



TECH 2005

MOTHERBOARDS / MBs

Force: ECS

- CPU: Intel Celeron 533\566 MHz
- Memory: DIMM – Dual inline memory module (PC133)

Maxx: Mitsubishi, Itox, Telco 586, & Unicorn.

- CPU: Windchip, Rise. 200 MHz
- Memory: DIMM – Dual inline memory module (PC100)

Note: Telco 586 requires SIMMs.

XL: DeAmeritek 486 & Telco 486

- CPU: AMD 66 MHz
- Memory: SIMM – Single inline memory module (Fastpage)

All MBs: System Battery: 3.0-volt lithium - CR2032 – System CMOS configuration.

I/O BOARDS – Input/output board.

Force: 3 in 1 I/O & USB I/O Board

- 3 in 1 I/O board:
Used EVO, Edge, Wallete & Fusion
Not interchangeable with the USB I/O board.
JP7 - Jumper must be in place when bill acceptor & coin are used.
- USB I/O (square I/O board)
Used in the Radion, Elite, Vibe, Classic, 19" Upright & Mr. VIPs.
USB I/O jumper settings for the FORCE Series games:
J5B - USB Port setting for Elite & Upright games.
J5A - USB Port setting for Radion & Classic games.



Note: If the jumpers are not set correctly, the I/O board will display an "Invalid Key" error.

Note: Check I/O board LEDs for voltages: Diodes D1: +3vdc, D2: +5vdc, D4: VSS & D3: USB VCC.

All four LEDs should be lit red. If not, an "Invalid Key" error will appear.

- Setup and calibration buttons are located on the I/O board.

Maxx: Three versions: I/O Heavy, I/O Lite & I/O Mini & Riser board.

Difference between the I/O boards:

- I/O Heavy has sockets.
- I/O Light does not have sockets.
- I/O Mini is not interchangeable with the I/O Heavy or Light.

Note: I/O heavy and I/O light are interchangeable.

XL: CRT500 Zeus I/O Board & Riser board.

U5 - SECURITY KEY – The security key is a copyright protection device.

U11 - NVRAM DS1230 – Non-Volatile RAM. Retains game information (hi score, bookkeeping, etc)

U12 - EPROM – This is the operating system for CD-ROM based games and is classified as Drive C:\

U13 - FLASH RAM.

- ERROR READING DRIVE D: U12 EPROM does not match the CD software version.

Operating system errors:

- OPERATING SYSTEM NOT FOUND: Indicates a problem with the DeAmertek motherboard.
- DISC BOOT FAILURE: Indicates a problem with the Telco motherboard.
- Hard Drive based games: The motherboard not communicating with the hard drive.
- CD-based games: The motherboard not communicating with U12 EPROM on the I/O board.
Check U12 EPROM for bent pins or damaged traces under socket.

Note: All DIPswitches DS2 & DS3 must be in OFF position.

Note: Earlier XL I/O boards have DS1 DIPswitches: 1, 4 & 8 must be in the OFF position.

Note: XL I/O board has small volume control incorporated on it. (Small blue disc)

Common I/O board facts:

- Sound level is controlled by soft volume control through SETUP on Force & Maxx games.
- Security key: round and silver with black handle. The key is a copyright protection device.
- DIPswitches located on the I/O board and should be in the off position.

SOFTWARE:

FORCE SERIES

FORCE 2002

Version: V8.00 - V8.06
Security Key: SA3050-XX

- V8.01, V8.02 requires V9.01 CD for calibration, audio, and high score problems.

FORCE 2002.5

Version: V9.00 - V9.01
Security Key: SA3050-XX

FORCE 2003

Version: V10.00 - V10.09
Security Key: SA3059-XX

- V10.00 - V10.07 requires V11.05 CD for credit, reboot, and lockup problems.

FORCE 2003.5

Version: V11.00 - V11.05
Security Key: SA3059-XX

FORCE 2004

Version: V12.00 - V12.10
Security Key: SA3068-XX

- V12.00 – V12.11 requires V13.00 CD for reboots and lockups.

