Getting Started

First let us say thanks again for purchasing The Ultimate MPU Board. The following instructions should allow you to have your pinball machine setup and ready to play quickly. If at any time you are unsure of how to proceed or have a question, STOP. We offer e-mail support at mpusupport@alltaksystems.com with an ever improving technical support page on our website at www.alltaksystems.com. This would also be a good time to fill out your warranty form. The serial number is located on the label of the IC chip U6 and has a format of a letter and 3 numbers.

Before you plug in The Ultimate MPU Board

Place the Ultimate MPU Board in front of you as shown with your old board on your right (if you have your old board). One of the first things to do will be to set your dipswitches. Looking at Table 1, located on the last page, find the pinball machine that you are setting up. If it's a Bally machine then you will need to decide if you want to set the dipswitches for free play or normal game mode. Now configure the Game Select dipswitch (SW2) to the game that you have chosen.

Game Select
Dipswitch

Game Feature
Dipswitches 1-32

Next, you might have to change the clock speed jumpers depending on what game you have selected. If you pick a game that has a note, make the stated jumper adjustment. If you have any questions, refer to the table below or the legend on the left side of The Ultimate MPU Board.
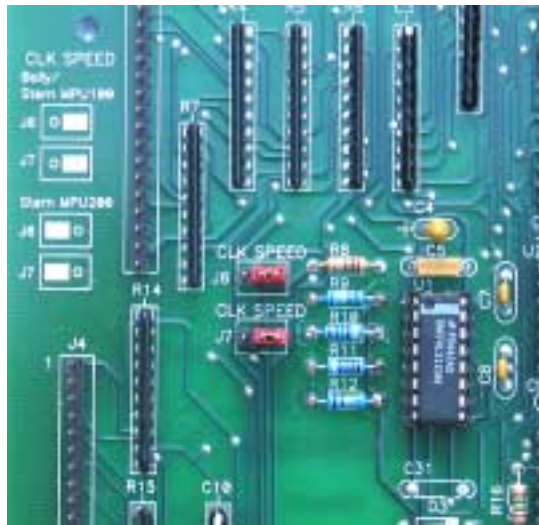
JUMPER

Clk Speed (J6 & J7)

LEFT	RIGHT
All Stern MPU-200 Games starting with Ali	All Bally Games

If you have an old board that you feel has the correct dipswitch settings for game features, go ahead and make The Ultimate MPU Boards dipswitches (S1-32) the same as your old board. Some of the older MPU boards had rocker type dipswitches, when the rocker switch is down on the right, this means that the switch is off. Down on the left would be on. If you choose free play mode you will also have to turn off the credit display game feature switch, which is either switch 20 or 27 depending on the game. One more thing, if you are setting the board up for a Stern machine, you must set the game feature switches. If the game feature switches are left all on or all off, the machine will stay in self-test mode.

Make sure the batteries are inserted as shown.

Battery +

Connecting Up

**** Important ***

Don't apply power until you have check the +5vdc and ac voltage.

It is important to do several things before you plug in the new board. First get a flashlight or a light bright enough to get a good look at the connectors that are hanging in the top left corner of the head of the machine. If you have a Stern machine you might have two extra connectors for the soundboard. Visually inspect the cables for broken wires or bad pins. If you see any damage you will need to repair this before continuing. Next, look at the pins and see if you spot any corrosion. If you do, this might not be a showstopper but you should take care of this problem ASAP. Also if you see some corrosion, keep this in mind in case your new board doesn't get your machine working.
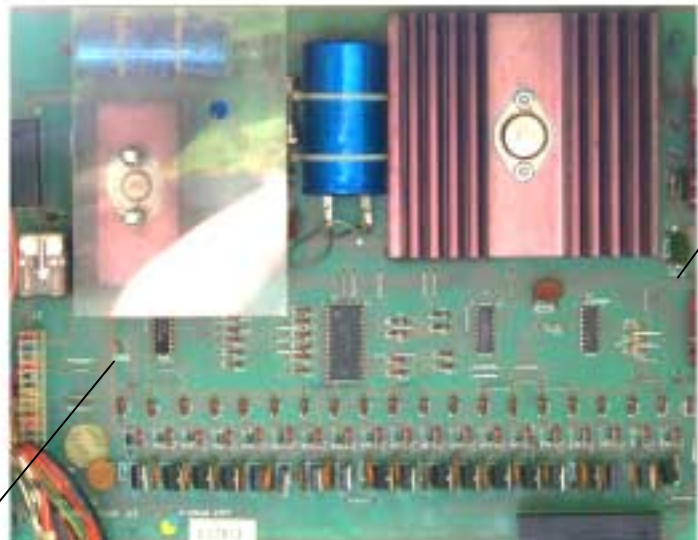
Test Point1 TP1

