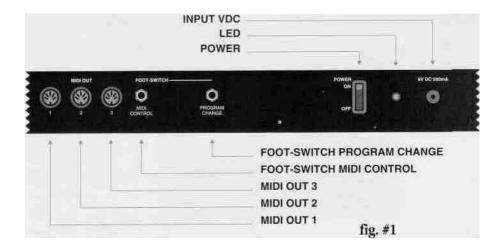Thank you for purchasing the FATAR Studio-90 Plus, the finest feeling master controller on the market today. The action is a result of many years of engineering that went into the keyboard mechanism. There are actually hammers that strike a surface that simulates a piano string.

The FATAR Studio-90 Plus master controller is very simple to operate once you understand its capabilities. Even though the controller seems to be always in split mode, you can layer or split one, two, or three sounds across the entire length of the keyboard. However, you must be aware of the specific use of each parameter to get the desired results.

▶ *FEATURE LIST!*   The following is a feature list of the ST-90 Plus master keyboard controller.

- Power Supply: 9 VDC 500mA
- 88 Note Weighted Hammer Action Keys
- Key measurements like a real piano
- Dynamic Range (00-99)
- Velocity Sensitivity Release (00-99)
- Three Zones Programmable
- Half-tone transposition
- Octave transposition
- Three MIDI Outputs
- Foot-Switch Control
- Program Change Footswitch
- Pitch and Modulation Wheels
- Outputs on all l6 MIDI Channels (three channels at one time)
- 100 Performance Programs (00-99)
- Two digit numeric display
- Beautiful Cabinet Design
- Also available in sturdy case road case

CONNECTIONS:

INPUT VDC
LED
POWER

MIDI OUT   FOOT-SWITCH

1   2   3   MIDI CONTROL   PROGRAM CHANGE   POWER ON / OFF   5V DC 200mA

FOOT-SWITCH PROGRAM CHANGE
FOOT-SWITCH MIDI CONTROL
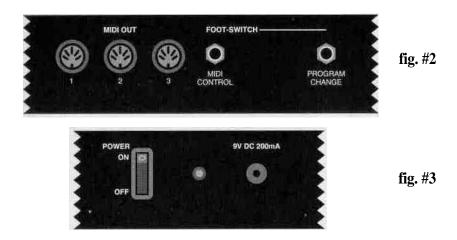MIDI OUT 3
MIDI OUT 2
MIDI OUT 1
fig. #1

The Studio-90 Plus can be supplied with a road case or with a beautiful designed cabinet. All the functions are the same, but cosmetically they are quite different. The following will explain the difference between the two regarding the back panel.

Look at figure #1. It shows the back panel of the ST-90 Plus built into a road case. Note its three midi outputs. Each output sends out identical information. You can connect four midi sound sources per output, giving you up to twelve sources to choose from. NEVER CHAIN MORE THAN FOUR MIDI DEVICES PER OUTPUT, THIS CAN CAUSE SOME DELAYS. If you need more outputs, purchase a thru-box. Located to the right of the midi outputs you will find a 1/4" phone input jack for a foot switch sustain pedal. We recommend a Music Industries PS-10 or a VFP-10 (optional) sustain pedal for this application. We will review the sustain capabilities later on in the next section. To the right of the sustain jack is another 1/4" phone input jack for program advance. You will also review this function later on. Located to the right of the 1/4" jacks you will find the power switch. To the right of power switch is the three pole line cord input and finally the fuse holder. Use a 1 AMP 250V GGS 5 X 20mm when replacing the fuse.

Look at figure #2 and #3. The functions are the same, but the location of the midi outs and foot switch controls are separated from the power section. You will find this configuration on the ST-90 Plus in the cabinet.

fig. #2

fig. #3

Note: If you want merging capabilities with the Studio-90 Plus, you must use a merge box. A good merge box we recommend is the Pocket Merge from Anatek Microcircuits, Inc. North Vancouver, BC, CANADA.

▶ *SWITCHING ON:*
To power on the instrument, connect the supplied power cable into "LINE" input and flip the power switch on. Ever time you power up, program 00 will illuminate on the LEDs.