FORCE 2004.5

Version: 13.00 - V13.10
Security Key: SA3068-XX

FORCE 2005

Version: V14.00 - V14.22
Security Key: SA3083-XX

- V14.00-V14.21 requires V15.00 version for "local host login" reboot problem

FORCE 2005.5

Version: V15.XX
Security Key: SA3083-XX

MAXX SERIES

MAXX – First release

Version: R00, R01 – R06, V3.01 - V3.07
Security Key: SA3022-XX, SA3031-XX

- V3.01 requires V3.06 and V3.07 kits for lockup problems.

2K

Version: V4.00 - V4.01
Security Key: SA3035-XX

- V4.00, V4.01 require V5.01 for a calibration problem.

2K PLUS

Version: V5.00 - V5.01
Security Key: SA3035-XX

DIAMOND

Version: V6.01 - V6.05
Security Key: SA3042-XX

- V6.00 requires V7.02 for the Golf game-pricing problem.

DIAMOND2

Version: V7.00 - V7.02
Security Key: SA3042-XX

EMERALD

Version: V8.01 - V8.06
Security Key: SA3048-XX

- V8.01, V8.02 requires V9.01 for calibration, audio, and high score problems.

EMERALD2

Version: V9.01
Security Key: SA3048-XX

RUBY

Version: V10.00 - V10.09
Security Key: SA3056-XX

- V10.00, V10.07 require V11.05 CD for credit, reboot, and lockup problems.

RUBY2

Version: V11.00 - V11.05
Security Key: SA3056-XX

SAPPHIRE

Version: V12.00 - V12.10
Security Key: SA3065-XX

- V12.00 – V12.11 requires V13.00 CD for reboots and lockups.

SAPPHIRE2

Version: V13.00 - V13.10
Security Key: SA3065-XX

JADE

Version: V14.00 - V14.22
Security Key: SA3079-XX

- V14.00-V14.21 requires V15.00 version for "local host login" reboot problem.

JADE2

Version: V15.xx
Security Key: SA3079-XX

Memory Requirements:

32 Meg of DIMM (32768K) requires Force 2002(5), Maxx 1st release, 2K(+), Diamond(2) & Emerald(2).

64 Meg of DIMM (64512K) required Force 2003(5), 2004(5), 2005(5), Maxx Ruby(2) & Sapphire(2) Jade(2)

XL SERIES

CD – R0, R0A, R0B, R0C, R0D, R1, R2, R3, R3A, R3B, R3C.
SECURITY KEY – SA3008-XX - R001, R002, R003, R004, R005.
EPROM – U11, U12, U12-R2, SA3014-03 U12-R3 / U12-R4.

XL5000

CD – R5A, R5B, R5D, R5E, R5G, R5H, R5I.
SECURITY KEY – SA3008-XX R006
EPROM – SA3014-03 U12-R3 / U12-R4.

XL6000

CD – R02, R04, R05, R07.
SECURITY KEY – SA3019-XX R00
EPROM – SA3014-04 U12-R00

XL GOLD

CD – R00, R01.
SECURITY KEY – SA3033-XX-R00 – Square key
EPROM – SA3014-04 U12-R00

XL GOLD

HARD DRIVE – R01.
SECURITY KEY – SA3033-XX R00 – Square key
SA3039-XX R00 – Button key

XL PLATINUM

CD – V1.01, V1.02, V1.03.
SECURITY KEY – SA3046-XX-R00 – Button key
EPROM – SA3014-04 U12-R00

XL DOUBLE PLATINUM

HARD DRIVE – V1.01, V1.02, V2.00, V2.01.
SECURITY KEY – SA3046-XX R00 – Button key

XL TITANIUM

HARD DRIVE – V3.00.
SECURITY KEY – SA3052-XX

XL TITANIUM2

HARD DRIVE – V4.00.
SECURITY KEY – SA3052-XX

Note: XL Gold CD R00: Will not work with Button security key (SA3039-XX R00), square key only (SA3033-XX).

Note: XL Titanium2: Final release of software for the XL Series.

Memory Requirements:

8 Meg of SIMM (8192K) required for R3 Series & XL5000

32 Meg of SIMM (32768K) required for XL6000, XL Gold, XL Platinum, XL Double Platinum & XL Titanium(2).

XL SOFTWARE

R3 SERIES

- R3A CD - Pix Mix Babes lockup, requires R3C CD.

XL5000

- R5B CD - Checkers lockup, requires R5I CD.

