressing the CANCEL key on the connected remote will initiate the CANCEL RADARLINK dialogue. Note that disabling RADARLINK on a slave machine in this way only applies to that specific unit and has no effect on the rest of the chain.

Link Mode

In LINK MODE, the main mode of operation when using RADARLINK, the master RADAR®24 has control over all other RADAR units in the configuration. LINK MODE commands are sent from the master unit to all slave units for simultaneous execution.

When this mode is engaged the master unit forces all slave units to conform to its current settings and system parameters including:

- Sample Rate

- TC Rate

- Crossfade Time

- Pre/Post Roll Time

- Auto-Input, Auto-Play, Auto-Punch, Cycle, Record Safe

- System Preferences, Time/Date

- Project Number

- Locate Points and Labels

Solo Mode

SOLO MODE allows you to select any single RADAR®24 unit in the RADARLINK chain and operate it independently from all of the others.

The following functions will only operate on slave machines when SOLO MODE is engaged:

- Mounting and Unmounting drives

- Disk functions (diagnostic operation, upgrade system, reclaim space etc.)

- Backups and Restores

- Importing and Exporting

- Digital I/O parameter adjustment

> **!** IMPORTANT NOTE: Unmounting in RADARLINK will NOT automatically unmount all of the slave units hard disks. To hot swap drives while in RADARLINK mode, you must solo each slave and unmount its' hard disk independently before unmounting the master system hard disk and swapping drives.

To solo a RADARLINK slave:

1. Press either the RLINK SOLO or the S key on the **Session Controller** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / SYNC MENU / RADARLINK / RADARLINK SOLO* dialog and press the ENTER key.

2. Use the up and down arrow keys or the numeric keys to select the desired RADARLINK ID number and press the ENTER key. The master can also be selected by pressing the M key on the QWERTY keyboard.

Note: The display will indicate if any machines are offline.

During RADARLINK solo operation the ID number of the soloed unit flashes in the upper right hand corner of the display.

To exit SOLO MODE:

1. Press either the RLINK or L key on the **Session Controller** or use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / SYNC MENU / RADARLINK / ENABLE DISABLE* dialog and press the ENTER key.

2. Use the right and left arrow keys to select ENABLE and press the ENTER key.

3. Select YES at the prompt.

Project Numbers Must Match

In LINK MODE all units must be set to the same PROJECT NUMBER at all times. Because of this you may have to manually renumber projects on the slave machines to match the master.

To renumber a project on a slave unit:

1. Use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / PROJ MENU / RENUMBER PROJECT* menu and press the ENTER key.

2. Use the up and down arrow keys to select a project number that matches the current project number of the master RADAR®24.

3. If the new project number is already assigned to an existing project you will be asked if you want to swap project numbers. Use the right and left arrows to select YES if you want to go ahead and swap the project numbers. Press the ENTER key.

   Note: You can renumber a project on a slave RADAR® 24 by entering solo mode if RADARLINK is already enabled.

Synchronization

When synchronizing a RADARLINK configuration to an external source such as SMPTE time code, only the master RADAR®24 is involved. The master in turn sends its clock data to each of the slave units providing accurate synchronization information to the entire system. Because the sample clock is sent through the RADARLINK cabling, no extra cabling is required between the master and connected slave units.

Editing in Link Mode

When in LINK MODE, connected RADAR®24 units act as a single multitrack recorder. There are a few exceptions though. Because the **Session Controller** only has 48 track-arming keys, performing edits using more than 48 tracks requires that you enter solo mode.

To edit in LINK MODE:

1. Select your MARK IN and MARK OUT points.

2. Use the MENU/PREV, arrow keys and ENTER key to go to the *MAIN / EDIT MENU* or use the direct access keys on the **Session Controller** or the **KC-24** keyboard to select the desired editing function.

3. Use the TRACK ARM keys to select the tracks you wish to include in the edit. For RADARLINK configurations with more than 48 tracks you must solo each additional RADAR®24 to select the tracks that will be included in the edit.

   Note: It is not possible to move or paste audio from one RADAR® 24 to another.

Reference

This section of the manual will help you get information quickly while using the RADAR®24 in your studio.

Menu Tree Overview

This section provides an overview of the RADAR®24 menu structure.

MAIN MENU >

    SYSTEM MENU >
        SYSTEM VERSION
        DISK MANAGEMENT >
            MOUNT / UNMOUNT
            SHOW DISK SPACE
            RECLAIM SPACE
            ERASE ALL AUDIO
            DISK MODE
        AUDIO I/O LEVELS
        8-BUS MODE
        SET TIME & DATE
        UPGRADE SYSTEM

    SYNC MENU >
        TC SETTINGS >
            TC FORMAT
            TC RATE
            SMPTE LOCK SPEED
            FREEWHEEL TIME
            STATIC TC OUT
            RECHASE MODE
        SYNC REFERENCE
        RADARLINK >
            ENABLE/DISABLE
            RADARLINK SOLO
            RADARLINK ID
        MACHINE CONTROL >
            ENABLE/DISABLE
            SELECT TYPE
            9-PIN SETTINGS >
                DEVICE ID
                CHASE MODE
                TRACK ARM MODE
                VARISPEED MODE
                TC OUT MODE-CUE
                TC OUT MODE-PLAY
        SYNC REF OUTPUT

DIG I/O MENU >
          DIG IN FORMAT
          DIG I/O ROUTING
          DIG I/O SDQ
          DIG 2 CH-OUTPUT
          AES SETTINGS >   **(IF AES CARD PRESENT)**
                SAMPLE RATE IN
                EMPHASIS IN
                EMPHASIS OUT
                MULTI-CHNL TYPE
          ADAT SETTINGS >   **(IF ADAT CARD PRESENT)**
                ADAT IN CLOCK
                ADAT IN WIDTH
                ADAT IN SMPL PT
                ADAT OUT WIDTH
                FACTORY DEFAULTS
          TDIF SETTINGS >   **(IF TDIF CARD PRESENT)**
                IN SAMPLE POINT
                SAMPLE RATE IN
                EMPHASIS IN
                EMPHASIS OUT
                CARD TYPE

FILE MENU >
          BACKUP MENU
          RESTORE MENU
          EXPORT MENU
          IMPORT MENU
          FILE MANAGEMENT >
                DELETE BACKUPS
                RECOVER BACKUPS
                DELETE FOLDER
          MACROS
          FILE PREFS >
                SHOW BACKUP SIZE
                EXPORT FORMAT
                EXPORT SILENCE

PROJECT MENU >
          GOTO PROJECT
          NEW PROJECT
          COPY PROJECT
          DELETE PROJECT
          NAME PROJECT
          RENUMBER PROJECT
          SAMPLE RATE
          BIT RESOLUTION
          START TIME
          SYNC OFFSET
          DISPLAY MODE
          MIDI TEMPO MAP
          VARISPEED
          UNDO LEVEL
          WAVE NOISE FLOOR
          NAME TRACK
          RENUMBER LOCATES
          PROJ PREFS >
                DEF SAMPLE RATE
                DEF BIT RES
                DEF START TIME
                DEF UNDO LEVEL
                DEF WAVE NS FLR

EDIT MENU >
          UNDO EDIT
          REDO EDIT
          MODIFY EDIT
          CUT
          COPY
          PASTE
          MOVE
          ERASE
          LOOP
          SLIDE
          INSERT SILENCE
          REVERSE
          GAIN/FADE
          LISTEN
          EDIT XFADE TIME
          REC XFADE TIME
          CROSSFADE TYPE
          MUTE TRACKS
          RECORD SAFE

PREFERENCES MENU >
        DEF SMPTE FIELD
        SHOW SUBFRAMES
        TRACK SOLO MODE
        ZOOM SOLO AUDIO
        LOW DISK WARNING
        SLIDE TIME UNITS
        RECORD MODE
        FFWD & REW RATE
        PEAK HOLD TIME
        CLIP HOLD TIME
        RECORD MK IN/OUT
        SAVE STATE DELAY
        SCRN-SAVER MENU >
                SAVER DELAY
                IMAGE EFFECTS
        AUTO RECLAIM
        TRK ARM GROUPING
        DAMSEL MODE
        FILE PREFS >
                SHOW BACKUP SIZE
                EXPORT FORMAT
                EXPORT SILENCE
        PROJ PREFS >
                DEF SAMPLE RATE
                DEF BIT RES
                DEF START TIME
                DEF UNDO LEVEL
                DEF WAVE NS FLR
        NETWORK SETUP >
                INTERFACE PREFS >
                        HOST NAME
                        DHCP ENABLE
                        LOCAL IP ADDRESS
                        SUBNET MASK
                        GATEWAY
                        DOMAIN NAME
                        PRIMARY DNS
                        SECONDARY DNS
                        FTP ENABLE
                SERVER PREFS >
                        CIFS SERVER IP
                        SERVER NAME
                        SERVER SHARE
                        CLIENT WORKGROUP

DIAGNOSTICS MENU >
        SCAN SCSI BUS
        INIT DISK
        CHECK DISK
        REPAIR DISK
        CHECK PROJECT
        REALTIME ERRORS
        COPY HARD DISKS
        VERIFY DISKS
        CONFIGURE DEBUG
        SAVE DEBUG

HELP >
     RELEASE NOTES
        MANUAL
SHUTDOWN RADAR

Menu Item Quick Reference

Main Menu

Pressing the `MENU/PREV` key on the Session Controller or KC-24 keyboard accesses the `MAIN MENU`. To enter the sub-menu structure of the currently selected menu item or to accept a selection or value in a menu dialog press the `ENTER` key. To exit from any level of the menu system and return to `TRANSPORT MODE` press the `MENU/PREV` key repeatedly or press the `CANCEL` key.

System Menu

SYSTEM VERSION

Displays the current version and the installation date of system software and the amount of installed RAM.

```
OPERATING SYSTEM        SYSTEM DATE:            INSTALLED RAM:
VERSION:   X.XX          YY-MMM-DD  HH:MM        XXXXXX KBYTES
```
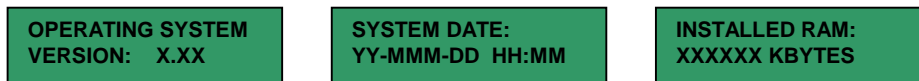
Other included menu items display the firmware versions of the X-chip, S-chip and F-chip. These version numbers can be potentially useful to iZ Technical support staff.