▶ *NOTE:* Studio-90 Plus RESET PROCEDURE:
If there is ever a time when the Studio-90 Plus acts up in a strange way due to an electrical spike, a reset procedure may be necessary. Turn off power switch. Press switches "ENTER and "1" down together. Turn on power and release "ENTER and "1" after two seconds.

THIS PROCEDURE WILL CANCEL ALL PREVIOUS PROGRAMS AND DEFAULTS UNIT TO FACTORY PRESETS. MAKE SURE YOU WRITE DOWN ALL IMPORTANT PATCH PARAMETERS BEFORE MOVING ON TO CREATE ANOTHER PROGRAM. THERE IS A BLANK PARAMETER CHART IN THE BACK OF THIS MANUAL. MAKE COPIES AND BACK UP YOUR PROGRAMS ON THIS CHART. THIS IS JUST GOOD ADVICE.

▶ *SECTION I: GETTING STARTED*
In this section we will explore the possibilities of the Studio-90 Plus in its entirety. Do not skip any pages. Since each function depends on a previous parameter, it is probably best to read carefully from here on out.

▶ *LET'S GET STARTED*
In this section you should get ready for hands on experience. Plug in one end of a midi cable to the output jack of the controller. Plug the other end into the midi input of your sound module. For the first application, even if you have a multi-timbral module, please set a piano or any other sound that you are comfortable with to channel number one. (Multi-timbral means receive on more than one channel at once.) The first application will only deal with channel number one. As you progress you will be adding channels for different keyboard sound combinations. At this time you should have your amplification set up as well. Any other questions dealing with equipment set up, refer to their respective manuals. Once everything is plugged in, power up your system in this order; controller, sound modules, effects, mixer, EQ, and amplifier. This procedure will eliminate any potential hazards to your system.

To program the controller properly you must understand in what sequence to push the buttons to get the desired result. Let's take a look at the program function key located under the two LEDs.

▶ *PROGRAMS:*
The Studio-90 Plus is equipped with 100 programs, represented numerically between numbers 00 and 99. In order to get from one program to another you must press the buttons in a particular sequence. First, enter program mode by pressing the button marked (prog.). Do this now. A light will illuminate at this time underneath the program button, (when the unit is turned on, the program light will already be illuminated) then enter a program number by pressing two of the numeric keys. (Example, enter program 00, program 05 or any other desired program up to 99).

At this point the numeric LED will flash, then you must press the ENTER* button located to the right of the numeric key pad. This process will lock the desired program into a current working memory location. Do this a couple of times so you

can get the feel of moving through programs. (You will find that the ENTER button must be pressed every' time you want a function to work properly regardless what you are attempting to do.) Another *way* to advance programs, is to use a foot switch plugged into the program change jack, located on the back of the controller. This will advance the programs in numerical order only.

▶ *PARAMETERS:*

Now you can start programming parameters within a program. Let us start by first picking a program, let's try program 00. If you're not sure how to do this, just reread the last paragraph. OK, now that you are there, you will need to address the parameters and see how they work.

Using the parameters on the Studio-90 Plus is easy once you get a handle on it. If you take a look at top of the controller you will see a listing of nineteen parameters, starting from 00 to 18. In order to access these parameters, press the parameter (param.) button located on the lower left *be\ow* the two LEDs. Please do this now. You will notice that a red light will illuminate under that parameter button. *Now* we will choose our first parameter.

▶ *SPLIT LEFT-SPLIT RIGHT:*

The Studio-90 Plus has two split points represented by parameter 00 (SPLIT LEFT), and parameter 01 (SPLIT RIGHT). You can assign these split points any where on the keyboard. These parameters will allow you to have the controller operate in single mode, split mode or layer mode. For now operate the controller in single mode (one sound across the keyboard). In the next section there will be examples of split and layer mode.

* Note: Enter all programs, parameters and values into the memory by pressing the enter key. The enter key acts as a save function.

In order to activate this mode at this time, press the parameter button. Then press 00 on the numeric key pad. At this point the LEDs will flash number 00, now press the ENTER key. This procedure will lock parameter 00 into position and move the red light to the VALUE* function. The VALUE function has a range from 00 to 88 within parameters 00 and 01. You will see how to use different types of VALUES for these parameters later on in this text.