XL6000

- "Invalid Key Error": CMOS time and date need to be set to current time period.
- "Insufficient Disk Space"/"0 Files Copied"/Bad Command or Filename": Indicate a conflict with EPROM at U12.
- R02 CD – If the disc loads and responds slowly, the R07 CD is required.
- If the game resets to files copied and repeats, reseal the SIMMs. 32768K memory is needed at Memory test.

XL GOLD & PLATINUM CD VERSION

- XL Gold CD-R00: If screen calibration drifts and then locks up, the R01 CD is required.
- If the logo picture remains on the screen without changing for a long time period, there is insufficient memory. 32768K memory is needed.
- If the logo picture comes up and changes to an "Operating system not found" error, there is a missing or defective 512K Video Dram IC chip at U38 (DeAmeritek motherboards).

XL GOLD & XL PLATINUM HD VERSION

- If the game logo appears on the screen, then resets:
There is insufficient memory. 32768K memory is needed and the year must be set to 2001 or later.
- "Invalid Key Error": Insufficient memory. 32768K memory is needed.
- "No Sound Driver Loaded: Insufficient memory. 32768K memory is needed.
- "Invalid Drive Specifications" (with a D:\ prompt flashing). Jumper JP1 (EPROM ENABLE) must be removed.
- If "Free Play" appears on the screen and cannot be changed through setup options, the date and time must be set to present time period.

XL PLATINUM CD & HD VERSION

- HD version: A calibration problem requires CDs PA0022-01 & PA0022-02, V2.00
- CD version: A calibration problem requires CDs Rev B PG3004-02 V1.02.

Note: Newer versions of Platinum software have a three-point calibration.

Once the two-point calibration is complete:

1. Press the icon reading LOW COLOR CALIBRATION; a single dot will appear on the screen,
2. Touch the dot for two seconds and remove your finger. The screen will return to the normal menu.

**Current versions will have the third dot come up automatically after the second dot.

CMOS CONFIGURATIONS

ECS (FORCE)

- 1 - Plug a keyboard into the bottom **purple port** connector (PS2)
 - 2 - Power the game on.
 - 3 - Press **DEL** to enter **SETUP**.
 - 4 - Arrow over and down to **Load Fail-Safe Defaults**,
 - 5 - Press **Enter**, select **Y** for Yes
 - 6 - Arrow back over to **Standard CMOS Setup**.
- Check the following:
- Drive A: **none**
 - Drive B: **none**
 - Floppy 3 Mode Support: **Disabled**, press **ESC**
- 7 - Arrow over and down to **Load Optimized Defaults**.
 - 8 - Press **ENTER**. Press **Y** for “Yes”.
 - 9 - Press **ENTER**. Press **F10**.
 - 10 - Press **ENTER**. The system should reboot. Unplug the keyboard.

Mitsubishi / ItoX (MAXX)

- 1 - Plug in a keyboard and turn on the game.
- 2 - Press **F2** to enter **Phoenix BIOS Setup Utility**.
- 3 - Press **F9** to load **Setup Default**.
- 4 - At Setup confirmation, press **ENTER** with YES shaded.
- 5 - Press **F10**, save and exit.
- 6 - Press **ENTER** for confirmation with **YES** shaded, then unplug the keyboard.
- 7 - The system should reboot.

Telco 486 (XL) & Unicorn 586 (MAXX) (Telco 586)

- 1 - Plug a keyboard into **J4** (Telco XL) or **purple port** (Unicorn Maxx).
 - 2 - Press the **DELETE** button to enter Setup.
 - 3 - Select “**LOAD SETUP DEFAULTS**” Press **Enter**.
 - 4 - Press **Y** for Yes, then press **Enter**
 - 5 - Select “**STANDARD CMOS SETUP**”
 - 6 - Press **Enter**. The settings should be as follows:
 - Date: Set to current date.
 - Time: Set to approximate time.
 - Hard Disks: All “TYPE” and “MODE” fields set to “AUTO”
 - Drive A: 1.44M, 3.5 in
 - Drive B: None
 - Video: EGA/VGA
 - Halt On: All, But Keyboard
 - 7 - After all settings have been changed or verified, press **Esc**.
- 8a through 8d for boot sequence for Unicorn 586 only, for Telco 486 continue to Line 9**
- 8a - Arrow down to “**BIOS feature setup**” Press Enter.
 - 8b - Arrow down to “**boot sequence**”
 - 8c - Use the **Page Up** or **Page Down** keys to change the sequence to: **CD-ROM, C, A**
 - 8d - After all settings have been changed or verified, press **Esc**.
 - 9 - Press the **F10** key. Press **Y** for Yes.
 - 10 - Press **Enter** and unplug the keyboard. The system should reboot.

