

# GENERAL INSTRUCTIONS

This section contains description of the general functions and procedures for the mainframe, no matter what hardware or software configuration you have. As the user interface is the same for all algorithms installed the global parameters are described in this section. The section contains the following text modules:

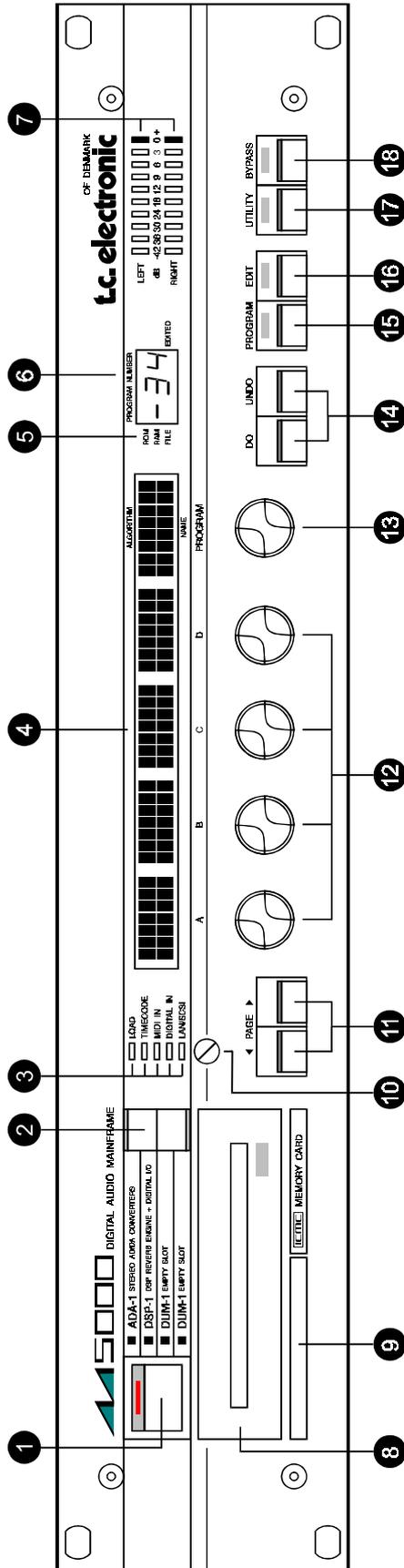
- FRONT/BACK PANEL DESCRIPTION
- PROGRAM HANDLING
- DISK/CARD HANDLING
- UTILITY HANDLING