At this time the keyboard is asking you at what key location on the keyboard would you like your first split. You will see a number in the screen. No matter what that number is now, please press 27 on the numeric key pad. This number will flash. Now press the ENTER key to lock this position into the memory of the keyboard. You have just set parameter 00 (SPLIT LEFT) to the 27th key on the keyboard, that is musically speaking, B in the 3rd octave or B3. Repeat this process a couple of times in order to get a feel for the programming.

Let's move on. Now press parameter 01 on the numeric key pad.
At this point the LEDs will flash number 01, now press the ENTER key. This procedure will lock parameter 01 into position and move the red light to the VALUE function. The keyboard is now asking you at what key location on the keyboard would you like your second split. At this time you will see a number in the screen. No matter what that number is now, please press 63 on the numeric key pad. This number will flash. Press the ENTER key to lock this position into the memory of the keyboard. You have just set parameter 01 (SPLIT RIGHT) to the 63rd key on the keyboard that is musically speaking, B in the 6th octave or B6. Repeat this process a couple of times in order to get a feel for the programming.

At this time, the controller's program has three zones. Zone one is from Al to B3, zone two is from B#3 to B6 and zone three is from B#6 to the highest key of the keyboard. This is where things could get confusing, but do not let it. Remember, you want to get one

Note: From here on out you must program a VALUE for every parameter in use. VALUE could mean anything from a key location to transposition to program change. We will see how this VALUE works in other situations later on in this text. For now let's just stay with parameter 00 and 01.

sound across the keyboard. How do you do this if there are three zones across the keyboard? The answer is simple. Locate parameters 08, 09 and 10, these are the midi channel parameters or as the parameter chart refers to it as CHANNEL MIDI 1, 2, and 3. Set each VALUE to number 01, using the method that you already have learned. More about midi channels later.

▶ *TRANSPOSER:*

Locate parameter 02 through 04 on the parameter chart at top of the keyboard that are clearly marked as TRANSPOSER 1, 2, and 3. Use these functions for transposition. Why are there three TRANSPOSER functions? The answer is, there are three zones, so there must be a control for transposition for each zone. Again, look at the parameter chart on top of the keyboard. The number 02 refers to the parameter number, TRANSPOSER refer to the transposition function and 1 refers to zone #1. The same idea applies to parameter 03 and 04 except they refer to TRANSPOSER 2 and 3 for zones 2 and 3. The TRANSPOSER function VALUES are between 00 and 11. These numbers represent semi-tone transposition. You can program each zone up to 11 semi-tones. However, you may only transpose up with these parameters. Do not worry, you can transpose down with the help of the next set of parameters called OCTAVE. Before using the OCTAVE function, you must realize that a VALUE of 00 represents NO transposition. This is important for having one sound across the keyboard chromatically. If on the other hand you need to have some type of transposition, just enter the number of semi-tones you desire.

Example.' To program a minor third up you must enter a value of 03 to get the desired result, for a major fifth, enter a value of 07 and so on. After you complete this exercise please enter the value 00 in parameters 02, 0, and 04. In order to create a chromatic state across the keyboard you must adjust the OCTAVE parameters.

▶ *OCTAVE:*

Parameters 05, 06, and 07 refer to OCTAVES 1, 2, and 3. This function controls octave transposition within each zone,

The VALUES of these parameters are 70, 60, 50, 40, 30, 20, 10, 00, 01, 02, 03, 04, 05, 06, and 07. 70 being seven octaves below the natural setting of a piano and 07 being seven octave above. 60 is six octaves below, 06 being six octaves above and so on. VALUE 00 has absolutely no transposition. To create one chromatic sound across the keyboard, set each VALUE for parameters 05, 06, and 07 to VALUE 00. You should now have one chromatic sound across the keyboard without any transposition. If you have reached this point with no problems, please take a break and play your heart out. If you have a problem, please go over each parameter. You might have missed one or two. When you find the incorrect parameter, please correct it, then celebrate. At this point you are half way there.