Ground

The next preventative measure will be to make sure that the +5 volt supply is OK. Again make sure that the **Ultimate MPU Board is not installed**. Turn the game on. Using a digital voltmeter set to DC, measure the +5 Volts between Test Point 1 (TP1) and the ground Test Point (Gnd) located on the solenoid board in the top right corner in the head. The voltage should be between 4.90 and 5.25 volts. Then place the voltmeter setting to AC; again measure the +5 volts making sure you don't have more the 100mv AC. If you have more then the recommended voltages, see the troubleshooting section before turning on the game. One special note, if your installing this in a Baby Pacman or a Granny and the Gators, use (TP2) to check the +5 Volts. **After you make the measurement, *turn off the game*.** If you don't have a voltmeter you can do one of several things. See if you can borrow one from a friend or purchase one from Radio Shack (~$20). You also could opt to do nothing with the understanding that we don't warranty returns or offer refunds for burned out boards caused by power supply damage.

After you have checked the connectors and power supply, you are ready to mount your new board into the machine. Locate the three spacers and the screw that you received. If you need to replace your old spacers, use the new ones.

Plug the board in by placing it as shown in the picture below. The board should line up with the spacers. Using the screw that you received, screw that into the lower left corner of the board.

Plastic Studs

Plastic Studs

Mounting Screw
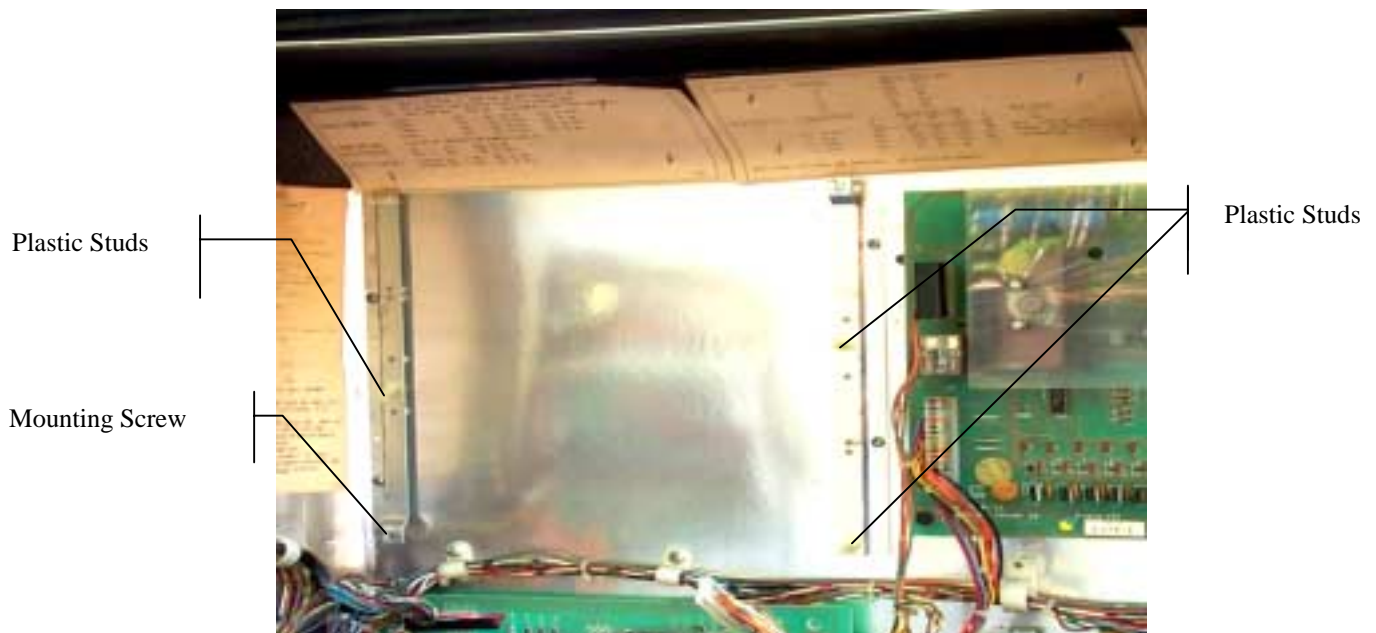
Now plug in the connectors, two on the left and two on the right, assuring that the connector keys line up for each connector. Also mount the battery holder as shown below with the 2 wood screws provided.

