

# CONFIGURATION

This section contains text modules concerning configuring either software or hardware applications. When software is released or a new module card is purchased, refer to this section in order to install it properly. The section contains the following text modules:

- ✓ M5000 APPLICATIONS
- ✓ SOFTWARE INSTALLATION
- ✓ HARDWARE INSTALLATION
- ✓ OPTION INSTALLATION
- ✓ HIGH MEMORY OPTION
- ✓ SIMM PACK INSTALLATION

# MULTIPLE ATAC/M5000/M5000X SETUP

The ATAC-remote system is capable of controlling multiple M5000/X main frames. The link that enables the data communication is the **TC DUAL RS485 INTERFACE for M5000/X**, also referred to as the **MULTAC**, and the proprietary **TC Network Protocol**. The RS485 INTERFACE and a connection example is illustrated below:

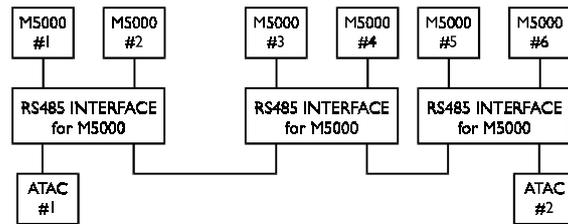
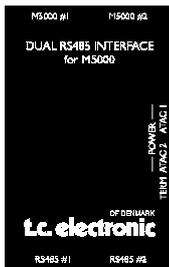


Fig.1

Fig.2

With one RS485 INTERFACE (MULTAC) you are able to connect one or two M5000/X frames. The M5000/X's are to be connected to the M5000/X #1 and #2 plugs (Fig.1).

The RS485 plugs each connect to either one ATAC or is used to loop on to the next MULTAC box (Fig.2). Additionally, you are able to connect two ATACs using both RS485 sockets.

When connecting two ATACs, in a multiple M5000/X/ATAC setup, you gain the advantage that two users can communicate simultaneously. Please note that two users cannot access the same mainframe at once.

The MULTAC also has DC plug connections for the ATAC power supplies.

## Cables:

You may substitute the cable, connecting the ATAC to the MULTAC, with a "MIDI Plus" cables (5 pins with shield).

A 7 pin cable with shield must be used when connecting the M5000/X with the MULTAC.

Note: To ensure a safe data transferal, please follow the cable length requirements stated below:

1. When only ONE M5000X is connected use max. 10m/33ft of remote cable.
2. In a MULTIPLE M5000/X/ATAC setup, lengths of the cables connecting the ATAC to the MULTAC can be extended to 100m/328ft. Maximum lengths may not exceed 100 meters/328 ft.

Here is the procedure for updating the application software in the M5000. You need to get to the special M5000 Setup Utility menu to accomplish this.

1. Turn the power off the M5000.
2. Press the BYPASS button (**22**) while switching power on again. Hold it for a few seconds. The **M5000 Setup Utility Menu** will appear.
3. With the PROGRAM DIAL (**17**) you choose the appropriate option:

**LOAD DISK/CARD** When DO is pressed the directory of the inserted floppy disk or memory card will appear. Scroll through the files with PROGRAM DIAL. Select the file by pressing DO and confirm the choice by pressing DO again. Software from floppy disk or memory card will be loaded. The UNDO button works as a cancel button and returns you to the Setup Menu.

**SAVE DISK/CARD** Saves the application software to a formatted floppy disk or memory card. By pressing DO you enter the name menu which enables you to give the application software a file name on the disk/card. On the top line a file 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.

(Press DO to confirm file name.)

**LOAD MIDI** Enables you to receive software updates from another M5000 (See SAVE MIDI) or you can use TC's M5DUMP software package which enables you to dump software to the M5000 via an IBM<sup>™</sup> compatible PC with a MIDI interface installed. This package is available from TC's bulletin board free of charge for M5000 USER CLUB members and instructions are implemented with the program.

**SAVE MIDI**

Enables you to dump the software from one M5000 to another. Connect this (master) M5000's MIDI out to another (slave) M5000's MIDI in. Select 'SAVE MIDI' in order to transmit. The Slave M5000 must be set at 'LOAD MIDI'. Press DO at the master first and then press DO at the slave. An ERROR detector will inform you if any errors arises during MIDI dump. If any errors are detected it is recommended that you repeat the procedure. It is of course also possible to save the application software over MIDI to an IBM™ compatible PC if you haven't a floppy disk instal-led.