# GENERAL INSTRUCTIONS

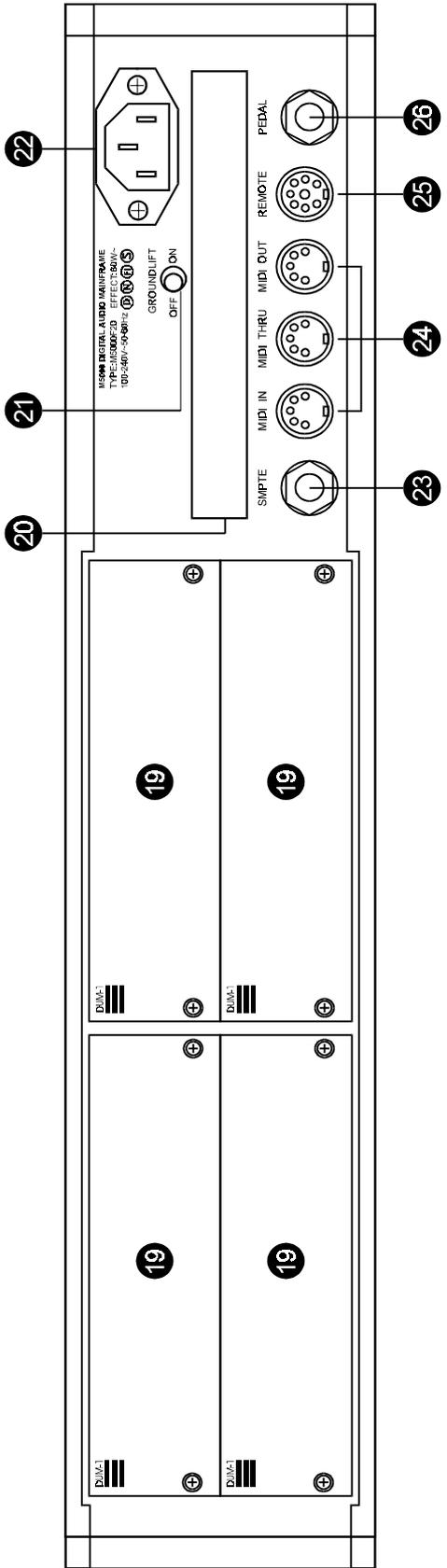
## FRONT PANEL

**M5000**

- 1. POWER SWITCH** The main power On/Off switch.
- 2. DEVICE SELECTOR** Selects between the installed kits to be operated from the mainframe front panel controls. The LED's and labels correspond to the configured kits.
- 3. LOAD LED** Lit while parameters/programs are being updated  
**TIMECODE LED** Lit when receiving timecode  
**MIDI IN LED** Lit when receiving MIDI  
**DIGITAL IN** Lit when receiving at digital inputs and SAMRATE is locked  
**LAN/SCSI** Lit when reading and writing data
- 4. DISPLAY** 80 character alphanumeric display. The top line is divided into 5 sections and tells which 4 parameters and which algorithm is currently being modified. The bottom line is dedicated to the five "soft dials" that are directly below it and displays the 4 parameter values and the program name.
- 5. ROM, RAM, FILE** ROM indicates that the factory program bank is selected for RECALL, STORE or PREVIEW. RAM indicates that the user program bank is selected. FILE indicates that programs relate to an external file on memory card or floppy disk.
- 6. PROGRAM NUMBER** Shows either the origin of the current setting or, if blinking, the current previewed program. If the current setting has been edited the small EDITED LED will be lit.
- 7. LEVEL METER** Dual 10 segment LED bargraph. Displays the input or output level on the DSP-module. Red light indicates **DSP** overload.
- 8. DISK DRIVE** Disk drive for updating software and storage of programs. The M5000 can be updated with new algorithms through the disk drive.



- 9. MEMORY CARD SLOT** Load and stores programs into the M5000. Makes transfer of "personal" programs from one M5000 to another very easy by means of the "credit card"-like memory card.
- 10. VIEWING ANGLE** Makes the alphanumeric display readable at almost any angle.
- 11. PAGE BUTTONS** As there are more parameters to edit than possible to show at the same time the page buttons scrolls through the parameters on the display.
- 12. SOFT DIALS A, B, C, D** Used for editing the parameter values on the display just above.
- 13. PROGRAM DIAL** Turn this dial to preview the programs. Also used when recalling, storing and renaming programs. The top line on the display shows the current algorithm type. The bottom line shows the name of the program.
- 14. DO, UNDO BUTTONS** When operating the M5000 many functions will not be executed until DO is pressed, e.g. turning the program dial will not execute the program until DO is pressed. The UNDO button enables you to compare edited program with the original.
- 15. PROGRAM BUTTON** Press this button to select program source, store or rename programs.
- 16. EDIT BUTTON** Press this button to edit the parameters in the current program. As soon as a stored program is edited the small 'edited' LED in the program number display will be lit until it is stored again.
- 17. UTILITY BUTTON** The UTILITY mode enables the user to access various utility menus for setting the selected kit.
- 18. BYPASS BUTTON** Press this button to bypass the current kit controlled by the mainframe, corresponding to the selected devices (2).