Clear Button

+5vdc LED

Self-Test
Green LED

Mounting
Screw

Reset Switch

Remote
battery
holder
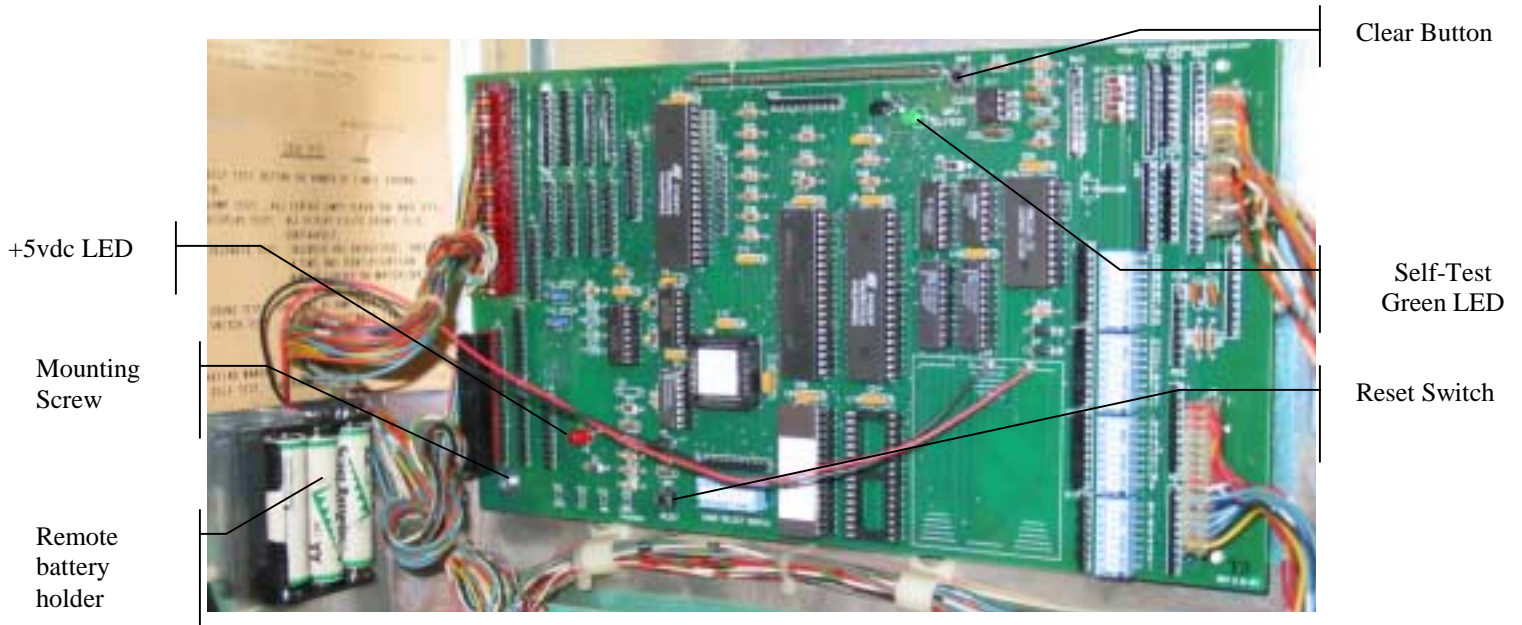
If you have a Stern game that has an aux. soundboard, plug this connector into the top connector J5. Remember, on The Ultimate MPU Board the right most side of J5 is pin 1. Make sure you match up the pin 1 of J5 to the aux. soundboards pin 1. Depending on the Stern machine, you might have 2 pins on the left not used.