DeAmertek: Has 2” fan in upper right hand corner.

- 1 - Plug keyboard into J4. Power On. Press **DEL** to enter SETUP.
- 2 - Use DOWN ARROW to “**Load ROM Default Values.**”
- 3 - Press **ENTER**. **NOTICE** message will appear on screen.
- 4 - Press **ENTER**. Use UP ARROW to “System setup.”
- 5 - Press **ENTER**. Use DOWN ARROW to **Diskette Drive A**.
- 6 - Press PAGE UP until “**Not installed**” appears.
- 7 - Press **ESC**. Main Menu appears on screen
- 8 - Use DOWN ARROW to highlight **Boot Options**.
- 9 - Press **ENTER**. Press PAGE UP to **C: ONLY**.
- 10 - Use DOWN ARROW to “**Post Errors**” PAGE UP to **Disabled**, then press **ESC**.
- 11 - Use DOWN ARROW to **Green PC** feature, then press ENTER.
- 12 - A customized gray box appears. PAGE UP to **Disabled**
- 13 - Press ESC Press F10, **WARNING!** Appears on screen. Press Y for Yes
- 14 - Press **ENTER**. Unplug keyboard from J4. System should reboot.

DRIVE DESIGNATION

XL / Maxx / Force

Drive C:\ Hard drive

Drive G:\ CD-ROM drive (downloading software)

XL - CD based only

Drive C:\ is the U12 EPROM.

Drive F:\ is the CD-ROM drive.

Hard drives: (HD) HDD

XL / Maxx / Force

- Disc Boot Failure: Indicates a defective hard drive.
- Operating System Not Found: Check the IDE ribbon cable from HD to motherboard. May indicate a defective HD.
- Critical Error, Abort, Retry, Fail: Indicates a defective hard drive or IDE ribbon cable.
- CRC Error Reading Drive C: Indicates a defective hard drive.
- Smart Failure: Indicates a defective hard drive.
- Bad Command or File Name: This may indicate a corrupted hard drive or motherboard. (Corrupt CMOS)

Note: Reloading the CDs may help correct the "BAD COMMAND or FILE NAME" error.

Note: Performing a CMOS configuration may also help correct a "BAD COMMAND or FILE NAME" error.

Force 2003 / 2004 / 2005 & Maxx Ruby / Sapphire / Jade

- **Error 64:** Indicates a defective hard drive.
- **Error 67:** Indicates a defective hard drive.
- **Error 97:** Indicates a defective hard drive.
- **Error 94:** Indicates that the hard drive is connected to the Secondary IDE. The hard drive must be connected the Primary IDE connector and the CD-ROM drive must be connected to Secondary IDE port.
- **Checking for bad blocks:** Possible corrupted hard drive. Try reloading the CDs.
- **Mounting other file system – failed:** Possible corrupted hard drive. Try reloading the CDs.

XL

- Invalid drive specifications: Possible problem with the IDE ribbon cable or CD-ROM drive.

Hard Drive checksum test:

1. Turn power off.
2. Turn on Dipswitch DS2 - 8.
3. Power the game up.
4. The test will run for about 20-25 minutes.
5. If the test passed, the game will go into attract mode.
6. If the test failed, a "Checksum Error" message displays. This indicates a defective hard drive.

Note: A hard drive can still be defective, even if it passes the hard drive test.

DOWNLOADING

CD:

- Make sure the CD is installed correctly, with the logo facing up.
- Check the CD for scratches or defects. Try a different set of CDs.
- Make sure the CDs are of the same revision.
- To verify that the CD ROM drive is being detected by the motherboard, install CD2 and power the game up. If the game acknowledges CD2 with an error message to "Re-install CD1 and start the process over", then CD1 is the problem.