DISK MANAGEMENT

This menu contains disk utilities and disk related housekeeping functions. For details in using these menu items please refer to OPERATIONS: DISK MANAGEMENT. The disk management sub-menu selections are:

- **MOUNT / UNMOUNT**

  Shortcut keys:

  - Session Controller   `MOUNT, SHIFT+MOUNT(UNMNT)`

  - KC-24 Keyboard   `N/A`

  Mounts and un-mounts attached SCSI hard disks for safe hot swapping of removable drives.

```
FILESYSTEM:             FILESYSTEM:            DISKS UNMOUNTED
  MOUNT    UNMOUNT        +UNMOUNTING+          PRESS ANY BUTTON
```
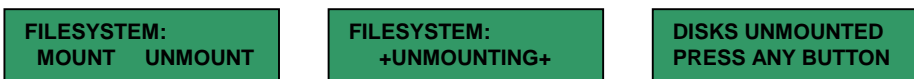
- **SHOW DISK SPACE**

  Displays the total remaining audio recording time left given the current projects bit-depth (16 or 24) and sample rate.

```
RECORD TIME LEFT
HH:MM:SS  REMAIN
```

- **RECLAIM SPACE**

This function reclaims disk space by analyzing all project play lists and deleting any unused audio files. This function is especially useful for reducing backup size and for reclaiming disk space that cannot be recovered automatically by RADAR®24 i.e. audio files that have been previously shared between multiple projects. RECLAIM SPACE also gives you the option to delete all project undo information. This can free up a lot of disk space and speed up backup operations significantly by removing references to audio from the undo list. Only audio that is currently in the project will remain. **All other unused audio will be deleted so use with caution.** This function is **NOT** undoable!

RECAIM SPACE?	DELETE UNDO?	ARE YOU SURE?
NO YES	NO YES	NO YES
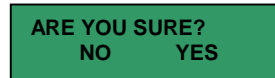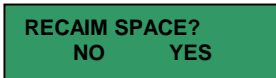
- **ERASE ALL AUDIO**

The name says it all! Use this function to completely erase all mounted audio recording drives.

ERASE ALL AUDIO?	LOSE ALL AUDIO?	ARE YOU SURE?
NO YES	NO YES	NO YES
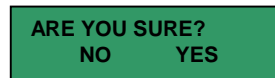
- **DISK MODE**

RADAR®24 provides maximum flexibility for the professional user including custom drive configuration. Standard disk mode uses large 128 KB clusters for high performance recording and editing. The other options include 64 KB and 32 KB clusters and splitting tracks to multiple disks. While using smaller cluster sizes can speed up cueing time, it can also reduce performance and **is not recommended** unless you have a very good reason to do so. For more information please refer to OPERATIONS: DISK MANAGEMENT: DISK MODE.

AUDIO I/O LEVELS

Input and Output audio reference levels can be set independently using this dialog. For more information refer to CONFIGURATION: OPERATING LEVELS. There are four different settings for input level and four different settings for output level:

- +24 dBu – results in a digital meter reading of –20 when a 0 VU tone is applied

- +22 dBu – results in a digital meter reading of –18 when a 0 VU tone is applied

- +20 dBu – results in a digital meter reading of –16 when a 0 VU tone is applied

- +18 dBu – results in a digital meter reading of –14 when a 0 VU tone is applied

AUDIO IN   : +22 dBU
AUDIO OUT : +22 dBU

8-BUS MODE

Use this function when feeding the RADAR®24 from the outputs of an 8-bus console. Any input signals appearing on RADAR®24 inputs 1 through 8 will be mirrored on 9 through 16 and 17 through 24. This allows bussing to all 24 tracks without changing any audio connections.
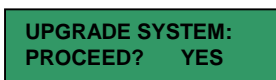
```
8-BUSS MODE:
  DISABLED   ENABLED
```

SET TIME & DATE

Set the time and date on your system!

UPGRADE SYSTEM

When upgrading to the latest version of software it is important to use UPGRADE SYSTEM to put all of the projects on the recording drives into a version independent state, which is essentially a text file version of each project that can be read by any version of RADAR®24 software. This is also recommended for drives that will be used on other RADAR®24 systems, which may have different versions of software or RADAR® I and II systems, which do not support many of the new features found in RADAR®24. See CONFIGURATION: SOFTWARE for further information.

```
UPGRADE SYSTEM:
  PROCEED?     YES
```

Sync Menu

TC SETTINGS

The TC SETTINGS menu provides a full suite of synchronization options that allow RADAR®24 to easily integrate into any studio, post or broadcast environment.

TC FORMAT

Shortcut keys (sets FORMAT and RATE):

- Session Controller   `SHIFT+CHASE(TC PREF)`

- KC-24 Keyboard   `N/A`

The TC FORMAT dialog lets you select either SMPTE or MTC as a time code format. SMPTE is input and output via the LTC connectors on the back panel. MTC is input and output using the MIDI IN and OUT connectors on the rear panel.

```
TC FORMAT:
   SMPTE    MTC
```

TC RATE

Shortcut keys (sets **FORMAT** and **RATE**):

-       Session Controller   `SHIFT+CHASE(TC PREF)`

-       KC-24 Keyboard   `N/A`

RADAR®24 supports all standard time code rates including:

-      **30 FPS**

-      **30 FPS DROP FRAME**

-      **29.97 FPS**

-      **29.97 FPS DROP FRAME**

-      **25 FPS**

-      **24 FPS**

Use the **TC RATE** dialog to select a frame rate for the current project.

```
TC RATE:        ^ v
  29.97ND    29.97DF
```

SMPTE LOCK SPEED

This dialog lets you choose a fast or slow lock time when chasing time code. In most situations the **FAST** setting will be the best choice. With jittery or poor quality time code however the **SLOW** setting provides smoother tracking of the incoming time code at the expense of lock time.

```
SMPTE LOCK:
   FAST    SLOW
```

FREEWHEEL TIME

SMPTE freewheel time is the number of frames of bad or missing code that will be tolerated before dropping out of chase mode. The possible values for this dialog range between 0 and 10 frames.

```
FREEWHEEL TIME:
   00  FRAMES
```

STATIC TC OUT

This dialog enables and disables the output of a static time code value when the machine is stopped. This is useful in certain situations where other machines need to know the position of the RADAR®24 at all times.

```
STATIC TC OUT:
DISABLED  ENABLED
```

RECHASE MODE

The **RECHASE MODE** setting determines the chase behavior of RADAR®24. When **ENABLED**, RADAR®24 will locate, lock and begin playback, continually comparing its position with that of the incoming time code. With **RECHASE MODE** set to **DISABLED** RADAR®24 will locate, lock, begin playback and release. This lock and release behavior is sometimes required for transfers from media with poor or damaged time code etc.

```
RECHASE MODE:
DISABLED  ENABLED
```

SYNC REFERENCE

Shortcut keys:

- Session Controller   `SYNC`

- KC-24 Keyboard   `SYNC`

Digital devices need a clock to operate. For stand-alone operation the device itself usually derives the clock signal from an internal master clock. However, when interconnecting with other digital devices it becomes necessary to have a master clock that provides timing information to all the connected devices so that they can communicate properly. RADAR®24 provides a wealth of digital synchronization options to cover just about any application imaginable. Possible reference sources are:

- **INTERNAL**

- **WORDCLOCK**

- **VIDEO**

- **SMPTE**

- **MTC**

- **AES 2-CH SYNC**

- **S/PDIF 2-CH SYNC**

- **AES MULTI-CH**

- **ADAT**

- **TDIF L/R IN**

- **TDIF WORD SYNC**

One of these options can be selected in the sync reference dialog and will remain selected until the unit is powered down or rebooted. For further information refer to CONFIGURATION: SYNC REFERENCE.

```
SYNC REFERENCE:
VIDEO: NTSC
```

RADARLINK

A single 9-pin cable allows two or more RADAR®24 units to be connected and operated as a single unit. See OPERATION: RADARLINK for further information.

ENABLE/DISABLE

Shortcut keys:

- Session Controller   `RLINK`

- KC-24 Keyboard   `N/A`

This dialog is used to enable or disable RADARLINK operation.

```
ENABLE RADARLINK:
   NO    YES
```

RADARLINK SOLO

Shortcut keys:

- Session Controller   `RLINK SOLO`

- KC-24 Keyboard   `N/A`

RADARLINK SOLO operation is required for editing with more than 48 tracks and certain other machine specific functions like backup, restore, mount and unmount. This dialog allows you to select a particular slave machine by entering its RADARLINK ID number.

```
RADARLINK SOLO:
ID:   1  ONLINE
```

RADARLINK ID

Each slave unit in a RADARLINK configuration must have a unique ID number between **1** and **7**. The RADARLINK master is automatically assigned and ID of **M**.

```
RADARLINK SLAVE:
ID:    01
```

RADAR®24 supports both 9-pin serial (RS-422) and MMC, which is the MIDI implementation of machine control. These menus configure RADAR®24 for use as a machine control slave in a variety of applications.

ENABLE/DISABLE

Shortcut keys:

- Session Controller   `SHIFT+RLINK(MCH CTL)`

- KC-24 Keyboard   `N/A`

This dialog is used to enable or disable 9-pin or MMM, depending on which type of machine control is selected and whether it is currently enabled or disabled.

```
ENABLE 9-PIN?
     NO     YES
```
```
DISABLE 9-PIN?
     NO     YES
```

SELECT TYPE

You can easily switch between 9-pin and MMC using this dialog.

```
MACH CTRL TYPE:
  9-PIN     MMC
```

9-PIN SETTINGS

These settings can be used to adjust for the multitude of 9-pin variations implemented by various manufactures.

DEVICE ID

The device ID setting allows RADAR®24 to appear as one of the following to the machine control master:

- **RADAR**

- **DVR-1000**

- **APR-24**

- **BVU-950**

With these various emulations it is possible to control RADAR®24 from virtually any 9-pin controller.

```
RS422 DEVICE ID
TYPE: BVU-950
```
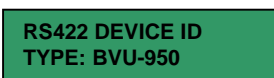
CHASE MODE

This dialog determines whether the time code source for chase lock will be derived from the LTC/MTC inputs (local) or from a machine control master via 9-pin (RS-422).

```
CHASE MODE:
   9-PIN    LOCAL
```

TRACK ARM MODE

This dialog determines whether track-arming commands will be derived locally or from a machine control master via 9-pin (RS-422).

```
TRACK ARM MODE:
   9-PIN    LOCAL
```

VARISPEED MODE

This dialog determines whether vari-speed commands will be derived locally or from a machine control master via 9-pin (RS-422).

```
VARISPEED  MODE:
   9-PIN    LOCAL
```

TC OUT MODE-CUE

This setting allows the time code output while cueing to respond differently for different applications.