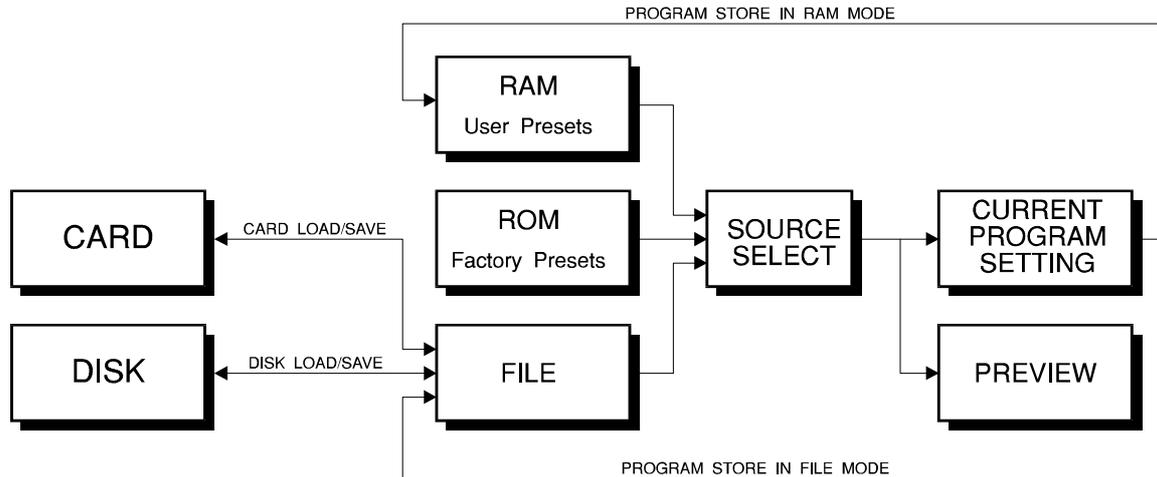


GEN. INSTR.  
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- 19. MODULE SLOTS** This is where the M5000 module cards are installed. With four module slots the M5000 frame can house for example 4 full stereo reverbs modules with digital I/Os.
- 20. OPTION** Future OPTION such as SCSI, PCMCIA and other future expansions may be configured to this port.
- 21. GROUNDLIFT** In position OFF : Direct connection from internal ground to chassis. In position ON : Internal ground connection to chassis through a capacitor. Also called 'flying chassis'.
- 22. AC CONNECTOR** Connector for AC power cord. 3 prong IEC type. The center post is chassis ground. Input voltage : 100-240 Vac, 50-60 Hz.
- 23. SMPTE INPUT** Enables the M5000 to make program changes and other pre-programmed functions as it is synchronized to timecode. Refer to the "MIDI & SMPTE" section for more information.
- 24. MIDI CONNECTORS** MIDI data can be read and generated from these connectors. MIDI THRU sends a duplicate copy of the data received at MIDI IN.
- 25. REMOTE** Connects to the ATAC remote controller. The port communicates with the remote through bi-directional serial data transmission.
- 26. PEDAL CONNECTOR** Used for a simple external switch. The function of the switch will be programmable.

## Concept

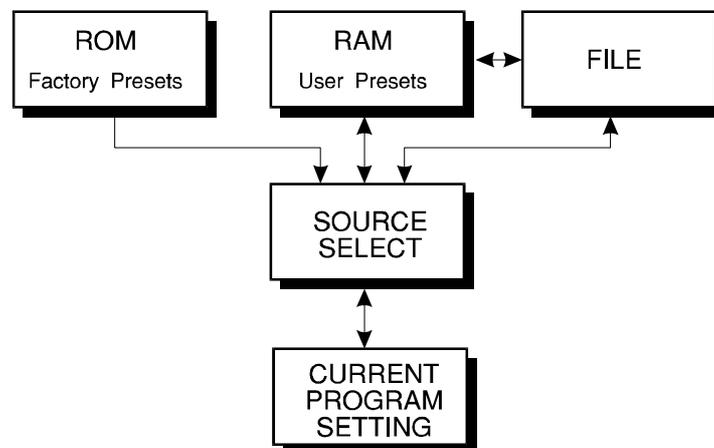
The M5000 handles 3 different program sources: ROM, RAM and FILE (fig. 1).



*Fig. 1*

- ROM** In ROM (Read Only Memory) you will find the factory programs. Along with the basic operating software there are factory programs implemented and they can not be overwritten, i.e. programs can not be stored back in ROM. The factory programs will increase as TC DSP programmers are continuously working on new programs. In the future these programs will be available either **free of charge** or for a moderate fee.
- RAM** In RAM (Random Access Memory) you are able to store an edited program, i.e. here you will find the so-called user programs. This is also where you can build up your own bank of maximum 100 user programs for instant recall. A long life lithium battery keeps these programs in RAM after power down.
- FILE** The FILE buffer is where programs are loaded from and stored to external devices. External devices can be either floppy disk or memory card. As in RAM the programs loaded into the FILE buffer can be recalled, edited and then stored again. One main difference from RAM is that programs in the FILE buffer are **not backed** up by battery and therefore will be lost after a power down. Before power down the FILE buffer **must be saved** to either floppy disk or memory card if you want to keep your presets. You may also copy the FILE buffer in to RAM, overwriting the existing presets.

When a program is recalled - either selected from ROM, RAM or FILE with the source selector (16A, in program mode) - it is **copied** in to a working memory. Here a program can be edited and it is referred to as the "current setting". This means that it is the current program setting, which is displayed on the alpha-numeric display (4). The current setting is - as RAM - also backed up by battery and will remain in working memory after power down. A small LED in front of the program number in the PROGRAM NUMBER display (6) will indicate where the current program is copied from. As soon as the current setting is edited the small EDITED LED in the PROGRAM NUMBER display (6) will light up. When you wish to store the new edited program you have different options to choose from. You can store it in RAM or FILE and overwrite the original recalled program or you can rename it - creating a new program. Storage means that the current setting in the working memory is copied into either RAM or FILE buffer. All programs can instantly be copied to and from RAM and FILE buffer (fig. 2).