▶ *CHANNEL MIDI:*

Parameters 08, 09, and 10 are midi channel functions. You will locate them on the parameter chart as CHANNEL MIDI 1, 2 and 3. Again, 1, 2, and 3, refers for zones one, two, and three. The VALUES of these parameters are midi channels 1 through 16, represented by 01, 02, 03, 04, 05, 06, 07, 08, 09,10,11,12,13,14,15,16, giving us access to all the midi channels in the specification.

Up to this point you have created a single midi channel. This midi channel runs across the keyboard. By using this procedure you get one chromatic sound from the bottom of the keyboard to the top. What happens if you want three sounds across the keyboard? Well, to start, change each midi channel to a different VALUE. For example, keep parameter 08 the VALUE of 01, but change parameter 09, to VALUE 02 and parameter 10 to VALUE 03. If you have three sound modules chained together by midi cables, please set each one to channel 1, then 2, then 3. If you have one multi-timbral module, set different sounds to channels 1, 2, and 3 (refer to the sound sources' owners manual for the channel change command). At this point you should have different sounds on three separate zones across the keyboard. Check this by playing the keyboard. If you do not have the desired results, check the value of each midi parameter and find your mistake. In the next section you will learn different ways of using midi channels in conjunction with parameters 00, split left and 01, split right, giving you totally different control across the keyboard.

▶ *PRESET:*

Use parameters 11,12 and 13 for PRESET changes or program changes. There are 100 program changes. The VALUES of these parameters start at 00 and continue through 99. If the number of the PRESET on the controller does not match the program number on the sound source, do not worry. You will notice that it may be one number off. This is recognized by the MIDI standard. Programming these parameters for each zone is just like programming the previous parameters, only this time you are sending program changes per zone. You will notice that your sound source may have more than 100 sounds. If this is the case, look in the owner's manual for the "program change map". Learn how to use it. In this way you can send patch changes to sounds higher than 100. For example, if the controller sends out a PRESET change of 99, the sound on the receiving end might be 127 or any other number.

Three Sounds Split at B3 and B6

►	00 = 27	►	10 = 03
►	01 = 63	►	11 = 08
►	02 = 00	►	12 = 00
►	03 = 00	►	13 = 33
►	04 = 00	►	14 = 03
►	05 = 01	►	15 = 03
►	06 = 00	►	16 = 03
►	07 = 30	►	17 = 50
►	08 = 02	►	18 = 50
►	09 = 01	►	-

Note: Part 1, 2 & 3 used across keyboard.

One Sound Left of C5, Two Sounds Right

►	00 = 40	►	10 = 04
►	01 = 88	►	11 = 32
►	02 = 00	►	12 = 05
►	03 = 00	►	13 = 10
►	04 = 00	►	14 = 03
►	05 = 00	►	15 = 03
►	06 = 00	►	16 = 03
►	07 = 00	►	17 = 50
►	08 = 02	►	18 = 50
►	09 = 03	►	-

Note: Part 1 to C5, part 2 & 3 from C#5 to top of keyboard.

Two Sounds Across Keyboard

►	00 = 88	►	10 = 03
►	01 = 88	►	11 = 00
►	02 = 00	►	12 = 34
►	03 = 00	►	13 = 08
►	04 = 00	►	14 = 03
►	05 = 00	►	15 = 03
►	06 = 00	►	16 = 03
►	07 = 10	►	17 = 50
►	08 = 01	►	18 = 50
►	09 = 02	►	-

Note: Part 1 & 2 across keyboard, part 3 off.

One Sound Across keyboard, Two more Layered Above C5

►	00 = 88	►	10 = 03
►	01 = 40	►	11 = 00
►	02 = 00	►	12 = 10
►	03 = 00	►	13 = 02
►	04 = 00	►	14 = 01
►	05 = 00	►	15 = 02
►	06 = 00	►	16 = 02
►	07 = 00	►	17 = 50
►	08 = 01	►	18 = 50
►	09 = 02	►	-

Note: Part 1 across keyboard, part 2 & 3, C#5 to top of keyboard.