In NORMAL mode, RADAR®24 will cue to a new location and begin outputting time code upon playback, based on the new position in the project. The small gap in time code output that occurs when a hard disk system like RADAR®24 is cueing can cause problems with some older synchronization systems that are expecting an immediate ramp up in time code output from a slave machine (i.e. tape machine) when a machine control PLAY command is sent.

In TAPE mode, RADAR®24 will immediately begin sending time code even before the cueing operation is complete. This emulates the behavior of a tape machine and prevents confusion with certain machine control systems.

TC OUT MODE-PLAY

This setting is almost identical to TC OUT MODE-CUE in that it allows the time code output on playback to respond differently for different applications.

In NORMAL mode, RADAR®24 will begin outputting time code immediately upon playback, based on the new position in the project regardless of any delay introduced by cueing audio. This alleviates problems that can occur with some older synchronization systems that are

expecting a ramp up in time code output from a slave machine (i.e. tape machine) immediately after a machine control **PLAY** command is sent.

In **TAPE** mode, RADAR®24 will immediately begin sending time code even if cueing is required. This emulates the behavior of a tape machine and prevents confusion with older machine control systems.

SYNC REF OUTPUT

The **SYNC REF OUTPUT** dialog determines whether the **WORDCLOCK/ VIDEO – OUT** connector on the rear of the unit functions as a thru connector for any incoming word clock signal or as an output for word clock generated by the internal clock of the RADAR®24. If you wish to use the clock of your RADAR® to drive other devices in your studio you must choose the **WORDCLK** option in this dialog.

```
SYNC REF OUTPUT:
   WORDCLK  THRU
```

Dig I/O Menu

Unlike analog audio routing, digital audio I/O can be a little complicated at times. RADAR®24 provides maximum flexibility in this department by offering a wide variety of digital audio interfacing options.

Note: Regardless of digital I/O settings, all analog and digital outputs are active at all times.

DIG IN FORMAT

Shortcut keys:

- Session Controller   **DIG IN**

- KC-24 Keyboard   **N/A**

This dialog determines if RADAR®24 will use digital or analog audio inputs and also lets you choose the digital I/O format. The currently selected digital I/O format is displayed above the track numbers in the RADARVIEW display. The selections in this dialog are:

- **NONE (ANALOG)**

- **AES/EBU 2-CH**

- **AES MULTI-CH**

- **ADAT**

- **TDIF**

```
DIG IN FORMAT:
  ADAT
```

DIG I/O ROUTING

Shortcut keys:

- Session Controller   SHIFT+DIG IN(ROUTE)

- KC-24 Keyboard   N/A

This menu has two sub-menu selections:

- **2-CH I/O ROUTING**

    Here you can independently assign the ins and outs of the 2-channel digital I/O to tracks 1 through 24.

    ```
    DIG  IN  L: 00  R:00
         OUT  L: 00  R:00
    ```
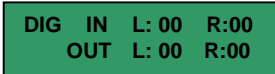
- **MULTI-CH IN TRKS**

    This dialog allows you to select either analog or digital inputs for each track using the track arming keys.

    ```
    DIG  IN  TRACKS:
     ALL        SELECT
    ```

DIG I/O SDQ

SDQ is an acronym for Single, Dual, and Quad wire. It refers to the way RADAR®24 handles high sample rate digital audio going to and from external sources via the AES multi-channel I/O. The choices in this menu will vary depending on the sample rate of the current project. At a sample rate of 192 kHz the selections will be:

- **SINGLE**

- **DUAL**

- **QUAD**

It is important to select the appropriate SDQ setting so that RADAR®24 will display and reproduce the recorded audio correctly.

```
DIG I/O SDQ      192K:
 SINGLE  DUAL  QUAD
```

! IMPORTANT NOTE: Projects being recorded at 192 kHz using dual and quad wire AES multi-channel digital audio cannot be monitored directly using the RADAR®24's analog outputs. Once the audio is recorded however the project can be played back using the analog outputs by selecting an SDQ setting of **SINGLE**.

Note: This only applies when recording from external dual and quad wire AES sources at 192 kHz.

DIG 2-CH OUTPUT

RADAR®24 supports both the AES/EBU and S/PDIF 2-channel I/O formats. Use this dialog to switch between the two formats.

```
DIG 2-CH OUTPUT:
  AES/EBU    S/PDIF
```

AES SETTINGS   (IF AES CARD PRESENT)

SAMPLE RATE IN

This dialog reads the indicator flag for the selected input pair. Use the up and down arrow keys to select an AES/EBU input pair with a valid signal and the sample rate will be displayed in the dialog.

EMPHASIS IN

In the early days of digital, emphasis was used to artificially boost the level of high frequency signal content so that it could be quantized at a higher resolution. The EMPHASIS IN dialog indicates if the incoming AES signal is using emphasis or not.

EMPHASIS OUT

Use this dialog to turn emphasis flag on and off for the AES output signal. When it is turned on it indicates to the receiving device that the digital audio stream has been recorded with emphasis and it should be decoded accordingly.

Since RADAR®24 does not decode emphasis nor store the emphasis flag for audio recorded with emphasis, the emphasis flag should be turned ON if you know with absolute certainty that the digital audio you recorded had previously been encoded with emphasis.

Emphasis is rarely, if ever, used in the industry today and these options are included primarily for dealing with legacy recordings.

MULTI-CHNL TYPE

The number of channels supported by the installed card. For RADAR®24 this value will always be 24-channels.

ADAT SETTINGS   (IF ADAT CARD PRESENT)

ADAT IN CLOCK

This dialog sets the input group that ADAT clock information will be derived from. The settings are:

- **AUTOMATIC**

- **FIBER C**

- **FIBER B**

- **FIBER A**

For most situations the **AUTOMATIC** setting will be the best choice. RADAR®24 will detect any incoming clock from the fiber ports and automatically make the **ADAT IN CLOCK** assignment.

ADAT IN WIDTH

These settings can be used to compensate for poor quality optical transceivers that alter the usable pulse width of the digital audio signal. Compensation can be set independently for each fiber port. Increments are displayed in positive and negative hexadecimal units 0 through F.

ADAT IN SMPL PT

Used in conjunction with **ADAT IN WIDTH** and **ADAT OUT WIDTH**, **ADAT IN SMPL PT** can help establish a solid link using Lightpipe by shifting the point in the recovered waveform that RADAR®24 interprets the data value. Increments are displayed as hexadecimal units, with each unit delaying the sample point by 10 nanoseconds.

ADAT OUT WIDTH

As in **ADAT IN WIDTH**, these settings can be used to compensate for poor quality optical transceivers that alter the usable pulse width of the digital audio signal. Compensation can be set independently for each fiber port. Increments are displayed in positive and negative hexadecimal units 0 through F.

FACTORY DEFAULTS

Use this function to return all of the RADAR®24's ADAT settings to factory default.

TDIF SETTINGS   (IF TDIF CARD PRESENT)

IN SAMPLE POINT

Interfacing with some makes and models of TDIF equipped audio gear can be challenging at times, especially with older equipment. The **IN SAMPLE POINT** dialog allows you to shift the position in the waveform where RADAR®24 interprets the incoming TDIF digital signal. The choices are:

- **¼ BIT**

- **½ BIT**

- **¾ BIT**

If you are experiencing difficulties interfacing with another digital audio device using TDIF you may want to experiment with these settings as a last resort.

SAMPLE RATE IN

This dialog displays the sample rate of incoming TDIF format digital audio.

EMPHASIS IN

In the early days of digital, emphasis was used to artificially boost the level of high frequency signal content so that it could be quantized at a higher resolution. The **EMPHASIS IN** dialog indicates if the incoming TDIF signal is using emphasis or not.

EMPHASIS OUT

Use this dialog to turn emphasis on and off for the TDIF output signal. When it is turned on it indicates to the receiving device that the digital audio stream has been recorded with emphasis and it should be decoded accordingly.

Since RADAR®24 does not decode emphasis nor store the emphasis flag for audio recorded with emphasis, the emphasis flag should be turned **ON** if you know with absolute certainty that the digital audio you recorded had previously been encoded with emphasis.

Emphasis is rarely, if ever, used in the industry today and these options are included primarily for dealing with legacy recordings.

CARD TYPE

The number of channels supported by the installed card. For RADAR®24 this value will always be 24-channels.

File Menu

The file menu contains all of the functions related to moving audio data or other information in or out of RADAR®24.

BACKUP MENU

Shortcut keys:

▪ Session Controller   **BACKUP**

▪ KC-24 Keyboard   **N/A**

Selecting this menu item and pressing the **ENTER** key causes RADAR®24 to scan for attached backup devices. When the scan is complete all valid backup destinations will be listed in the **BACKUP TO**: dialog. For more information on backing up your projects refer to OPERATIONS: FILE MENU: BACKUP.

RESTORE MENU

Selecting this menu item and pressing the **ENTER** key causes RADAR®24 to scan for attached backup devices. When the scan is complete all valid drives will be listed in the **RESTORE FROM**: dialog. For more information on restoring your projects refer to OPERATIONS: FILE MENU: RESTORE.

EXPORT MENU

Selecting this menu item and pressing the **ENTER** key causes RADAR®24 to scan for attached devices. When the scan is complete all valid export destinations will be listed in the **EXPORT TO**: dialog. For further information on exporting your projects refer to OPERATIONS: FILE MENU: EXPORT.

IMPORT MENU

The import menu will be implemented in a forthcoming software version.

FILE MANAGEMENT

DELETE BACKUPS

Selecting this menu item and pressing the ENTER key searches for valid backup devices and displays them in a list in the dialog. Follow the procedure for deleting backups as outlined in OPERATIONS: FILE MENU: DELETE BACKUPS.

RECOVER BACKUPS

Selecting this menu item and pressing the ENTER key searches for valid backup devices and displays them in a list in the dialog. Follow the procedure for recovering backups as outlined in OPERATIONS: FILE MENU: RECOVER BACKUPS.

DELETE FOLDER

Selecting this menu item and pressing the ENTER key searches for valid devices and displays them in a list in the dialog. Follow the procedure for deleting folders as outlined in OPERATIONS: FILE MENU: DELETE FOLDER.