*Fig. 2*

The purpose of the FILE buffer is that it enables a freelance engineer to bring his own programs on a floppy disk or his "personal" memory card and load them into the FILE buffer without overwriting the M5000's existing RAM programs. He will always know exactly what he is working with as he is familiar with his own programs and doesn't have to look for appropriate programs in RAM. Another use is to stack user modified programs in the FILE buffer for certain recording projects and then save it on a disk dedicated to the specific project. The disk can then be stored with the multitrack tape, sequence disk etc. For a later remix situation the programs can instantly be recalled along with the dedicated sequencer song and sample library.

## PROGRAM PARAMETERS:

Pressing the PROGRAM button (15) makes the following parameters appear on the display (4):

## PAGE 1 PARAMETERS: RECALL AND STORAGE OF PROGRAMS

<u>CONTROL</u>	<u>TOP LINE</u>	<u>BOTTOM LINE</u>	<u>DEF. VALUE</u>
SOFT DIAL A:	SOURCE SELECTOR	ROM, RAM, FILE	ROM
SOFT DIAL D:	MODE	RECALL, STORE	RECALL
PROGRAM DIAL:	ALGORITHM NAME	PROGRAM NAME	-

## PAGE 2 PARAMETERS: CREATE AND RENAME PROGRAM

On the bottom line - over the PROGRAM DIAL (13) - the name of the last recalled program is displayed. If the EDITED LED in PROGRAM NUMBER display (6) is lit this program has been edited and is altered from the original. The edited program can be stored as it is, overwriting the original program under the same name, or stored in another program location in either RAM or FILE. The program can be renamed on page 2. The name of the current program is changed (in either RAM or FILE), not only the name of the current setting. The procedure will not affect the sound.

On the top line the original program name is displayed with a cursor under the first character - ready for editing.

SOFT DIAL A:	CURSOR	Moves the cursor forward or backwards through the name. The name can have a maximum of 8 characters.
SOFT DIAL B:	LETTERS	Selects a letter from A to z and inserts it in the name over the cursor.
SOFT DIAL C:	FIGURES	As letters but numerical from 0 to 9.
SOFT DIAL D:	SYMBOLS	Inserts symbols instead of characters, e.g. blank or space is a symbol found here.
PROGRAM DIAL:	PROGRAM NAME	Shows the original program name. (Press DO to confirm program change/rename)

## PAGE 3 PARAMETERS: FILE BUFFER HANDLING

Before any FILE buffer handling is possible one must be created. On page 3, turn soft dial A until "New" occurs. Press the DO button and you have created an empty FILE buffer. You can also simply go directly to Load either Disk or Card. The following parameters are accessible with soft dial A after a File buffer has been created:

<b>New</b>	Creates a new FILE buffer.
<b>Ram To File</b>	Copies all RAM programs to FILE buffer.

<b>Load Disk</b>	Loads programs from floppy disk into the FILE buffer.
<b>Load Card</b>	Loads programs from memory card into the FILE buffer.
<b>Save Disk, Save Card</b>	Saves existing programs in FILE buffer on either floppy disk or memory card. Press DO and a new page will appear. It enables you to create or rename a file. File names are edited as program names. Program dial selects the saving destination, i.e. floppy disk or memory card.
<b>File To Ram</b>	Copies the whole FILE buffer to RAM. Existing RAM programs will be overwritten. Confirm by pressing the DO button.

### **COMPARE A PROGRAM (UNDO-button)**

In order to be able to compare program changes to the original program TC has implemented this A/B-test feature. As mentioned before once the current program setting has been changed from the original program, the small EDITED-LED in the PROGRAM NUMBER display will lit. By pressing the DO-button once, the original program will be loaded again and the EDITED-LED is off. Press the UNDO-button and the previous changed setting is recovered. Switch between original and changed program settings by pressing respectively DO- and the UNDO-button.

The following parameters appears when pressing the UTILITY button (17). The PROGRAM dial (13) selects the menus.

PROGRAM DIAL:           **MENU**                    I/O, G-LEVELS, MIDI, METERS, FILE,  
 PEDAL, ATAC SETUP, CONFIG and SMPTE.