Power Up

Now we get to the fun part of the manual. With everything checked and plugged in, turn the game on. You should notice two things on The Ultimate MPU Board. You should notice a red LED (D1) in the lower right hand side of the board in a steady on indicting the +5 volts is present to the board. The green LED (D4) should flash 8 times, with the first flash being the reset pulse, the remaining flashes representing the board self test. If you don't see the LED's operating as stated above, proceed to the troubleshooting section of this manual.

Programming Game Bookkeeping

At this point your game should be up and running. There is one more important step that you need to do. You need to set your free play scores. There might also be several settings in your bookkeeping that need to be set for sound options. It is best to refer to your game manual for this step but just in case you don't have a manual we will try and step you through it.

Memory Clear Feature

You might need to clear all of the memory first by running the memory clear feature. This is useful if you have switched the Ultimate MPU Board from one game to another, but sometimes you need to run this if you see some strange display values or if you have noticed that you can't get into bookkeeping mode. The reason for this is the memory space is used differently from game to game. To run this feature setup the game select switch as described in Table 1. After you have setup for the memory clear feature, reset the game or turn the game off and then on. You will notice that the green LED will flash on and off about ever second. The game memory is now clear. You will now have to set the game select switch back to the game you had it set for before doing the memory clear feature.

High Score Feature Adjustments

The game is designed to award an extra ball or free game at each of three score levels. The recommended levels are on the scorecard of the game. Any level from 10,000 to 9,999,000 can be set, as desired, as long as your game has 7 digit displays. If you have 6 digit displays then you can only go from 10,000 to 990,000. It is also possible to reset or turn off any or all of the levels, if desired.

1. Push and release the Self-Test button at one-second intervals approximately six
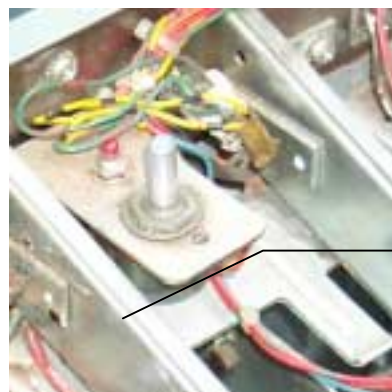
Red
Self-Test
Button

times or until identification number 01 appears on the 'Match/Ball in Play' display.

2. The number on the Player Score Display is the score level. Press the Clear Button (SW3) located on The Ultimate MPU Board to reset the displayed value to 00. Then hold the credit button in until you get the desired replay value. Release the credit button when the desired number appears. Note that the level changes 10,000 points at a time. If the number '00' is left on the displays, the high score feature is eliminated for that level.

3. Repeat steps 1 and 2 for the second and third score levels. The identification numbers '02' and '03' on the 'Match/Ball in Play' display are for the second and third levels, respectively.

High Score to Date

The game is designed to award free games when you beat the current 'High Score to Date'. The adjustment procedure is the same as for the High Score Feature Adjustment, Steps 1 and 2. Continue pushing the Self-Test button until the identification number '04' appears on the 'Match/Ball in Play' display and then do step 2.

Bookkeeping Features

The game is designed to help perform certain accounting functions. The game can display the number of total plays and replays (free games) as well as several other features as follows:

'05' – Current Credits

'06' – Total Plays (Paid & Free Games)

'07' – Total Free Games

'08' – Game Percentage

'09' – Total times 'High Score to Date' is beat

'10' – Coins dropped thru coin chute #1

'11' – Coins dropped thru coin chute #2

'12' – Coins dropped thru coin chute #3[*]

'13' – Number of specials awarded from panel specials only[*]

'14' – Number of minutes of game play[*]

'15' – Number of service credit[*]

[*] *Not all games have these features*

If desired, you can reset the bookkeeping numbers. The procedure is the same as before but you set the numbers with the credit button.

1. To clear the bookkeeping push the Self-Test button until the identification number '05' appears on the 'Match/Ball in Play' display and then press the clear button on The Ultimate MPU Board.
2. Then repeat step 1 for identification numbers for '06' thru '15', remembering that not all games go to identification number '15'.