MACROS

Macros may be saved to disk, loaded from disk and deleted from disk. Please refer to OPERATIONS: FILE MENU: MACROS for further information.

```
MACRO KEYS:
LOAD  SAVE  DELETE
```

FILE PREFS

These dialogs let you streamline your workflow by creating preferences for certain file related functions. These EXPORT FORMAT and FILL SILENCE preferences are also used when using the EXPORT CLIP short cut key.

SHOW BACKUP SIZE

Backup size can be displayed in megabytes, time or not at all.

```
SHOW BACKUP SIZE
OFF  MBYTES  TIME
```

EXPORT FORMAT

This sets the preference for the export file format. The choices are WAV, BWF or ASK. When ASK is selected as the preference you will be prompted to choose a file format each time you export files.

```
FILE FORMAT:
WAV    BWF    ASK
```

EXPORT SILENCE

Fill silence pads blank audio regions with zeros to create contiguous files for export. When **ASK** is selected as the preference you will be prompted to choose a fill silence option each time you export files.

```
FILL SILENCE:
NO    YES    ASK
```
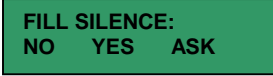
Project Menu

GOTO PROJECT

Shortcut keys:

- Session Controller   **GOTO PROJ**

- KC-24 Keyboard   **GO TO PROJECT**

Lets you quickly switch projects. Select a project and press **ENTER**.

NEW PROJECT

Shortcut keys:

- Session Controller   **NEW PROJ**

- KC-24 Keyboard   **N/A**

Lets you quickly create a new project. When you select **NEW PROJECT** a new project is created and assigned the next available unused project number. Type in a name for your project on the QWERTY keyboard and press the **ENTER** key.

COPY PROJECT

Shortcut keys:

- Session Controller   **COPY PROJ**

- KC-24 Keyboard   **N/A**

When you don't want to mess with the original project, **COPY PROJECT** lets you make a duplicate of the current project in a hurry. The project copy will be assigned the next available unused project number and be named automatically using the original project's name and an appended version number.

```
COPY XX TO XX
MY PROJ          V-2
```
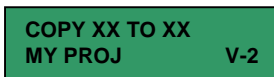
DELETE PROJECT

Shortcut keys:

- Session Controller   `DEL PROJ`

- KC-24 Keyboard   `N/A`

Lets you quickly delete a selected project.

```
DELETE PROJ:    XX
MY PROJ
```

NAME PROJECT

Shortcut keys:
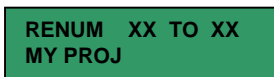
- Session Controller   `NAME PROJ`

- KC-24 Keyboard   `N/A`

Lets you quickly name a selected project. The dialog cursor defaults to the project number field.

```
NAME PROJ:     XX
MY NEW PROJ
```

RENUMBER PROJECT

Lets you renumber a project quickly. This is often required to give restored projects the same number for RADARLINK operation.

```
RENUM   XX  TO  XX
MY PROJ
```

SAMPLE RATE

Sets the sample rate for the selected project. Available sample rates will vary depending on the installed I/O options.

```
SAMPLE RATE:
  192         KHZ
```

Note: This option can only be changed before audio is recorded.

BIT RESOLUTION

Sets the bit depth for the selected project. The available bit depths are 16 and 24-bit PCM.

```
BIT RESOLUTION:
   24-BIT PCM
```

Note: This option can only be changed before audio is recorded.

START TIME

This dialog allows you to enter a start time for the current project.

```
SET START TIME:
HH:MM:SS:FF
```

SYNC OFFSET

Shortcut keys:

- Session Controller   `SHIFT+SYNC(OFFSET)`

- KC-24 Keyboard   `N/A`

It is often necessary to set an offset between two synchronized machines when time codes differ. When the two machines are parked at the appropriate location to be synchronized the offset can be calculated by subtracting the master machines time code from the slave machines time code. See OPERATIONS: CHASING TIME CODE: CHASE/TC PREF for information on how RADAR®24 can capture an offset automatically.

```
SET SYNC OFFSET:
HH:MM:SS:FF      +
```

DISPLAY MODE

RADAR®24 can display its current position in the following units:

- **FEET/FRAMES**

- **BARS/BEATS**

- **SMPTE**

- **INT/EXT SMPTE**

Choose your favorite format and press the **ENTER** key. For bars and beats operation you must also set the reference tempo in the *PROJ MENU / MIDI TEMPO MAP* dialog.

```
DISPLAY MODE:
  BARS / BEATS
```

MIDI TEMPO MAP

Use this dialog to set the reference tempo and time signature for **BARS/BEATS** display mode.

```
BARS  001  -  999
120.0  BPM      4/4
```

VARI-SPEED

Shortcut keys:

- Session Controller   **VARI-SPEED**

- KC-24 Keyboard   **N/A**

VARI-SPEED is stored independently for each project, but you must manually engage it each time the project is loaded. See OPERATIONS: VARI-SPEED for more details on using this feature.

```
V-SPEED:      00.00%
UNITS: PERCENT
```

UNDO LEVEL

RADAR®24 supports up to 99 levels of undo. The factory default setting is 10. Use this dialog to customize the number of undo levels for your system.

```
UNDO LEVEL:
       10
```

Note: Too many levels of undo can waste disk space. Disk space cannot be automatically reclaimed by the system until deleted audio regions "fall off" the undo list.

WAVE NOISE FLOOR

This dialog sets the signal level threshold for waveform drawing. Noise and other signals below the noise floor setting will not be drawn. The threshold value can be modified in 5-decibel increments between –90.0 and -60.0.

```
NOISE FLOOR:
   -80.0   dB
```

NAME TRACK

Shortcut keys:

- Session Controller   **NAME TRACK**

- KC-24 Keyboard   **N/A**

Enter a name using the QWERTY keyboard. Upon pressing the ENTER key, the new track name will appear to the left of the track numbers in the RADARVIEW display and the dialog will automatically select the next track number for naming. Track names can be 16 characters in length. For more information refer to OPERATIONS: TRACK MANAGEMENT: NAMING TRACKS.

```
TRACK:  01
MY FIRST TRACK
```

RENUMBER LOCATES

This handy dialog lets you automatically renumber locates in chronological order. Selecting RENUMBER LOCATES and pressing the ENTER key presents you with the prompt: RENUMBER ALL? A YES response will renumber locates sequentially from the beginning of the project arranging them in chronological order. A NO response will cancel the renumber function.

```
RENUMBER ALL?
    NO     YES
```

PROJ PREFS

These project preferences define the parameters that will be used every time you create a new project.

DEF SAMPLE RATE

Sets the sample rate for newly created projects. Valid values range from 32kHz to 192 kHz, depending on the options installed.

DEF BIT RES

This preference determines the default bit-depth or bit resolution for newly created projects.

DEF START TIME

Sets the start time that will be automatically assigned to new projects.

DEF UNDO LEVEL

This allows you to set a default undo level setting for all new projects. This setting can be changed at any time, however setting this value to a lower value will delete any undo information that existed in the higher undo levels. For example: changing the undo level setting from 10 to 0 and then back to 10 will erase all undo information.

DEF WAVE NS FLR

This sets the wave-drawing noise floor for all new projects.

Edit Menu

UNDO EDIT

Shortcut keys:

- Session Controller   **UNDO**

- KC-24 Keyboard   **UNDO**

Lets you undo an edit or record. Undo levels can be set anywhere from 0 to 99. For more information see OPERATIONS: RECORDING: UNDO/REDO

REDO EDIT

Shortcut keys:

- Session Controller   **REDO**

- KC-24 Keyboard   **N/A**

Allows you to redo edits or records that were undone using the **UNDO** function. You may **REDO** as many times as you performed the **UNDO** function. The ability to **REDO** will be lost upon performing new edits, entering record or switching to another project. For more information refer to OPERATIONS: RECORDING: UNDO/REDO

MODIFY EDIT

Shortcut keys:

- Session Controller   **MODIFY EDIT**

- KC-24 Keyboard   **N/A**

This powerful function allows you to quickly change any or all of the parameters of the previous edit. Parameters available for modification include:

- **MARK IN**

- **MARK OUT**

- **CROSSFADE TIME**

- **ORIGINAL TRACK (S)**

- **DESTINATION TRACK (S)**

- **INSERT OR OVERWRITE**

- **SLIDE TIME**

- **LOOP COUNT ETC.**

For more information see OPERATIONS: EDITING: MODIFY EDIT

CUT

Shortcut keys:

- Session Controller   `SHIFT+COPY(CUT)`

- KC-24 Keyboard   `CUT`

Cuts the defined track-region to the clipboard and removes it from the project. Audio after the edit point on affected tracks will be pulled forward to fill the space left by the CUT function. For more information refer to OPERATIONS: EDITING: CUT.

COPY

Shortcut keys:

- Session Controller   `COPY`

- KC-24 Keyboard   `COPY`

Copies the defined track-region to the clipboard. Project audio is not affected in any way. For more information refer to OPERATIONS: EDITING: COPY.

PASTE

Shortcut keys:

- Session Controller   `PASTE`

- KC-24 Keyboard   `PASTE`

Pastes the defined track-region into the project from the clipboard. The PASTE function has many variables that will affect project audio in several different ways, including:

- **PASTE TO SAME OR DIFFERENT TRACKS**

- **INSERT OR OVERWRITE**

- **MULTIPLE PASTE POINTS**

- **BACK TIME PASTING**

- **SYNC MARKER PASTING**

For detailed information on pasting audio see OPERATIONS: EDITING: PASTE.

MOVE

Shortcut keys:

- Session Controller   `MOVE`

- KC-24 Keyboard **MOVE**

Moves the defined track-region to another location without using the clipboard. Project audio is removed like the **ERASE** function and will either **INSERT** or **OVERWRITE** at the **MOVE TO**: point. For more information refer to OPERATIONS: EDITING: MOVE.

ERASE

Shortcut keys:

- Session Controller **ERASE**

- KC-24 Keyboard **ERASE**

Erases the defined track-region from the project. Post-edit point audio is not affected in any way. For more information refer to OPERATIONS: EDITING: ERASE.

LOOP

Shortcut keys:

- Session Controller **LOOP**

- KC-24 Keyboard **LOOP**

Creates consecutive loops of the defined track-region starting from the track-regions **MARK OUT** point. Loops may set to **INSERT** or **OVERWRITE**. For details refer to OPERATIONS: EDITING: LOOP.