CD-ROM:

- Jumper setting on the back of the CD-ROM drive must be set to MASTER (MA).
- Try a different CD-ROM drive to determine whether the existing CD-ROM drive is a problem or defective.
- **Error 13.9:** This error can indicate either defective set CDs or CD-ROM drive.
- Rebooting after download: The game will reboot after Linux* software is loaded. A questionable CD-ROM drive may have a problem by not reading the CDs correctly. Try a newer CD-ROM drive.

Note: The age and condition of the CD-ROM drive are factors in downloading problems.

CMOS CONFIGURATION:

- A problem with CMOS configuration can cause the motherboard to not recognize the CD-ROM drive. See CMOS Configuration Settings page.

CONNECTION PROBLEMS:

- Make sure that the Centronics cable is connected correctly and pushed all the way down in place. Try another Centronics cable.
- IDE ribbon cable: Use IDE ribbon cable connected between the CD-ROM drive and the motherboard. Use the fan power connector to power the CD-ROM drive. The IDE ribbon cable going to the motherboard will go to the Secondary IDE connector on the CD-ROM drive.
- **CD-ROM error:** CD-ROM must be to Secondary IDE port.
 - Hard drive IDE ribbon cable must be connected to the Primary IDE Port (top port) on the motherboard.
 - CD-ROM drive IDE ribbon cable connects to Secondary IDE port (bottom port) on the motherboard.

SOFTWARE:

- If CD1 gets about 51% of loading and detects a hard drive error. The hard drive is defective. This is determined after a different set of CDs and a different CD-ROM drive are used and the reloading attempt fail again at 51%.
- CD2 is loads to about 82-87% before asking again for CD2 to be installed, This would indicate that CD2 is defective. Try a different set of CDs.
- CD3 is installed and ejects, asking for CD4: This indicates that CD3 is defective.

Note: CD3 problem is only seen with Linux OS: 2004(5)/2003(5) & Ruby(2)/Sapphire(2)

Note: 2003\Ruby are a two CD set.

Note: 2004\Sapphire are a three CD set.

Note: 2005\Jade are a four CD set.

TOUCHSCREEN CONTROLLER – Microtouch controllers.

- The game boots up to the **MERIT SOFTWARE LICENSE AGREEMENT** on the screen without the "Accept" and "not-accept" icons being displayed.
 - 1 - Make sure the green LED on controller is lit. Orange wire to +12 vdc and gray wire to black wire (ground)
 - 2 - Touchscreen controller drivers may not match the software version being loaded.

Note: A Microtouch controller acquired through a non-Merit distributor may not have the same drivers as a Microtouch controller that was used in dedicated Merit games. The controller may have been replaced in the past.

LOCKUPS \ REBOOTS

All games

Fans: Make sure fans are clean and clear of dirt. On the CPU chip, power supply (if any) and hood, etc.

Memory: Physical memory: Force, Maxx (DIMMs) & XL (SIMMs)

- Defective DIMMs or SIMMs can cause games to lock up or reset and can also create graphics problems.
- Continuous repeating tone or tones may indicate a hardware memory problem with the DIMM.
Try reseating or replacing the DIMM(s)
- Check and reseat SIMMs. Check for good or bad SIMMs by reading the memory numbers.

Memory corruption: Corrupted Software or missing files on the hard drive.

- Corrupted software on a hard drive can also be responsible for games rebooting and locking up.
- Clearing memory or reloading the CDs may help correct the problem. *Refer to memory clear section.*
- Some software versions had problems with lockups and reboots. *Refer to Tech2005 for software revision.*

Monitors & Touchscreens: Games with CRTs

- Touchscreen cable should not be positioned under or on top of the yoke of the monitor.
- Touchscreen controller cable should not be positioned near the flyback transformer.

Hardware:

- Motherboard: A defective motherboard can be responsible for lockups and reboots.
- Hard drive: Problems with age and physical condition are factors. 24/7 operation.
- Power supply can create problems with lockups and reboots.

Note: If the fan in the power supply has failed, it is recommended that the power supply be replaced.