**SERIAL #**

Read Only parameter. Shows the topical serial number of the M5000 and the BIOS version no. If the FLASH EPROM is a 2 Megabit size it is also shown here. If not - it is a 1 Megabit.

**FORMAT CARD**

Formats a never used memory card or erases the existing files. Insert the unformatted card or a card you want to erase that supports the JEIDA PCMCIA standard. A 64 Kb memory card will be able to hold over 2000 programs. Press DO and the display will tell you that all data will be erased on the card. Confirm by pressing DO or abort by pressing UNDO.

**FORMAT DISK**

Formats a floppy disk with the IBM™ compatible format. After format there will be 1.44 MB available on disk. This means that if the application software is stored on disk there are room for over 50,000 programs. Press DO and the display will tell you that all data will be erased on the floppy disk. Confirm by pressing DO or abort by pressing UNDO.

When the time comes when you want to upgrade your M5000 with additional modules in order to run more than one effect simultaneously, the procedure is as follows:

1. Switch the machine OFF and disconnect the main power cord.
2. Remove the DUM-1 option plate(s) or module by loosening the 2 screws.

As the M5000 modules are sensitive to static electricity, certain precautions must be taken to protect them from damage during storage and handling.

## **STORAGE**

Non-mounted modules should always be stored in anti-static shielding bags.

## **GENERAL HANDLING**

When inserting or removing any modules, avoid touching the circuit board by handling only the rear panel of the module. Modules should always be placed in either an M5000 or in a shielding bag. To minimize the static potentials that can cause damage to the electronic circuits, you should observe precautionary grounding techniques such as touching a grounded M5000 Audio Frame immediately before inserting modules.

## **REMOVING MODULES**

Before removing any module from your M5000, switch off the power and unplug the main power cable. Unplug all other connections from the module before unscrewing the two screws securing the module in the Mainframe. When removing a module from an M5000, the module should be mounted directly in another M5000 or placed in an anti-static shielding bag.

## **MOUNTING MODULES**

Before mounting modules in your M5000, switch off the power and unplug the main power cable. Remove the dummy-panel or original module from the slot where you want to install the module. The module should then be removed from the shielding bag and mounted directly in the M5000 Audio Mainframe by handling the rear panel of the module only. Avoid touching any components on the PCB-Board.

3. Set the DIP-switches on the module cards as shown below.

	Dip 1	Dip 2	Dip 3	Dip 4	Addr.
1. DSP	off	off	off	off	0
2. DSP	off	on	off	off	2
3. DSP	off	off	on	off	4
4. DSP	off	on	on	off	6

	Dip 1	Dip 2	Dip 3	Dip 4	Addr.
1. ADDA	on	off	off	off	1
2. ADDA	on	on	off	off	3

4. Insert the module as shown in figure 1 below.



*fig. 1*

**AD/DA cards are always mounted as far away as possible from the power supply!**

The module cards will fit in the module guides inside the M5000 frame. **It is important that the modules are mounted correctly in these blue guides** to ensure proper connection to the buss. It is recommended that you use a powerful light source in order to see properly inside the frame. Improper connection may cause serious damage to the modules.

- Fasten the module with the two screws and connect the cables.
- The module cards will be initialized during the next power up.
- If there are problems e.g. the cards are not recognized by the M5000 frame, please check once again - especially the address settings.

In Appendix C you can find a self-test procedure to see if the M5000 has found the cards at the proper addresses and if the M5000 is working alright.

You have the facility to try the newest options within a certain time limit (normally 100 hours). First of all you need to install the new application software which is described in the 'SOFTWARE INSTALLATION' module in this section.

The option you want to install is in fact already in the M5000. However, a 20 character license code and an 8 character subcode are needed to access the option. This is done by writing a code in the M5000 generated only by TC Electronic. The code is based on a set of parameters you must know before you order the option:

- Serial number of the M5000 frame.
- A four character reference code (only for temporary option installation)

When you want to order an option, either temporary or permanent, you need to supply your dealer with these parameters. You will find them as follows:

### **SERIAL NUMBER**

1. Switch off the M5000.
2. Press the BYPASS-button (**18**) and switch the power on again while pressing the BYPASS-button. Hold it until the SETUP UTILITY-menu appears on the display.
3. Turn the PROGRAM-dial until you find the **SERIAL #** and then press DO.