SLIDE

Shortcut keys:

- Session Controller **SHIFT+MOVE(SLIDE)**

- KC-24 Keyboard **SLIDE**

Slides the defined track-region in frames or milliseconds. Sliding leaves behind empty space and will **OVERWRITE** post-edit project audio. For details refer to OPERATIONS: EDITING: SLIDE.

INSERT SILENCE

Shortcut keys:

- Session Controller **SHIFT+ERASE(SILENCE)**

- KC-24 Keyboard **N/A**

Inserts a user-definable amount of silence into the project at the current **MARK IN** point. Silence is an **INSERT** type of edit and post-edit project audio on affected tracks will be moved later in time. For more information see OPERATIONS: EDITING: INSERT SILENCE.

REVERSE

Shortcut keys:

- Session Controller   `SHIFT+LOOP(REVERSE)`

- KC-24 Keyboard   `N/A`

Reverses the audio on the clipboard. For details see OPERATIONS: EDITING: REVERSE.

GAIN/FADE

Shortcut keys:

- Session Controller   `GAIN/FADE`

- KC-24 Keyboard   `N/A`

Changes the gain of the current track-region. **START** and **END** gain settings are independent so fade ins and fade outs can be performed. For details refer to OPERATIONS: EDITING: GAIN/FADE.

LISTEN

Shortcut keys:

- Session Controller   `SHIFT+PASTE(LISTEN)`

- KC-24 Keyboard   `LISTEN`

Auditions the audio on the clipboard. For more information refer to OPERATIONS: EDITING: LISTEN.

EDIT XFADE TIME

Shortcut keys:

- Session Controller   `N/A`

- KC-24 Keyboard   `N/A`

Sets the crossfade time for edits. Possible values range from 1 millisecond to 9 seconds 999 milliseconds. The factory default is 5 milliseconds. For details see OPERATIONS: EDITING: EDITING CROSSFADES.

REC XFADE TIME

Shortcut keys:

- Session Controller   **N/A**

- KC-24 Keyboard   **N/A**

Sets the recording crossfade time. Recording crossfades occur whenever recording mode is entered or exited, including punch-ins and punch-outs. Possible values range from 1 millisecond to 9 seconds 999 milliseconds. The factory default is 5 milliseconds. For details see OPERATIONS: EDITING: EDITING CROSSFADES.

CROSSFADE TYPE

Shortcut keys:

- Session Controller   **N/A**

- KC-24 Keyboard   **N/A**

Sets the crossfade type for the **MOVE, SLIDE** and **ERASE** edits. The possible crossfade types are **PRE, MID** and **POST**. The factory default is **POST**. For more information refer to OPERATIONS: EDITING: EDITING CROSSFADES.

MUTE TRACKS

This is a legacy feature that was used to disabled unused tracks to free up disk bandwidth in the days of slower hard disks. The selections are **NONE** and **TRACK ARM**. The default is **NONE**. If you do wish to mute tracks for some reason you may do so by selecting **TRACK ARM** and using the **TRACK ARM** keys to temporarily disable selected tracks.

RECORD SAFE

Shortcut keys:

- Session Controller   **SAFE**

- KC-24 Keyboard   **SAFE**

Sets all tracks to **SAFE** mode. No recording can take place while **SAFE** mode is engaged.

Preferences Menu

These menus access global preference settings that will be loaded every time you use your RADAR®24.

DEF SMPTE FIELD

This setting determines the default position of the cursor when entering SMPTE times into the RADAR®24. The preference choices are:

▪ **SECONDS**

Cursor defaults to the seconds field.

▪ **FRAMES**

Cursor defaults to the frames field.

SHOW SUBFRAMES

This item allows you to select whether or not sub-frames (hundredths of a frame) will be displayed during normal transport operation. Sub-frames are always displayed when Jog is enabled. The preferences are:

▪ **ENABLED**

Sub-frames will be displayed during normal transport operations.

▪ **DISABLED**

Sub-frames will not be displayed during normal transport operations.

TRACK SOLO MODE

There are three different modes of operation for Track Solo, which is a playback-monitoring feature available from the **Session Controller** and the **KC-24** keyboard. The three **TRACK SOLO MODE** settings are:

▪ **ADDITIVE**

In **ADDITIVE SOLO** mode, each time a track solo button is pressed, the track is added to any others currently being soloed.

▪ **INTERLOCK**

In **INTERLOCK SOLO** mode, which is the system default, every time a track is soloed using a **TRACK ARM** key it replaces any previously soloed track or tracks. If you want to solo more than one track while in **INTERLOCK SOLO** mode, simply press and hold the currently selected **TRACK ARM** key and select additional tracks to be soloed.

▪ **MOMENTARY**

In Momentary Solo mode, track(s) are kept in solo only as long as their corresponding **TRACK ARM** keys are held down.

ZOOM SOLO AUDIO

This preference determines whether or not audio is soloed in concert with the zoom solo display function. When enabled, visually soloed tracks on the display will determine the solo status of audio tracks as well. The preference selections are:

▪ **ENABLED**

Audio tracks will be soloed when tracks are visually soloed on the display using ZOOM SOLO feature.

▪ **DISABLED**

Audio tracks will not be soloed when tracks are visually soloed on the display using the ZOOM SOLO feature.

LOW DISK WARNING

This preference allows you to set a low-disk space alarm that will alert you when the available recording time gets below the specified amount. The default setting for this level is 5 minutes. Values for the warning threshold range between 0 and 99 minutes. To disable the low disk space warning set the value to 0 minutes.

SLIDE TIME UNITS

Here you can select the units used for the SLIDE TIME editing function. Preference choices are:

▪ **MILLISECONDS**

The SLIDE TIME function uses MILLISECONDS for editing.

▪ **FRAMES**

The SLIDE TIME function uses FRAMES for editing.

RECORD MODE

There are several options available for both the transport and the TRACK ARM keys that affect the way recording is initiated on RADAR®24:

▪ **RECORD**

There are two modes for recording using the transport keys:

• **REC+PLAY**

Requires that both the PLAY and RECORD keys be pressed simultaneously to initiate recording.

• **REC**

Only requires a single press of the RECORD key to initiate recording.

- **ARM TK**

  There are two modes for the track arm keys:

  - **REC READY**

    This is the default mode of operation. In this mode pressing a TRACK ARM key puts the selected track into record ready mode. Recording will only take place when initiated using the transport keys.

  - **INST REC**

    In this mode, pressing a TRACK ARM key puts the selected track into record mode immediately without using the transport keys.

FFWD & REW RATE

This preference item is used to select the speed of both the FFWD and REW fast-wind transport modes. The value range is from 1 to 99 times normal play speed. The default setting is 8 times normal. RADAR®24 also provides a super fast-wind mode when the FFWD or REW keys are pressed twice in a row. The super fast-wind speed is 3x faster than the regular fast-wind speed set in this preference dialog.

PEAK HOLD TIME

This preference determines how long the meters will hold a peak level indication. The duration is specified in seconds, with a maximum value of 999 seconds. To hold level peaks indefinitely, enter a value of -1 for this setting. To disable the feature altogether, enter a value of 0.

CLIP HOLD TIME

This preference determines how long the clip LED's will hold a clip indication. The duration is specified in seconds, with a maximum value of 999 seconds. To hold clip indications indefinitely, enter a value of -1 for this setting. To disable the feature altogether, enter a value of 0.

RECORD MK IN/OUT

You can use this preference dialog to enable or disable the automatic mapping of record in and out times as MARK IN and MARK OUT points. The choices are:

- **ENABLED**

  Punch in and punch out times will be automatically stored as MARK IN and MARK OUT points.

- **DISABLED**

  Disables the RECORD MK IN/OUT feature.

SAVE STATE DELAY

This preference item specifies how long RADAR®24 waits after an operation before it performs its periodic SAVE STATE operation, which commits the current state of the system to the hard disk. The delay is set in seconds with a value ranging between 1 and 99. The SAVE STATE feature cannot be permanently disabled.

SCRN-SAVER MENU

SAVER DELAY

The default screen saver delay is 60 seconds. Delays up to 999 seconds are possible. Setting the value to 0 will disable the screen saver feature.

IMAGE EFFECTS

This enables and disables the image effects applied to the RADAR®24 screen saver.

AUTO RECLAIM

This preference setting enables and disables the AUTO RECLAIM function. AUTO RECLAIM automatically frees up disk space when deleted audio "falls off" the UNDO list. **It is recommended that you leave AUTO RECLAIM enabled unless you have a really good reason to do otherwise.**

TRK ARM GROUPING

When using multiple RADAR®24 units at higher sample rates, this feature allows all of the metering to be grouped together on the master machine. For example two units operating at 96 kHz with 12 tracks per unit could have all 24 tracks of metering displayed on a single **MeterBridge 24**. The selections are:

- **NORMAL**

  Meters function normally. With 96 kHz RADARLINK® projects 12 tracks of metering will be available per meter bridge. In 192 kHz projects 6 tracks of metering will be available per meter bridge.

- **COMPACT**

  Meters functions are compacted. With 96 kHz RADARLINK® projects up to 48 tracks of metering will be available per single 48-channel meter bridge.

DAMSEL MODE

This preference is provided for RADAR®24 users requiring compatibility with Digital Audio Miracles *DAMSEL*, RADAR® to SDII file conversion software for the Macintosh. For more information visit **www.digitalaudiomiracles.com**.

FILE PREFS

SHOW BACKUP SIZE

This preference setting lets you choose the parameters for the backup dialog. Options are:

- **OFF**

  Disables the backup dialog.

- **MBYTES**

  Displays the pending backup size in megabytes.

- **TIME**

    Displays the pending backup size in hours, minutes and seconds.

EXPORT FORMAT

Here you can set the file format preference for exporting files from RADAR®24. The preference choices are:

- **WAV**

    Exports audio files in the .wav format.

- **BWF**

    Exports audio files in the time-stamped Broadcast Wave format.

- **ASK**

    Prompts you to choose a file format each time you export.

EXPORT SILENCE

This preference determines whether or not un-recorded sections of exported projects are filled with zeros to create a track-as-file type export. The preference choices are:

- **NO**

    Exports individual audio files for each recording in the project.

- **YES**

    Pads un-recorded regions with zeros and exports each track as a separate audio file.

- **ASK**

    Prompts you to choose a **FILL SILENCE** option each time you export.

PROJ PREFS

DEF SAMPLE RATE

Sets the default sample rate for projects created using **NEW PROJECT**. Available sample rates will vary depending on installed hardware options. The sample rate cannot be changed once a project has recorded audio in it.