Voltage: Location / wall outlet / grounding

- Heavy devices: A refrigeration unit (beer box) or compressors on the same line will cause lockups.
- Poor line voltage: The location may have a problem with poor wall voltage or grounding with electrical system.
- Reversed polarity at the wall outlet will effect game operation.
- Improper wall voltage or low voltage can be a factor.
- Neon Lights: Can produce disruptive line noise.
- Proper grounding is necessary for normal game and touchscreen operation. Proper grounding is also a safety issue.

Maxx \ XL

Contact connection:

- Dirty edge pins on the I/O and riser boards.
- Dirty edge pins on SIMMs or DIMMs.
- IDE ribbon cable: Dirty pins or defective due to age.

XL – (Causeway Error 9 & 11)

- Check for scratched or faulty CDs.
- CD-ROM drive: Old and defective.
- Defective IDE ribbon cable.
- Dirty edge pins on the I/O and riser boards.
- Dirty edge pins or defective SIMMs.
- No sound driver loaded: Possible defective motherboard assembly or insufficient memory.
- Memory corruption: Try a two-button memory clear.
- Defective motherboard and/or I/O board.

Note: A causeway error does not refer to any direct problem, but only indicates that a problem exist.

MEMORY CLEAR

Two button clear – All games.

Turn off the game.

Locate the SETUP & CALIBRATE buttons.

Press and hold the SETUP & CALIBRATE buttons while turning the game back on.

After about 20 seconds, the message “**TWO BUTTON CLEAR DETECTED, PLEASE RELEASE THE BUTTONS**” should appear on the screen. Upon seeing this message, release the buttons. The game will continue to bootup.

Keyboard clear – DOS operating system.

XL: Gold, Platinum & Titanium(2) / Maxx: 1st release, 2K+, Diamond(2) & Emerald(2) / Force 2002(5)

Turn off the game.

Plug in the keyboard, then power the game up.

Allow the game to boot up into the first menu screen.

Press the **ESC** key. The screen should display **C: MERIT2**

Type in **cd..** and press **ENTER**. **C:\ prompt** will appear.

Type in **del nvram.dat** and press **ENTER**. **C:\ prompt** will reappear.

Turn off the game and unplug the keyboard, then turn the game back on.

Note: If a Bad Command or File name appears, chances are the del nvram.dat was not typed correctly.

DIPswitches – Linux operating system

Force 2003, 2004, 2005 series / Maxx: Ruby, Sapphire, Jade series only.

DS4 & 7: Complete memory clear. Resets the game to the factory defaults. Clears ALL memory on hard drive.

DS6: Hardware configuration: Identifies system hardware and reconfigures the device drivers for the motherboard.

2005/Jade:

DS1: Four selection icons: DS6, DS8, DS4 & 7, DS5 & 7.

Reloading software - CDs

Reloading the CDs will reformat the hard drive and restore the software to an original default level.

Note: The two-button memory clear should be tried first, before the keyboard clear.

Note: A keyboard memory clear will only work with hard drive-based games.

If there is a need to clear memory beyond two-button memory clear on a CD-based XL game,

You will need to use a different CD revision or different version of software.

Note: For hard drive-based games, should a two-button memory and/or a keyboard clear not correct the problem, Reloading the software would be the next step.

Note: The keyboard clear procedure does not work with 2003/2004/2005 & Ruby/Sapphire/Jade software versions.

SECURITY KEY: Copyright protection device

Invalid key error:

All Games:

- Check time & date in CMOS configuration.
- Check for a defective security key.

Force:

- LEDs: Check LEDs on the I/O board: D1: +3vdc, D2: +5vdc, D4: VSS Voltage & D3: USBVCC. All four LEDs must be lit in order for the FORCE I/O board to function correctly.
- USB cable: Make sure USB cable is seated all the way at the I/O board and ECS motherboard.
- Check for a defective I/O board, or if the I/O board was replaced, check the jumpers. Refer to FORCE Series on Tech notes for I/O board (USB port)
- Corrupted hard drive: Reload software CDs.
- Dipswitch DS6: Device drivers may need to be reset. *Check Memory Clear section / DIPswitches.*

Note: Force game boots up to "**Maxx loading**" then displays **invalid key**. To test whether the I/O board is being recognized by the motherboard, turn the game off and put DIPswitch 6 (DS6) to the ON position. Then turn the game back on. If "**Maxx loading**" followed by **invalid key**, this would indicate that the motherboard is not recognizing the I/O board. Check and reseal the USB cable. Check for the four red LEDs on the I/O board. Check power connector on the I/O board.