Three Sounds Left of C5, One Sound Above

►	00 = 40	►	10 = 04
►	01 = 00	►	11 = 07
►	02 = 00	►	12 = 05
►	03 = 00	►	13 = 01
►	04 = 00	►	14 = 03
►	05 = 00	►	15 = 03
►	06 = 01	►	16 = 03
►	07 = 10	►	17 = 50
►	08 = 02	►	18 = 50
►	09 = 03	►	-

Note: Part 1 & 2 up to C#5, part 3, C#5 to top of keyboard.

One Sound Left of C5, One Sound Right of C5, One Sound Across

►	00 = 40	►	10 = 03
►	01 = 40	►	11 = 33
►	02 = 00	►	12 = 00
►	03 = 00	►	13 = 34
►	04 = 00	►	14 = 03
►	05 = 00	►	15 = 03
►	06 = 00	►	16 = 03
►	07 = 10	►	17 = 50
►	08 = 02	►	18 = 50
►	09 = 01	►	-

Note: Part 1 to C5, part 3 from C#5 to top of keyboard. Part 2 across the keyboard.

Two Sounds Layered to C5, One Sound Above

►	00 = 00	►	10 = 04
►	01 = 40	►	11 = 06
►	02 = 00	►	12 = 07
►	03 = 00	►	13 = 01
►	04 = 00	►	14 = 03
►	05 = 00	►	15 = 03
►	06 = 00	►	16 = 03
►	07 = 10	►	17 = 50
►	08 = 02	►	18 = 50
►	09 = 03	►	-

Note: Part 1 & 2 up to C#5, part 3, C#5 to top of keyboard.

Three Sounds Across Keyboard

►	00 = 88	►	10 = 04
►	01 = 00	►	11 = 09
►	02 = 00	►	12 = 10
►	03 = 00	►	13 = 43
►	04 = 00	►	14 = 03
►	05 = 00	►	15 = 03
►	06 = 00	►	16 = 03
►	07 = 00	►	17 = 50
►	08 = 02	►	18 = 50
►	09 = 03	►	-

Note: All parts across the keyboard layered.

Left Sound up to E6, Right Sound from E4 to Top Key, Middle Sound Between E4 & E6

►	00 = 56	►	10 = 04
►	01 = 32	►	11 = 34
►	02 = 00	►	12 = 27
►	03 = 00	►	13 = 02
►	04 = 00	►	14 = 03
►	05 = 01	►	15 = 03
►	06 = 00	►	16 = 03
►	07 = 20	►	17 = 50
►	08 = 02	►	18 = 50
►	09 = 03	►	-

Note: Part 1 up to E6, part 2 between E4 and E6. Part 3 from E4 to top of keyboard.

MIDI IMPLEMENTATION CHART ST-90 Plus

FUNCTION		TRANSMITTED	RECOGNIZED	REMARKS
Channel		10 -16	x	Memorized
Mode Default		3	x	
Messages		x	x	
Note Number		0- 127	x	21 -108 in C key
Velo. Note On		o	x	
Note off		o	x	
After Key,s		x	x	
Touch Ch's		x	x	
Pitch Bender		o	x	
Control	1	o	x	Modulation Wh
Change:	2	x	x	Breath Control
	4	x	x	Foot Control
	5	x	x	Portamento
	6	x	x	Data Entry Knob
	7	x	x	Volume
	64	o	x	Sustain foot sw
	65	x	x	Portamento fsw
Velocity Dyn.		o	x	
Velocity Rel.		o	x	
Program Chg.		o	x	0- 99
Sys. Ex.		x	x	
Song Position		x	x	Sys. Common
Song Select		x	x	Sys. Common
Tune		x	x	Sys. Common
Clock		x	x	Sys. Real Time
Commands		x	x	Sys. Real Time
Local ON/OFF		x	x	Aux. Message
All Notes OFF		x	x	Aux. Message
Active Sense		x	x	Aux. Message
Reset		x	x	Aux. Message

Note: Mode 1: Omni On, Poly   Mode 2: Omni On Mono   o: Yes
       Mode 2: Omni Off, Poly   Mode 2: Omni Off Mono   x: No

PARAMETER CHART

Program Name _____

Program Number _____

00=
01=
02=
03=
04=
05=
06=
07=
08=
09=
10=
12=
13=
14=
15=
16=
17=
18=

Notes: _____

_____

_____

_____

_____

_____