## I/O MENU:

### PAGE 1:

SOFT DIAL A:                **I/O**                                Selects different input and output configurations.  
 See the following examples:

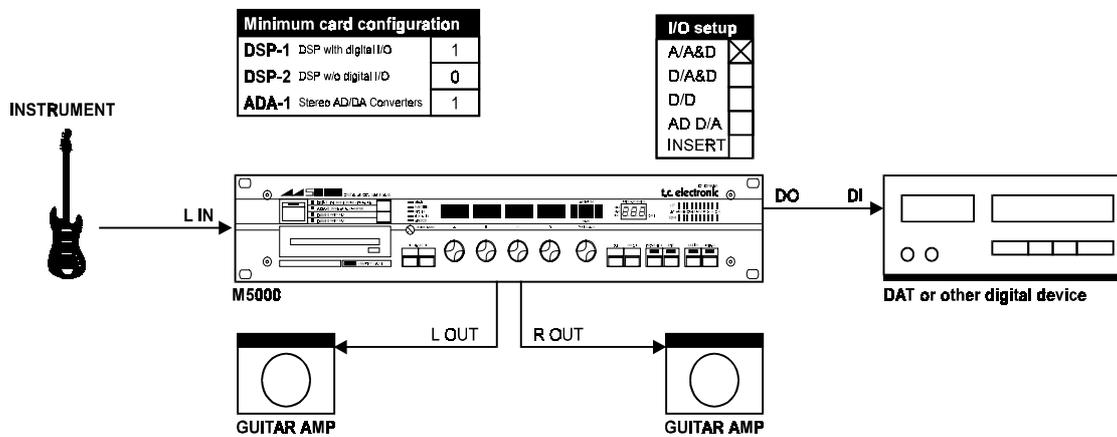


FIG. 1. A/A&D: Analog input and both analog and digital output.

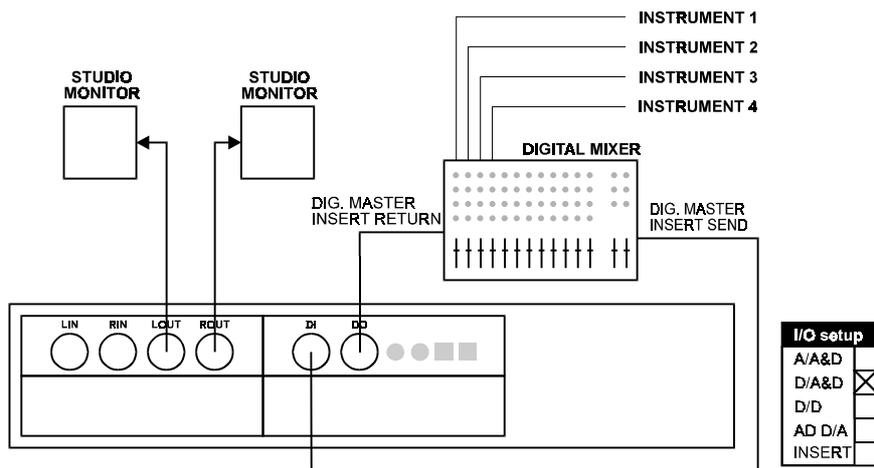


FIG. 2. D/A&D: Digital input and both analog and digital output.

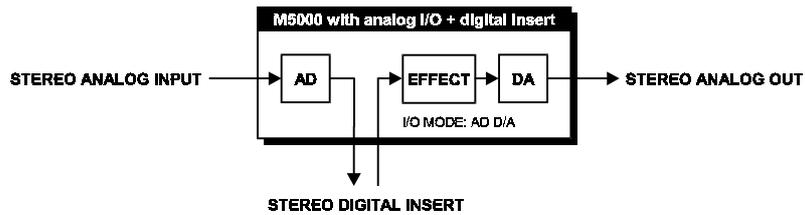


FIG. 3. AD D/A: Analog in and unprocessed digital out simultaneously with digital in and processed signal analog out.

This may be used as a converter mode, where you convert from A to D (**unprocessed** digital out) and also from D to A (analog **processed** signal out) simultaneously and independent. You can use this mode for various purposes. An example is to use the M5000 as an AD converter and connect the house clock to the digital input on the M5000. Another possibility is to use more than one DSP-1 in a serial connection (FIG. 4).