DEF BIT RES

Sets the default bit depth for projects created using **NEW PROJECT**. Choose either a 16 or 24 bit resolution. Bit depth cannot be changed once a project has recorded audio in it.

DEF START TIME

Sets the default start time for projects created using NEW PROJECT. The factory default is 00:59:55:00.

DEF UNDO LEVEL

Sets the default number of undo levels for each project created using the NEW PROJECT function. The factory default is 10 levels of UNDO.

DEF WAVE NS FLR

This dialog sets the signal level threshold for waveform drawing for projects created using NEW PROJECT. The factory default is -80.0 dB. Noise and other signals below the noise floor setting will not be drawn. The threshold value can be modified in 5-decibel increments between -90.0 and -60.0.

NETWORK SETUP

For detailed information on network preferences please refer to SYSTEM SETUP: CONFIGURATION: NETWORKING.

INTERFACE PREFS

HOST NAME

Enter the host name for your RADAR®24.

DHCP ENABLE

Enable or disable Dynamic Host Configuration Protocol.

LOCAL IP ADDRESS (DHCP DISABLED)

Enter the IP address of your RADAR®24.

SUBNET MASK (DHCP DISABLED)

Enter the subnet mask if required.

GATEWAY (DHCP DISABLED)

Enter the address of your Internet router.

DOMAIN NAME (DHCP DISABLED)

Enter a domain name.

PRIMARY DNS (DHCP DISABLED)

Enter the address of a primary domain name server.

SECONDARY DNS (DHCP DISABLED)

Enter the address of a secondary domain name server.

FTP ENABLE

Enable or disable RADAR®24 FTP serving.

FTP LOGIN NAME (FTP ENABLED)

Enter an FTP login name.

FTP PASSWORD (FTP ENABLED)

Enter an FTP password.

SERVER PREFS

CIFS SERVER IP

Enter your servers IP address.

SERVER NAME

Enter your servers name.

SERVER SHARE

Enter the name of the server share you wish to use.

CLIENT WORKGROUP

Enter the name of a client workgroup.

Diagnostics Menu

SCAN SCSI BUS

This function scans the SCSI bus and gives a report detailing the attached devices and their SCSI ID's.

INIT DISK

This function selects and initializes attached SCSI hard disks. See OPERATIONS: DISK DIAGNOSTICS: INITIALIZE DISK for more information.

CHECK DISK

This function selects and checks attached SCSI hard disks. See OPERATIONS: DISK DIAGNOSTICS: CHECK DISK for more information.

REPAIR DISK

This function selects and repairs attached SCSI hard disks. See OPERATIONS: DISK DIAGNOSTICS: REPAIR DISK for more information.

CHECK PROJECT

This function selects and checks projects for errors. See OPERATIONS: DISK DIAGNOSTICS: CHECK PROJECT for more information.

REALTIME ERRORS

This function displays and clears any real time errors that are experienced by the system during playback or record. See OPERATIONS: DISK DIAGNOSTICS: REAL-TIME ERRORS for more information.

COPY HARD DISKS

This function allows you to make a copy of audio and project data on another SCSI hard disk. See OPERATIONS: DISK DIAGNOSTICS: COPY HARD DISKS for more information.

VERIFY DISKS

This function selects and verifies attached SCSI hard disks. See OPERATIONS: DISK DIAGNOSTICS: VERIFY HARD DISKS for more information.

CONFIGURE DEBUG

This function determines the information included in the debug log. See OPERATIONS: DISK DIAGNOSTICS: CONFIGURE DEBUG for more information.

SAVE DEBUG

This function lets you save the debug log to a floppy disk. See OPERATIONS: DISK DIAGNOSTICS: SAVE DEBUG for more information.

Help

Shortcut keys:

- Session Controller   `HELP, SHIFT+HELP(FIND)`

- KC-24 Keyboard   `H` for `HELP,` `CTRL+H` for `FIND`

The help menu choices are:

- **MANUAL**

  Launch the PDF viewer and display the on-board manual

- **RELEASE NOTES**

  Launch the PDF viewer and display the current release notes

To use the `FIND` function within the on-board manual or release notes press `SHIFT+HELP(FIND)` on the **Session Controller** or `CTRL/H` on the **KC-24** keyboard. For complete details refer to OPERATIONS: DISPLAY OVERVIEW: ON SCREEN HELP.

Shutdown RADAR

Performs a final SAVE STATE, which saves the current project and system information to the disk and displays a prompt in the display confirming that it is safe to power down the unit.

Remote Keyboard Keys

Session Controller

The **Session Controller** is a feature rich, professional control surface loaded with powerful features designed to help you be efficient and productive. The following section breaks the **Session Controller** keys into logical groupings and provides references to detailed information in the manual.

TRACK ARM KEYS
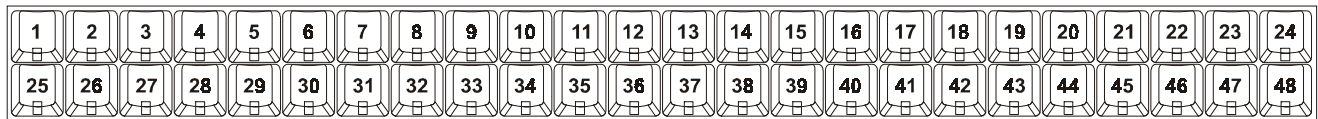
These keys perform two basic functions:

- **TRACK ARMING**

  These keys provide up to 96 tracks of direct track arming when used in conjunction with the 49-96 key.

- **TRACK SELECTION**

  These keys are also used to select individual tracks when editing, exporting, soloing etc.

  Refer to OPERATIONS: RECORDING: MONITORING AND TRACK STATUS for more information.

MACRO KEYS

With a single key press, a macro key can recall multiple keystrokes. To store a new macro press SHIFT+MACRO 1-8 and the selected macro key will begin flashing. Perform the keystrokes that you wish to record and then press the selected macro key again to store it.

Refer to OPERATIONS: FILE MANAGEMENT: MACROS for more information.

FILE AND RADARLINK RELATED SHORTCUT KEYS

These keys are direct access shortcuts to frequently used menu items with the exception of the 49-96 key, which is not accessible from the menu system. For reference information please refer to the section covering the menu item accessed by the shortcut.

BACKUP	RE-STORE	FILE EXPORT	FILE IMPORT	UNMNT MOUNT	TK ARM 49 - 96	MCH CTL RLINK	RLINK SOLO
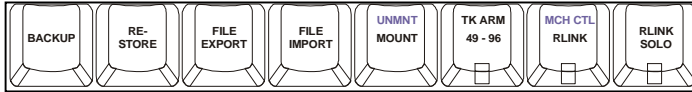
- **BACKUP**

    Shortcut to *MAIN /FILE / BACKUP* menu item.

- **RESTORE**

    Shortcut to *MAIN /FILE / RESTORE* menu item.

- **EXPORT**

    Shortcut to *MAIN /FILE / EXPORT* menu item.

- **IMPORT**

    Shortcut to *MAIN /FILE / IMPORT* menu item.

- **MOUNT (UNMNT)**

    Shortcut to *MAIN /SYSTEM / DISK MANAGEMENT/* **MOUNT/UNMOUNT** dialog.

- **49-96**

    Switches metering and track arm keys for direct control of RADARLINK units 3 and 4.

- **RLINK (MCH CTL)**

    Shortcuts to *MAIN /SYNC / RADARLINK /* **ENABLE/DISABLE** and *MAIN /SYNC / MACHINE CONTROL /* **ENABLE/DISABLE**

- **RLINK SOLO**

    Shortcut to *MAIN /SYNC / RADARLINK / RADARLINK SOLO* menu item.

PROJECT RELATED SHORTCUT KEYS

GOTO PROJ	NEW PROJ	COPY PROJ	DEL PROJ	NAME PROJ	NAME TRACK		FIND HELP
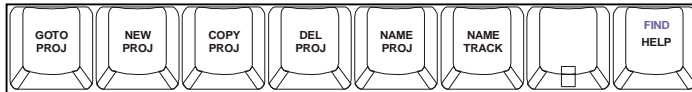
- **GOTO PROJ**

    Shortcut to *MAIN / PROJECT / GOTO PROJECT* menu item.

- **NEW PROJ**

    Shortcut to *MAIN / PROJECT / NEW PROJECT* menu item.

- **COPY PROJ**

  Shortcut to *MAIN / PROJECT / COPY PROJECT* menu item.

- **DEL PROJ**

  Shortcut to *MAIN / PROJECT / DELETE PROJECT* menu item.

- **NAME PROJ**

  Shortcut to *MAIN / PROJECT / NAME PROJECT* menu item.

- **NAME TRACK**

  Shortcut to *MAIN / PROJECT / NAME TRACK* menu item.

- **HELP (FIND)**

  Shortcut to *MAIN / HELP* menu item.

VIEW MANAGEMENT KEYS

| HORZ ZOOM IN | HORZ ZOOM OUT | VERT ZOOM IN | VERT ZOOM OUT | SCROLL UP | SCROLL DOWN | ZOOM SOLO | SHIFT |

- **HORZ ZOOM IN**

  Zooms in horizontally to a width of 5 seconds displayed across the screen.

- **HORZ ZOOM OUT**

  Zooms out horizontally to a width of 24 hours displayed across the screen.

- **VERT ZOOM IN**

  Zooms in vertically to a width of 1 track displayed on the screen.

- **VERT ZOOM OUT**

  Zooms out vertically to a width of 24 tracks displayed on the screen.

- **SCROLL UP**

  Scrolls the display upward vertically when fewer than 24 tracks are displayed.

- **SCROLL DOWN**

  Scrolls the display downward vertically when fewer than 24 tracks are displayed.

- **ZOOM SOLO**

  When engaged the TRACK ARM keys may be used to visually solo tracks in the display.

- **SHIFT**

   This secondary SHIFT key is a duplicate of the SHIFT key located above the UNDO key.

   Refer to OPERATIONS: DISPLAY OVERVIEW: VIEW MANAGEMENT for more information.