Feature options '16 thru '22'[*]

To setup positions '16' thru '22' push and release the Self-Test button until '16' shows on the 'Match/Ball in Play'. Now press the credit button until you get to the value desired. It is best to use the game's manual for these features, but if you don't have the original manual, then make the desired number 03. Repeat this step until the game goes in to a reset condition. At this point your game is all ready for play but if you made a mistake on any of the settings, you can go through them again and change only the ones that you desire.

[*] *Not all games have these features*

The Enhanced Diagnostics Self-Test Mode

The enhanced diagnostics mode has a burn in test mode that is useful if you want to test out your machine for a period of time. We also offer an inexpensive board, The Ultimate MPU Test Card. The test card plugs into the J2 connector. This will allow you to test through every aspect of the game in very small detail. If you have this option, refer to The Ultimate MPU Test Card Manual for further instructions.

If you don't have this board option you can still place your game in burn-in test mode.

1. Remove the J2 connector from The Ultimate MPU Board.
2. Place the Game Select Switch (SW2) in Enhanced Diagnostics Mode by turning on switches 1 and 2. See table 1 for more info if needed.
3. Turn on the machine
4. You should notice that the 'Player Scores' have a "0" flashing in them.
5. Press the self-test button on the door until you see a "5" on the 'Match/Ball in Play' display.
6. The machine is now in a burn in mode until you turn off the machine.
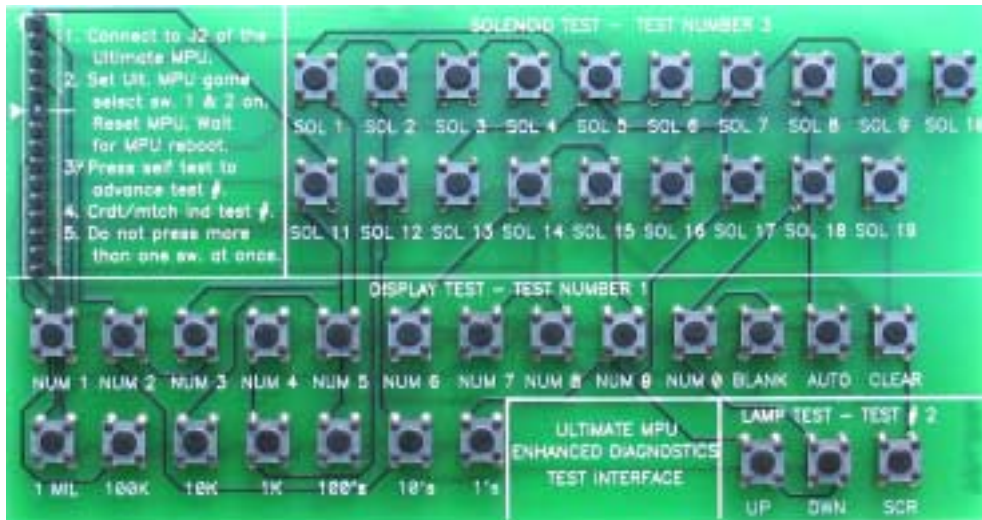
Optional Ultimate MPU Test Card

Troubleshooting Section

I turn on the game and nothing happens. No game lights or LED's on The Ultimate MPU Board are on.

- Check that the machine is plugged in.
- Move power plug to a different outlet
- Check that all of your connectors are connected

I turn on the game and nothing happens. I do have game lights but no LED's on The Ultimate MPU Board.

- Check that all of the connectors are plugged in.
- If you checked the +5 Volts and it was OK, check the +5 volts on The Ultimate MPU Board. You will notice a Test Point labeled +5 volts and Ground. If you don't have it on the board, you are losing the power between your Solenoid Board and your new MPU board.

I turn on the Game but don't see the green LED flash 8 times. I do have the +5 volt LED on.

- Remember the first flash is the reset pulse. If you see the first flash and then only 6 more after that, this means you have a +43 volt solenoid power problem. Your +43 volt fuse could be bad.

The game turns on and starts but only the flippers are working.

- Check the fuse that is located under the playfield.

I have the MPU board setup for a newer Stern machine and it's running slow.

- Check that the clock jumpers (J6 & J7) are on the left 2 pins

I have the MPU board setup for a Stern machine and the game will not get out of self-test mode.

- You must have the game feature switches set to something other then all on or all off.