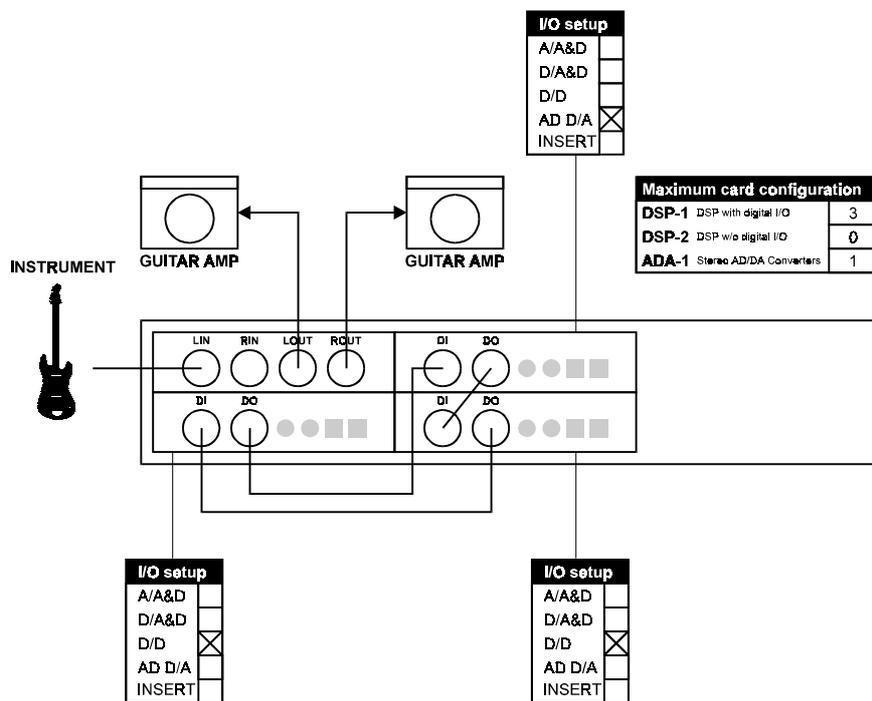


FIG. 4. M5000 as a multieffect unit.

Another example is if you work with a digital storing media and want to record a guitar while you are listening to some other tracks and also on the same time want reverb on these tracks. You can then connect your guitar setup to the analog input on the M5000. From the digital output you connect to the digital input on your DAT/ hard disk (FIG. 5).

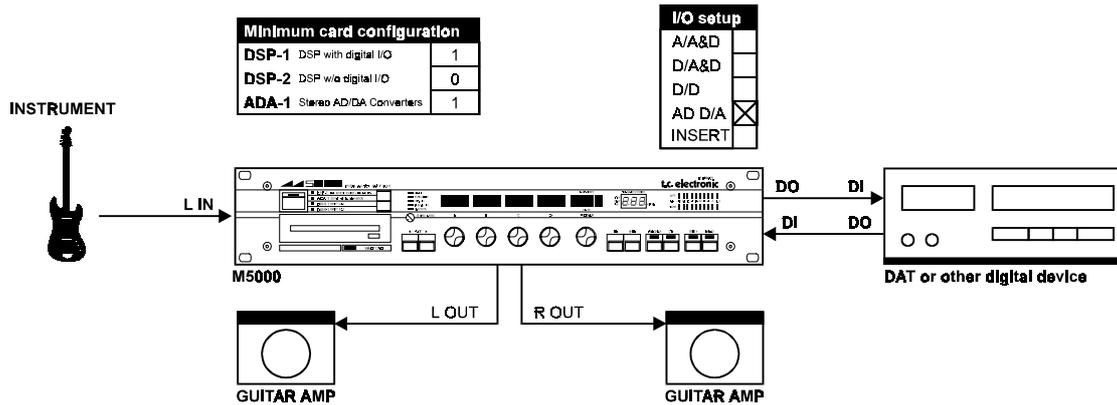


FIG. 5. Digital storing media for instruments.

The guitar signal will be converted for storing on your DAT. At the same time the M5000 can process and convert the tracks selected from your DAT from digital to analog. (You have to connect the digital out from your DAT to the digital in on your M5000).

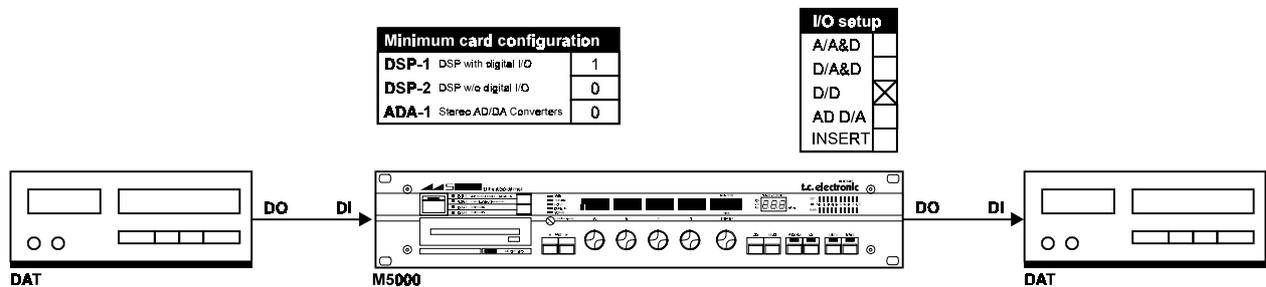


FIG. 6 D/D: Digital input and digital output.