QWERTY KEYS
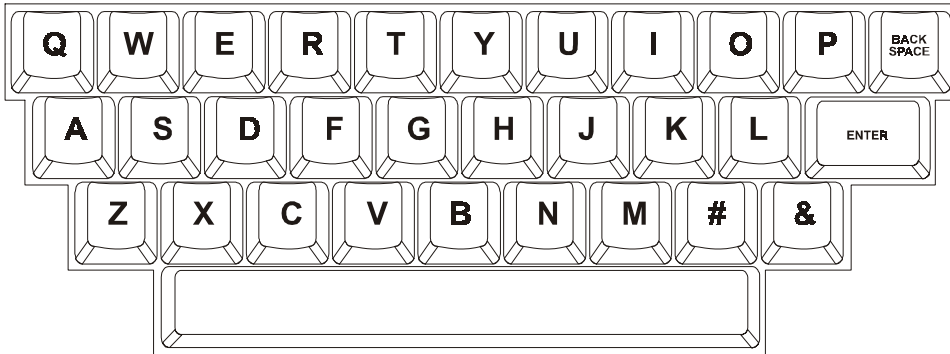
These keys are used to enter names and other information into RADAR®24. They are also used as shortcuts in both transport and menu mode.

TRANSPORT MODE SHORTCUTS

   H = Launch HELP

   L = RADARLINK ENABLE/DISABLE

   M = Display the MUTE TRACKS dialog

   N = Display the NAME TRACK dialog

   S = RADARLINK SOLO

MENU MODE SHORTCUTS

   QWERTY KEYS = Cycle through menu selections starting with that letter.

   Example: While in the main menu repeatedly pressing S cycles through the SYSTEM MENU, SYNC MENU and SHUTDOWN RADAR selections.

Refer to OPERATIONS: QWERTY KEYBOARD for more information.

TRACK STATUS KEYS

These keys control several aspects of RADAR®24 recording and monitoring status:
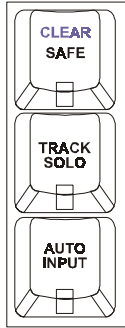
SAFE (CLEAR)

This key puts the system in **SAFE** mode. No recording can take place while **SAFE** is engaged. The shifted **CLEAR** function resets all tracks in record ready mode.

TRACK SOLO

When **TRACK SOLO** is engaged selecting a **TRACK ARM** key places that track in solo mode.

AUTO INPUT

When the **AUTO INPUT** key is engaged the system automatically switches monitoring from **INPUT** to **PLAYBACK** when playback begins and returns it to **INPUT** when playback stops.

Refer to OPERATIONS: RECORDING: MONITORING AND TRACK STATUS for more information.

NUMERIC KEYS
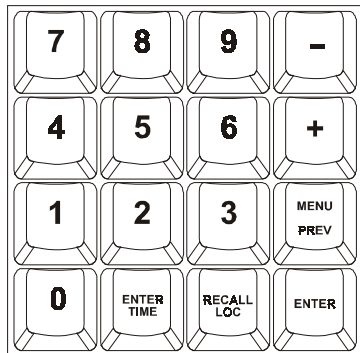
The numeric keypad is used to enter times and other values into RADAR®24. It is also used for recalling single digit locate points 0 - 9.

The plus and minus are multi-function keys, used for different purposes in different situations.

The remaining keys are used for locating and navigating through the RADAR®24 menu structure as outlined below.

▪ **0-9**

One key recall of locate points in transport mode. Used to enter numerical data.

▪ **+ / -**

Used for incrementing/decrementing, adding/subtracting and indicating positive or negative values.

▪ **ENTER TIME**

Enter a time value and press **ENTER** to locate.

▪ **RECALL LOC**

Use this key in conjunction with the numeric keys and **ENTER** to recall 2-digit locate points.

- **ENTER**

    Use ᴇɴᴛᴇʀ in conjunction with functions, menus and dialogs to accept selections and values.

- **MENU / PREV**

    This key lets you step in and out of the menu system.

SYSTEM AND SYNC KEYS

Some of the keys in this grouping are not accessible from the menu system. For reference information please refer to the section covering the item accessed by the key.
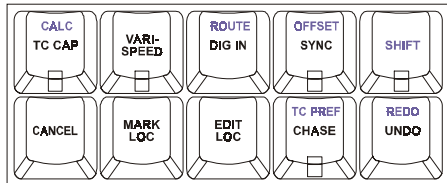
- **TC CAP (CALC)**

    Used to automatically set an offset when receiving static SMPTE from a device that is in the correct position relative to RADAR®24. For more information see OPERATIONS: CHASING TIME CODE: TC CAP/ CALC.

- **VARI-SPEED**

    This is a dual press activation/de-activation key. The first key press displays the ᴠᴀʀɪ-sᴘᴇᴇᴅ value and the next key press engages ᴠᴀʀɪ-sᴘᴇᴇᴅ. Pressing the key while ᴠᴀʀɪ-sᴘᴇᴇᴅ is engaged once again displays the speed value and pressing it a second time disengages ᴠᴀʀɪ-sᴘᴇᴇᴅ. To change the speed while the function is engaged, press the ᴠᴀʀɪ-sᴘᴇᴇᴅ key once to display the speed dialog, change the value and hit the ᴄᴀɴᴄᴇʟ key to return to transport mode. This setting may be changed while in ᴘʟᴀʏ mode. For further information please refer to OPERATIONS: VARI-SPEED.

- **DIG IN (ROUTE)**

    This shortcut key lets you quickly select digital I/O format or routing. The shifted ʀᴏᴜᴛᴇ function sets the 2-channel I/O source and destination tracks and determines whether track inputs are analog or digital. For more information see SYSTEM SETUP: CONFIGURATION: DIGITAL I/O.

- **SYNC (OFFSET)**

    The sʏɴᴄ shortcut key lets you quickly select an external digital sync source for digital I/O formats. The shifted ᴏғғsᴇᴛ function lets you enter a SMPTE time to create an offset with other LTC synchronized devices. For details refer to SYSTEM SETUP: CONFIGURATION: DIGITAL I/O and OPERATIONS: CHASING TIME CODE: SYNC/OFFSET.

- **SHIFT**

    This sʜɪғᴛ key is one of 2 on the **Session Controller**. The sʜɪғᴛ function can be used for capitalization when entering information or to select the shifted key functions on the remote.

- **CANCEL**

  When CANCEL is pressed the system will abort any current operations and return to transport ready mode. CANCEL can also be used to completely exit the menu tree or to abort a file I/O operation such as backup or restore.

- **MARK LOC**

  The MARK LOC key is used to drop locate markers along the project timeline. Markers can be dropped while playback is stopped or in any transport mode including fast-forward or rewind.

- **EDIT LOC**

  The EDIT LOC key is used to modify locate markers that have been placed along the project timeline. See OPERATIONS: TRANSPORT OPERATIONS: AUTO LOCATE MARKERS for detailed information.

- **CHASE (TC PREFS)**

  When pressed, this key puts the system into CHASE mode using the parameters set in the *MAIN / SYNC MENU / TC SETTINGS* menu. The shifted function TC PREFS acts as a direct access shortcut to these settings. For further information please consult OPERATIONS: CHASING TIME CODE.

- **UNDO (REDO)**

  The number of UNDO and REDO levels is dependent on the setting in the *MAIN / PROJECT MENU / UNDO LEVELS* dialog. See OPERATIONS: RECORDING: UNDO/REDO for further information.

TRANSPORT KEYS

These keys provide access to advanced transport operations.
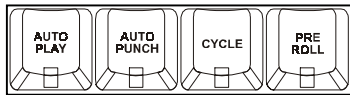
- **AUTO PLAY**

  When used in conjunction with any RECALL LOCATE functions AUTOPLAY initiates playback automatically once the specified timeline location has been cued.

- **AUTO PUNCH**

  AUTO PUNCH uses the MARK IN and MARK OUT locate points to automatically initiate and terminate recording. Please see OPERATIONS: RECORDING: AUTO PUNCH for further information.

- **CYCLE**

  The CYCLE key initiates a playback cycle using the MARK IN and MARK OUT points as a reference. Playback cycling will continue until the cycle key or any transport key is pressed again.

  Note: There is a pause between playback cycles. This is not intended as a loop previewing function.

- **PRE ROLL**

  This key activates and de-activates the **PRE ROLL** function. For detailed information please refer to OPERATIONS: TRANSPORT OPERATIONS: PRE ROLL.

EDIT KEYS

The editing keys provide direct access to almost all of the functions contained in the **EDIT MENU**.
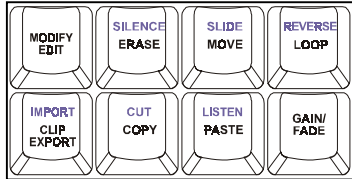
- **MODIFY EDIT**

  This function allows you to quickly and easily fine-tune the current edit. For details refer to OPERATIONS: EDITING: EDITING FUNCTIONS: MODIFY EDIT.

- **ERASE (SILENCE)**

  Use **ERASE** to eliminate audio without affecting post-edit audio on the project timeline. See OPERATIONS: EDITING: EDITING FUNCTIONS: ERASE for further information.

  The shifted function **SILENCE** can be used to insert a silent region into the project timeline. Refer to OPERATIONS: EDITING: EDITING FUNCTIONS: INSERT SILENCE for more information.

- **MOVE (SLIDE)**

  MOVE and **SLIDE** both reposition the audio defined by the selected track-region. While **MOVE** prompts you to enter a new destination in the HH:MM:SS:FF format, **SLIDE** uses frames or millisecond to provide a way to easily nudge audio regions. For more information please refer to OPERATIONS: EDITING: EDITING FUNCTIONS: MOVE and OPERATIONS: EDITING: EDITING FUNCTIONS: SLIDE.

- **REVERSE (LOOP)**

  The **REVERSE** function reverses the audio currently stored on the clipboard. See OPERATIONS: EDITING: EDITING FUNCTIONS: REVERSE for more information.

  LOOP automatically pastes multiple copies of a track-region using the **MARK OUT** point as a starting reference. Please refer to OPERATIONS: EDITING: EDITING FUNCTIONS: LOOP for details.

- **CLIP EXPORT (IMPORT)**

  This shortcut key allows you to quickly export a track-region using the current preferences set in the *MAIN / PREFERENCES MENU / FILE PREFS* menu. For more information see OPERATIONS: FILE MENU: EXPORT and REFERENCE: MENU ITEM QUICK REFERENCE: PREFERENCE MENU: FILE PREFS.

- **COPY (CUT)**

    COPY moves a duplicate of the defined track-region to the clipboard. The shifted function **CUT** removes the defined track-region from the project timeline and creates a duplicate of the defined track-region to the clipboard. For further information see OPERATIONS: EDITING: EDITING FUNCTIONS: COPY and OPERATIONS: EDITING: EDITING FUNCTIONS: CUT.