As you can see on this page, you will find not only the serial number but also the BIOS version and the size of the flash EPROM.

### **REF. CODE**

This reference code is also needed for generating the specific license code and subcode. Follow the procedure below:

4. If you still are in the Setup Utility menu - switch the M5000 off and on again.
5. Press the UTILITY-button (**17**) and turn the PROGRAM-button to the CONFIG menu.
6. Use soft dial A to find the wanted option.
7. When you have found the wanted option press DO once.

OPTION	TIME	LEVEL
(Option name)	--	off

This display shows the status of the selected option.

8. Press DO again;

LICENSE # (XXXX) :	00000000000000000000
CURSOR CHAR	NUM

9. The 4 character reference code for this option is found within the brackets, shown above as (XXXX). This code is only needed when ordering the temporary option with time limit.

Based on the parameters received from you by following the above procedure, a special license code and subcode, which are unique for your frame, are generated at TC Electronic headoffice in Denmark. This is the procedure regardless if you are ordering a temporary or permanent option.

## INSTALLING THE OPTION

10. When you have received the 20 character license code and the 8 character subcode, you can follow the steps 5 to 8 above, which should get you to the page where you can dial in the 20 character license code. It is of vital importance when selecting you select the option in step 7 that you select the same option as you got the 4 character reference code from !
11. Use softdial A, B and C as you dial the code.
12. When the license code is dialed please check once again that the characters are dialed correctly.
13. Press DO and dial the subcode. Again double check the dialed characters.
14. Press DO and **switch the M5000 off and then on**. If all codes were dialed correctly and the option selected is correct the option is now installed. **If not:**

The code is illegal Press DO to continue
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If this happens then start from step 10 again. Make sure that you select the right option according to the reference code you gave to your dealer.

## CHECK THE OPTION INSTALLED

You can check your installation by following procedure:

15. Press the UTILITY-button (**17**) and turn the PROGRAM-button to the CONFIG menu.
16. Scroll trough the options by turning soft dial A. If you want to check one of the options simply press DO. If LEVEL is '**off**' the selected option is not installed. 'TIME' shows the time limit and counts down in hours and minutes unless it is a permanently installed option. The time limit will in that case be 'forever'. When the time is up you will get a warning and at the next power up the temporary option is gone. Press UNDO to go back to the CONFIGURATION MENU.

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As you can see on this page, you will find not only the serial number but also the BIOS version and the size of the flash EPROM.

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6. Use soft dial A to find the wanted option.
7. When you have found the wanted option press DO once.

OPTION	TIME	LEVEL
(Option name)	--	off

This display shows the status of the selected option.

8. Press DO again;

LICENSE # (XXXX) :	00000000000000000000
CURSOR CHAR	NUM

9. The 4 character reference code for this option is found within the brackets, shown above as (XXXX). This code is only needed when ordering the temporary option with time limit.

Based on the parameters received from you by following the above procedure, a special license code and subcode, which are unique for your frame, are generated at TC Electronic headoffice in Denmark. This is the procedure regardless if you are ordering a temporary or permanent option.

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14. Press DO and **switch the M5000 off and then on**. If all codes were dialed correctly and the option selected is correct the option is now installed. **If not:**

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If this happens then start from step 10 again. Make sure that you select the right option according to the reference code you gave to your dealer.

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You can check your installation by following procedure:

15. Press the UTILITY-button (**17**) and turn the PROGRAM-button to the CONFIG menu.
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Before you can use your purchased option sampler, the SIMM-modules of dynamic ram must be mounted. You can buy SIMM-modules yourself in a normal computer store (see type listings below).

**START OF INSTALLATION:**

1. Switch of the machine and remove the power cord.
2. Remove the DUM-1 option plate(s) or DSP-module by loosening the 2 screws.

As the M5000 modules are static sensitive devices, certain precautions should be taken to protect them from damage during storage and handling. Please refer also to CON-FIGURATION section, HARDWARE INSTALLATION and MODULE HANDLING.