In this mode the M5000 works locally on the DSP-1 card and therefore does not use the bus, which means that you can use a different clock than the one the bus is using.

## INSERT

In the TOOLBOX™ algorithm you have the opportunity to insert a second DSP engine internally in the M5000 frame in order to have 2 DSP engines connected into one system (see TOOLBOX™ algorithm description in the BASIC ALGORITHM section). When you are running the TOOLBOX™ on one DSP you can for example run the DYNAMIC1 algorithm on a second DSP engine. The I/O mode on the DSP engine that runs the TOOLBOX™ can be set as normal (see the above options). The second DSP **must be set to INSERT** in order for the DSP to know where to get its signal.

**SOFT DIAL B: M-CLOCK**

Selection of the master clock. Determines the working speed on the bus. This also means that it is a global parameter that works for all the devices mounted in the frame, except for the devices set to D/D I/O. These devices work locally and can have a work clock different to the one used by the bus.

M5K44.1 &  
M5K48.0

This selects the clock that the M5000 works with internally. This clock also functions as the house clock in a digital system (this is of course only if you have DSP-1 with digital I/O.) E.g. if you are working with a system that does not generate a master clock - use either the M5K44.1 or the M5K48.0 setting to make the M5000 generate one of these clocks (44.1 KHz. or 48.0 KHz.) to use as the house clock in your system.

DIN-1, DIN-2,  
DIN-3, DIN-4

The M5000 locks on the sample rate from the signal received in either digital input number 1, 2, 3 or 4 according to your selection. DIN-1 corresponds to digital input no. one, DIN-2 to digital input no. 2 and so on. The numbers available depend on the amount of DSP-1s mounted in the frame. If you have one DSP-1 card in your frame you can only select the DIN-1 setting.

**SOFT DIAL C: SAMRATE**

NONE,  
32.0 (LCL)  
44.1 (LCL)  
48.0 (LCD)

This is a read only indicator. It means that you can not change anything, but only read the sample rate on the display.

This indicator shows the sample rate for the device you have selected to operate. (LCL) after the number means that the device is operating locally and has no contact with the bus (only possible in D/D mode). If the device selected needs to work with the bus (all I/O settings except D/D) the number will correspond to the master clock in the M5000.

**SOFT DIAL D: SOURCE STEREO, LEFT, RIGHT, MONO**

Input source. Selects between a stereo or mono input signal.

**PAGE 2:**

**SOFT DIAL A: DO-TYPE\* S/PDIF, AES/EBU**

Determines the digital out type, regardless of the input source used.

**SOFT DIAL B: DO-CPY\* on, off**

Copy protection on/off. The M5000 can remove the copy prohibit bit that is present in the S/PDIF format (DO-CPY=**on**). This means that you can edit your DAT recordings in the S/PDIF format more than once. If DO-copy is **off** the M5000 adds the copy prohibit bit to the digital output.

\* Has no influence if DSP-2 is installed.

## G-LEVELS MENU:

When an ADA-1 is installed in the M5000, audio levels must be adjusted in order to get a clean distortion-free sound. Once analog inputs and outputs are connected, levels can be set. The output level can be adjusted to provide levels that matches your console or other audio system. Once a digital signal has been recorded it is often hard to adjust the digital level. In this menu it is possible to attenuate the digital signal, digital gain is available only in the optional MD2 algorithm.

### PAGE 1:

SOFT DIAL A:	<b>A-IN</b>	-12 dB to +12 dB	Sets analog input level.
SOFT DIAL B:	<b>A-OUT</b>	-18 dB to +12 dB	Sets analog output level.
SOFT DIAL C:	<b>D-IN</b>	off - 0.0 dB	Digital attenuation.
SOFT DIAL D:	<b>MIXMODE</b>	WET+DRY, WET=MAX and WET=MIX	

As all factory programs are programmed with a mixed signal between dry and wet signal for musical instruments (WET+DRY) TC has implemented this feature. When MIXMODE is set to WET=MAX, it automatically sets the mix level on 100 % meaning that no dry signal is coming through to the effect output. Set MIXMODE **WET=MAX** and all direct signals are "killed" regardless of preset mix settings. This application simplifies the use of the M5000 when it is used with mixing consoles. WET=MIX means that the dry signal is killed, but the programmed MIX percentage remains unchanged from the original.