The games self-test will not allow me to go into bookkeeping mode or the game has some strange high score values when I start the game.

- Run the memory clear function located in Table 1.

The voltages are not correct.

- There are only two important components that make up the +5vdc. The voltage regulator and the big capacitor on the solenoid board. If you have to much AC, then replace the big cap first.

Remember that if you don't feel comfortable working to this level of your game it would be wise to call in a technician to help out. There will be times that you have multiple problems with a game, especially if it has sat idle for sometime. Also don't forget we offer support via email or phone.

Game Select Switch Chart

Bally Machines

Freedom	00000000
Night Rider	00000001
Evel Knievel	00000010
Eight Ball	00000011
Power Play	00000100
Mata Hari	00000101
Blackjack	00000110
Strikes & Spares	00000111
Lost World	00001000
6 Million $ Man	00001001
Playboy	00001010
Sexy Girl	00001010
Voltan	00001011
Supersonic	00001100
Star Trek	00001101
Kiss	00001110
Paragon	00001111
Harlem Globe	00010000
Dolly Parton	00010001
Future Spa	00010010
Nitro Ground	00010011
Silver Ball Mania	00010100
Rolling Stones	00010101
Mystic	00010110
Hot Doggin	00010111
Viking	00011000
Space Invaders	00011001
SkateBall	00011010
Frontier	00011011
Xenon	00011100
Flash Gordon	00011101
Eight Ball Deluxe	00011110
FireBall II	00011111
Embryon	00100000
Fathom	00100001
Medusa	00100010
Centaur	00100011
Elektra	00100100
BMX	00100101
Mr. & Mrs. Pacman	00100110
Speakeasy 2 player	00100111
Spectrum	00101000
Vector	00101001
Granny & Gators [2]	00101010
Cybernaut	00101011

GoldBall	00101100
FireBall Classic	00101101
Spy Hunter	00101110
X & O's	00101111
Black Pyramid	00110000
Kings of Steel	00110001
Grand Slam	00110010
Rapid Fire	00110011
Baby Pacman [2]	00110100
Speakeasy 4 Player	00110101
Big Bat Baseball [2]	00110110

Stern Machines

Pinball	01000000
Sting Ray	01000001
Dracula	01000010
Wild Fyre	01000011
Lectronamo	01000100
Nugent	01000101
Magic	01000110
HotHand	01000111
Memory Lane	01001000
Stars	01001001
Trident	01001010
Ali [1]	01001011
Big Game [1]	01001100
Catacomb [1]	01001101
Cheetah [1]	01001110
Dragonfist [1]	01001111
Flight 2000 [1]	01010000
Galaxy [1]	01010001
Iron Maiden [1]	01010010
Lazer Lord [1]	01010011
Lightning [1]	01010100
Meteor [1]	01010101
NineBall [1]	01010110
Orbitor1 [1]	01010111
Quick Silver [1]	01011000
Seawitch [1]	01011001
Split Second [1]	01011010
Star Gazer [1]	01011011
Viper [1]	01011100
FreeFall [1]	01011101
Cosmic Princess	01011110

Bally Free Play Settings

To place any of the Bally games in free play mode, just place the left most switch in the on position. For example lets use Future Spa again.

```
Example:Future Spa   10010010
                     ⇑⇓⇓⇑⇓⇓⇑⇓
```

Then turn off your credit display feature which is either switch 20 or 27 of the game feature dipswitches.

Consult our manual or the settings cards located in the game for the correct switch to turn off or just try one or the other.

Enhanced Diagnotics Test

Place the two left most switches in the on position. You can keep the other switches as they are.

```
Example:             11000000
                    ⇑⇑⇓⇓⇓⇓⇓⇓
```

Memory Clear Function

Place all the switches in the up position except switch one. See Example.

```
Example:             01111111
                    ⇓⇑⇑⇑⇑⇑⇑⇑
```

Other Game Software:

Sexygirl [2]	00001010
Big Ball Bowling [3]	01011111
Blk Sheep Squadron [2]	01100000
Genisis Puck Bowler [2]	01100001
Blk Beauty Shuffle	01100010

Note 1: CLK Jumpers need to be on the left side.
Note 2: No freeplay for these games. Should be a switch option.
Note 3: Remove R50 for this configuration.

Table 1

Ver 6