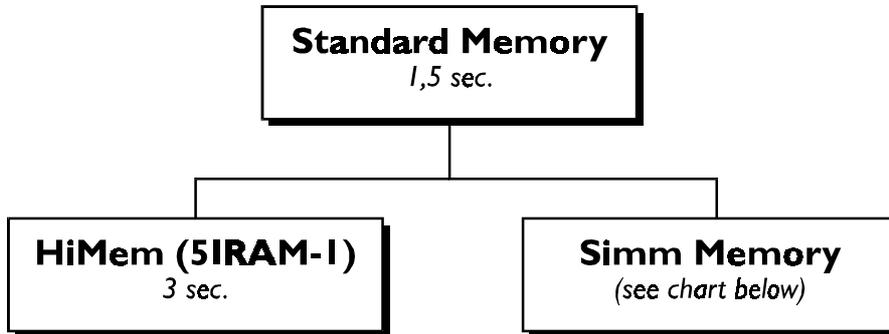
**GENERAL HANDLING**

When inserting or removing any modules, avoid touching the circuit board by handling only the rear panel of the module. Modules should always be placed in either an M5000 or in an electrostatic shielding bag. To minimize the static potentials that can cause damage to the electronic circuits you should observe precautionary grounding techniques such as touching a grounded M5000 Audio Frame immediately before inserting modules.

**REMOVING THE MODULES**

Before removing any module from your M5000, switch off the power and unplug the mains power cable. Unplug all other connections from the module before unscrewing the two screws securing the module in the Mainframe.

# SELECTION OF THE SIMM PACK MODULES



M5000 Display	Code option	seconds 44.1 (48) KHz	Resolution	No of SIMM's	Type of SIMM's
<b>SAMPLER</b>	<b>5SAMP-3</b>	23.7 (21.8)	16 bit	2	1 MByte x 8 bit
		23.7 (21.8)	18 bit	2	1 MByte x 9 bit
		23.7 (21.8)	24 bit	3	1 MByte x 8 bit
		23.7 (21.8)	24 bit	3	1 MByte x 9 bit
		95.0 (87.3)	16 bit	2	4 MByte x 8 bit
		95.0 (87.3)	18 bit	2	4 MByte x 9 bit
		95.0 (87.3)	24 bit	3	4 MByte x 8 bit
		95.0 (87.3)	24 bit	3	4 MByte x 9 bit
		380.4 (349.2)	16 bit	2	16 MByte x 8 bit
		380.4 (349.2)	18 bit	2	16 MByte x 9 bit
		380.4 (349.2)	24 bit	3	16 MByte x 8 bit
		380.4 (349.2)	24 bit	3	16 MByte x 9 bit

(the sampling times mentioned are max. mono sampling times)

Suggestions to SIMM brands:

- SAMSUNG            e.g. KMM594000B-7, 4M x 9 SIMM DRAM Memory Module
- HITACHI
- TEXAS INSTRUMENTS
- TOSHIBA

Speed: fast page mode, 70 ns.