### PAGE 2:

DA-DEMP	none, 48KHz, 44.1KHz, 32KHz	Digital to analog de-emphasis. If you need to deemphase a pre-emphased signal, choose the proper samplerate.
ABSPHAS	neg, pos	With this parameter the absolute phase of the output signals can be inverted. It affects both the analog and digital output signals.
R68-LEV	off, on	When set to <b>on</b> the headroom on analog inputs and outputs are changed to 18 dB according to the EBU TECHNICAL RECOMMENDATION R68-1992.
FST.TRG	off, on	When fast trigger chip is mounted this should be set to <b>on</b> .

## MIDI MENU:

For more information about the MIDI menu, please refer to the text module "INTRODUCTION TO MIDI OPERATION" in the MIDI & SMPTE section.

## METERS MENU:

Turning the PROGRAM dial to the METERS menu enables you to choose whether you want the meter to display digital input or digital output level. Note that the meters (7) **always** displays the digital levels (in/out of the DSP module). Set the input level so that the green -3 dB LED on each channel just flickers at peak levels. The red 0 dB LED will light up when DSP input is overloaded - even if output level meter is selected.

## FILE MENU:

When storing programs on either floppy disk or memory card eventually the disk or card will be full. In the FILE MENU it is possible to view and erase files stored on either disk or memory card.

Entering the FILE MENU the display will show <<FILE      PRESS DO>>. Use soft dial A and press DO to select the following functions:

CARD    DIRECTORY	Scrolls through the files on the PCMCIA memory card. Views not only program files but also application software files. Press DO or UNDO to return.
CARD    DELETE FILE	Scrolls through the files on memory card. Views all files placed on the card. Press DO to erase selected file or UNDO to abort this function. Confirm by pressing DO a second time or press UNDO again to cancel.
CARD    FORMAT	Memory card formatting. Press DO and select card size with soft dial A. Confirm by pressing DO once again.
DISK    DIRECTORY	Scrolls through the files on disk. Views not only program files but also application software files. Press DO or UNDO to return.
DISK    DELETE FILE	Scrolls through the files on disk. Views all files placed on the disk. Press DO to erase selected file or UNDO to abort this function. Confirm by pressing DO a second time or press UNDO again to cancel.
DISK    FORMAT	Disk formatting. Press DO and select disk size with soft dial A. Confirm by pressing DO a second time or press UNDO again to cancel.

## PEDAL MENU:

It is possible to remote bypass the M5000 with an external switch. Connect your pedal/switch to the pedal connector (26) and use the soft dial A to configure the M5000 to your switch.

SOFT DIAL A:                    **NONE, BYPASS WHEN TOGGLE, BYPASS WHEN PUSHED, BYPASS WHEN RELEASED.**

## CONFIGURATION MENU:

Use DIAL A to select the different options:

### SHOW CONFIG (Press DO):

This menu shows (read only) the module configuration for the selected device, the size of the index ram (**IDX=**), and the size of the **DRAM** (extra memory for sampling).

<b>IDX=</b>	The index ram can be either 32K (standard) or 64 K. If you mount a HIMEM kit (64K) it will give your DSP card more memory, thus providing longer delay / pre delay times in some of the algorithms. Exactly where and how much is described under the respective algorithms.
<b>DRAM</b>	Shows how much dynamic RAM (for sampling) is mounted.

### M5000 OPTION (Press DO to view):

Dialing forward you will find all the options available using this software version. If the option you selected is not installed, the display will appear as follows:

OPTION	TIME	LEVEL
(Option name)	--	off

Beneath 'OPTION' you see the option names. These options can be installed in 2 ways; PERMANENTLY or TEMPORARY, i.e. for a limited number of hours. All options purchased are of course installed permanently, but we invite you to **try an option free of charge** for a limited time period, usually 100 hours. The installation procedure is described in CONFIGURATION section, OPTION INSTALLATION. Please refer to this text module for information about **how to order a temporary demo option**. The LEVEL parameter describes how many DSP cards in the frame that can run the option simultaneously.

On temporary installations 'TIME' describes the number of hours the option is still available. On permanently (purchased) installed options the time limit will of course be '**forever**'.

### SMPTE MENU:

For more information about the SMPTE menu, please refer to the text module "SMPTE OPERATION" in the MIDI & SMPTE section.