- **PASTE (LISTEN)**

    The **PASTE** function places a copy of the audio currently stored on the clipboard into the project at the specified paste point. See OPERATIONS: EDITING: EDITING FUNCTIONS: PASTE for details.

    The shifted function **LISTEN** lets you audition the audio currently stored on the clipboard. For details see OPERATIONS: EDITING: EDITING FUNCTIONS: LISTEN

- **GAIN / FADE**

    This key provides a shortcut to the **GAIN/FADE** edit menu. For details on **GAIN/FADE** operations please refer to OPERATIONS: EDITING: EDITING FUNCTIONS: GAIN/ FADE.
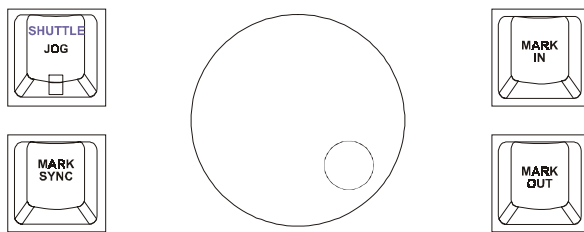
- **JOG (SHUTTLE)**

    This key engages the **JOG** function and allows you to scrub an edit point using the **Jog/Shuttle wheel**. The shifted **SHUTTLE** function initiates playback with variable speed in either forward and reverse. The Jog/Shuttle wheel dynamically controls playback speed and direction.

- **MARK SYNC**

    The **MARK SYNC** key places a special sync marker in a region defined by the **MARK IN** and **MARK OUT** points. See OPERATIONS: EDITING: MARKING A TIME REGION for more information.

- **MARK IN**

    This key is used to define the starting point of a track-region. See OPERATIONS: EDITING: MARKING A TIME REGION for details.

- **MARK OUT**

    MARK OUT defines the end point of a track-region. See OPERATIONS: EDITING: MARKING A TIME REGION for further information.

ARROW KEYS

The arrow keys are multi-function keys that have many uses depending on the current context.
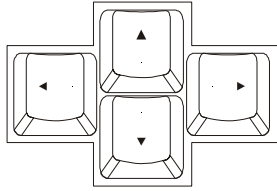
Uses include:

- Menu and dialog navigation (all arrow keys).

- Value increment and decrement (up and down arrow keys).

- Sub-frame positional nudge in Jog mode (left and right arrow keys).

- Locate to `MARK IN` and `MARK OUT` in transport mode (left and right arrow keys).

- Audition current `MARK IN` - `MARK OUT` region (down arrow key).

- Display remaining recording time (left and right arrow keys simultaneously).

TRANSPORT KEYS

The transport keys also have special alternate functions including:

- `RECALL LOC + REWIND` locates to the very beginning of recorded audio in a project.

- `RECALL LOC + FAST-FORWARD` locates to the very end of recorded audio in a project.

- Pressing the `REWIND` or `FAST-FORWARD` key twice in rapid succession engages `SUPER FAST-WIND MODE`.

- When in `HELP` mode, the transport keys are used to navigate the PDF viewer.

SC Keycap Layout
RADAR 24 Version 3.10
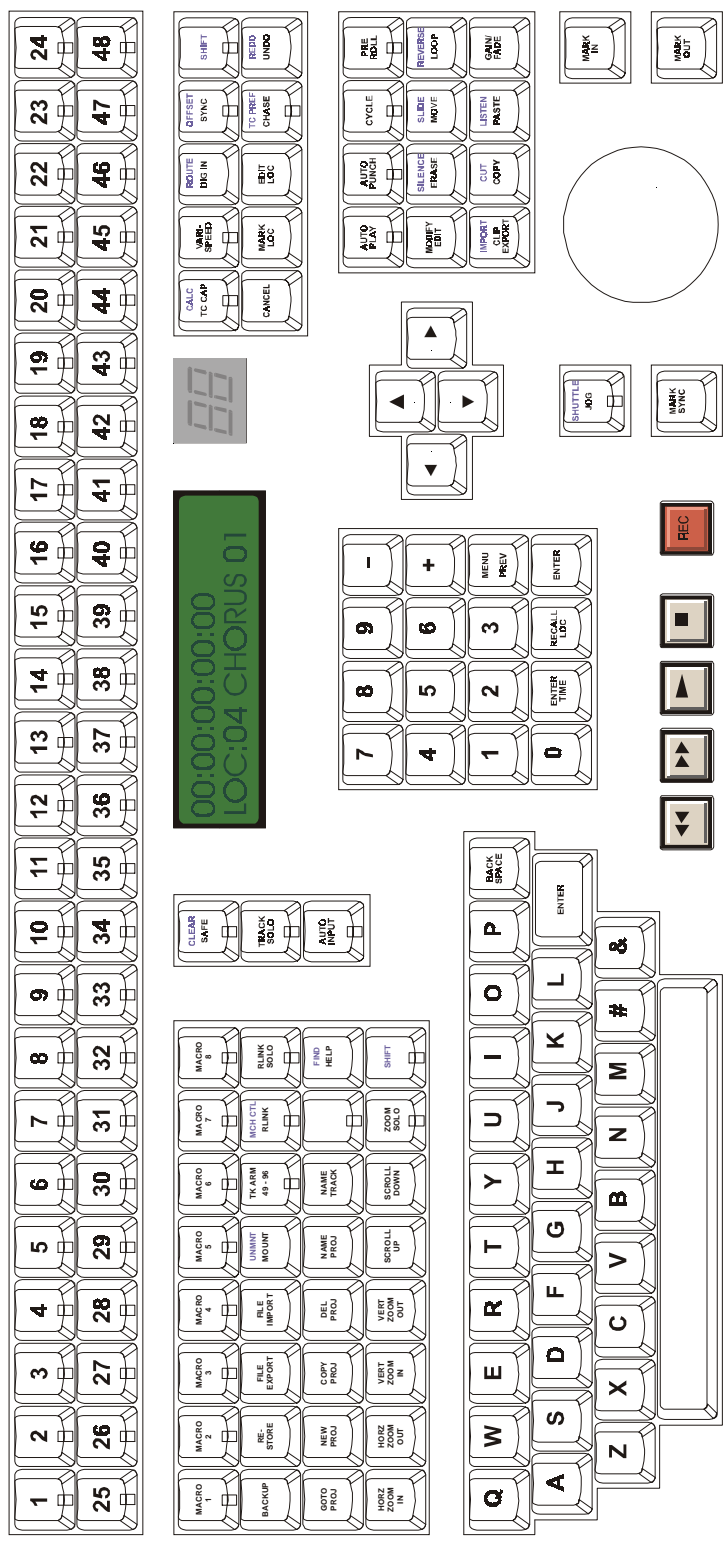
The **KC-24** is a full-featured control surface that is included with RADAR®24 units sold without the optional **Session Controller**. The following section gives an overview of the **KC-24** and provides references to related functions in the manual.

Note: The KC-24 or a standard PC keyboard may be required for certain RADAR®24 diagnostic procedures.

Note: Certain functions like `ZOOM SOLO` *are not available using the KC-24.*

TRACK ARMING

These keys perform two basic functions:

- **TRACK ARMING**

  These keys provide up to 24 tracks of direct track arming when used in conjunction with the `TRACK ARM 13-24` key.

- **TRACK SELECTION**

  These keys are also used to select individual tracks when editing, exporting, soloing etc.

Refer to OPERATIONS: RECORDING: MONITORING AND TRACK STATUS for more information.

TRANSPORT CONTROLS

Standard transport controls are provided: `REWIND, FAST-FORWARD, PLAY, STOP,` and `RECORD`. Also included is the key labeled `REH`, which is the rehearse key. This is effectively a practice record button, switching between playback and input monitoring without actually entering record mode. Although the `REH` key is provided this feature has not yet been implemented in software.

The `JOG` key is at the top of the numeric pad. Once you press `JOG`, you may use the right and left cursor keys to scrub the audio. If a mouse is attached to the rear of the RADAR®24, the mouse can be used as an alternative method for scrubbing audio. The `SHUTTLE` key has not yet been implemented on the **KC-24**.

See OPERATIONS: TRANSPORT OPERATIONS for details.

EDITING KEYS

Quick access keys are provided for the most commonly used editing functions including:

- **UNDO**

- **CUT**

- **COPY**

- **PASTE**

- **MOVE**

- **ERASE**

- **SLIDE**

- **LOOP**

- **MODIFY EDIT**

Please see OPERATIONS: EDITING for information on using these editing features.

MENU / PREV KEY

On the top, left hand side of the **KC-24** is the MENU/PREV key. This key accesses the RADAR®24 menu system. Pressing this key either enters the menu system, steps back to the previous menu level or exits the menu system completely depending on the current mode of operation. Refer to OPERATIONS: NAVIGATING MENUS: MENU/PREV for more information.

LOCATE / TRANSPORT FUNCTION KEYS

This key grouping is located above the arrow keys and contains the following keys:

- **AUTO PLAY**

- **AUTO PUNCH**

- **MARK IN**

- **MARK OUT**

- **PRE ROLL**

- **CYCLE**

The MARK IN and MARK OUT keys allow you to specify the start and end of a region for editing. These points also serve as in and out points for the AUTO PUNCH feature. Please see OPERATIONS: TRANSPORT OPERATIONS for more details.

QUICK ACCESS AND UTILITY KEYS

Several keys on the KC-24 provide one touch access to frequently accessed menu functions. These include:

- **VARI-SPEED**

- **CHASE**

- **MARK LOC**

- **GO TO PROJECT**

- **TRACK SOLO**

- **RECALL LOC**

- **SYNC**

- **EDIT LOC**

- **BACK UP**

- **SAFE (CLEAR)**

- **AUTO INPUT**

Please refer to REFERENCE: REMOTE KEYBOARD KEYS: SESSION CONTROLLER for details on using these functions.

QWERTY KEYS AND NUMERIC KEYPAD

The QWERTY keys are used to enter names and values into the system. Please note that keys in use as transport or custom controls will not work like their counterparts on a conventional keyboard. You must use the SPACE and SHIFT keys provided on the right hand side of the keyboard.

The Numeric keypad is used to enter values and to recall locate points in the project.

ZOOM/SCROLL FUNCTIONS

On the KC-24 there aren't dedicated zoom or scroll keys. The following key combinations are used instead:

- Zoom in or out horizontally by pressing and holding the z key and pressing either + or –.

- Zoom in or out vertically by pressing and holding the v key and pressing either + or –.

- Scroll up or down by pressing and holding the v key and pressing the up or down arrow key.

Index

Notes