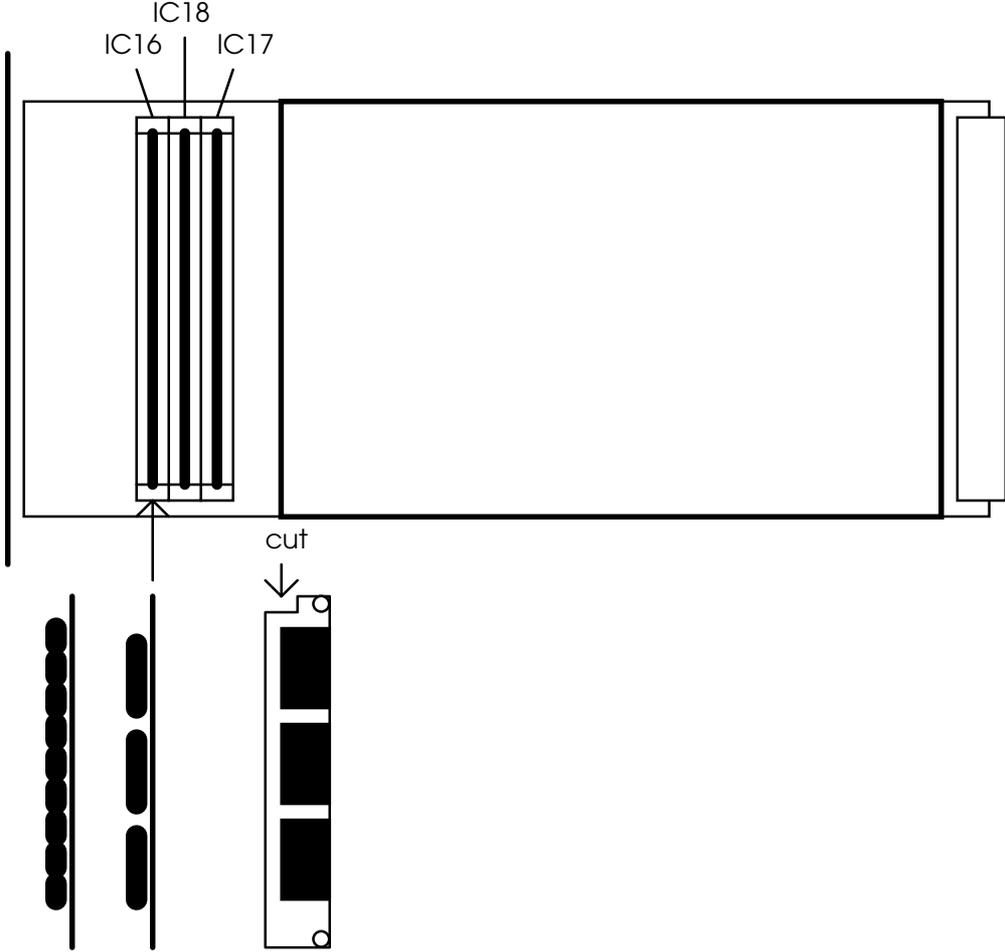
## INSTALLING SIMM PACK'S ON THE DSP-MODULE

On the DSP-card between the back plate and the sub boards there are 3 sockets named : IC16, IC17 and IC18.

For installing 16/18 bit sampling, you have to place 2 modules in IC16 and IC18, the sockets nearest to the back plate.

For installing 24-bit sampling, you have to place 3 modules in all three socket positions.

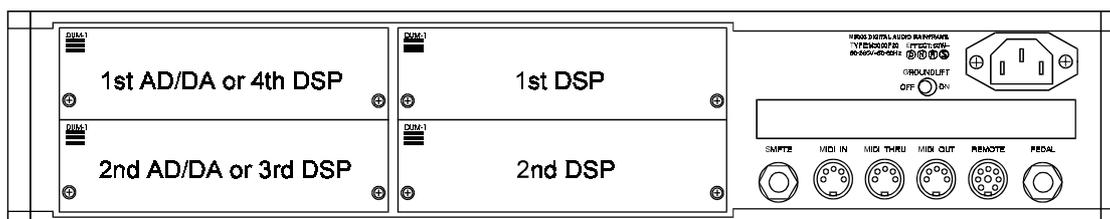
The SIMM-modules can only be properly inserted one way, that is with the IC's on the SIMM-modules facing the back plate. There is an indentation (cut) on the SIMM-modules which must be placed correspondingly with the IC16-IC18-IC17 name reference markings on the board.



## MOUNTING MODULES

Before mounting the modules in your M5000, switch off the power and unplug the mains power cable. Remove the dummy-panel or original module from the slot where you want to install the module. The module should then be mounted directly in the M5000 Audio Mainframe by handling the rear panel of the module only. Avoid touching any components on the PCB-Board.

3. Insert the module after the diagram below (fig. 1).



*fig. 1*

**AD/DA cards are always mounted as far as possible from the power supply !**

The module cards will fit in the module guides inside the M5000 frame. **It is important that the modules are mounted correctly in these blue guides** to ensure proper connection to the buss. It is recommended that you use a powerful light source in order for you to see properly inside the frame. Improper connection may cause serious damage to the modules.

4. Fasten the module with the two screws and connect the cables.
5. The module cards will be initialized during the next power up.
6. If there are problems e.g., the cards are not recognized by the M5000 frame, please check the installation once again and the address settings (refer to **HARDWARE INSTALLATION** text module in this section).

In Appendix C you can find a self test procedure to see if the M5000 has found the cards at the proper addresses and if the M5000 is working alright.

7. Press the **UTILITY** button on the front panel and turn the **PROGRAM** dial to the **CONFIG** menu. The 'dram=xxxxxx' will tell you if the **SIMM** packs are installed properly. If 'dram=none' is shown then the M5000 hasn't found the **SIMM** packs.