Note: Force2003/2004/2005 software requires all hardware to be correct. Hard drive, controller, I/O board, etc.

Maxx (Unicorn)

- Audio board: Check to see if the audio board is seated or installed correctly. The socket on the Unicorn MB is larger than audio board connector.

XL / Maxx

- Check for dirty edge pins on I/O & riser boards.
- Check for a defective I/O board or riser board.

XL

- Check memory. If there is under 32 Meg (32768K) for a 6000, Gold, Platinum, or Titanium game, The adapter board for the button key may have a poor contact connection. Reapply red gel from the kit.

Note: Invalid key error occurs when attempting a download of newer software, chances are that the new security key was installed first and the attempted download either failed or did not occur.

This would indicate a loading problem. Refer to DOWNLOADING page of TECH2005 for possible solution.

TOUCHSCREENS: (TS)

Microtouch:

- SMT-3 Controller XL & Maxx games (white box)
- SMT-4 FORCE games only. (black box)
- Green LED on controller lit is at half brightness and goes to full brightness when the screen is touched.
- Overlay functions on capacitance.

Note: Green LED is flashing from 1 to 5 times, self-diagnostics detected an error or the controller may be defective.

Note: Green LED is not lit: Check +12 vdc. The touchscreen and/or controller may be defective.

ELO Graphics: (Used in XL & early Blue Maxx countertop games)

- Controller is in a silver box. Requires +5.0 vdc.
- Overlay functions on SAW/Sound Acoustic Waves. Sound waves are reflected across the screen.
- Normal Operation: The green LED will flash constantly; LED lights steadily when the screen is touched.
- Touchscreen overlay has ridges around the edge that must be kept clean for the screen to respond correctly.
- Touchscreen cable is on left side of CRT.

Green LED is steadily lit:

- Check for objects that may be attached to the screen.
- Make sure the bezel is dry and not stuck to the screen.
- Check the grooves etched around the outside edge of the screen for dirt.
- The controller may be defective.

Calibration:

1. Locate and press the **CALIBRATE** button.
2. Touch the first dot that appears in the corner for about 2 seconds, then pull your finger away.
3. Touch the second dot that appears in the opposite corner for about 2 seconds, then pull your finger away.
4. During the touchscreen test, the cursor should follow your finger anywhere you touch the screen.

Note: XL Platinum, Maxx Emerald and Force 2002 have a three-point calibration.

CALIBRATION \ LOCKUP PROBLEMS:

Touchscreen:

- Problem with the entire screen: Recalibrate the touchscreen.
If the calibration is still off, replace the touchscreen.
- Problem in one area of screen: check for scratches or nicks on the screen.
If scratches or nicks are found: Replace touchscreen
- Loses calibration: Check the ground pin on the line cord. Replace AC line cord. Check AC wall outlet.

Grounding:

- Improper grounding will affect the operation of the touchscreen.
- Double-touch problems (i.e., taking two or three cards away in Tri Towers & 11-UP after only one touch to the screen, make sure the A/C plug and wall outlets are properly grounded.

CRT \ Monitor:

- The touchscreen cable should not be positioned under or on top of the yoke of the monitor.
- The touchscreen controller cable should not be positioned near the flyback transformer.

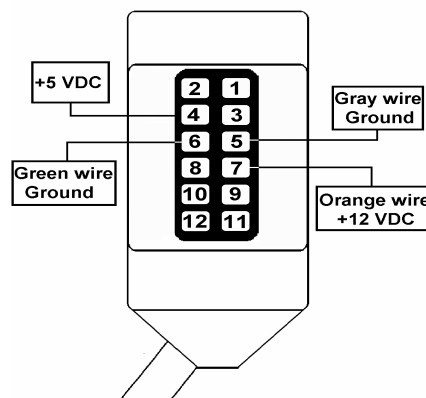
Note: If the cable is not properly installed, touchscreen response will be 180 degrees out of sync.

Note: Microwave ovens and neon lights can and will interfere with the calibration of the touchscreen and should not be within 6 feet or 2 meters of the game.

Cleaning:

Use only soft a cloth with water or denatured alcohol.

TOUCHSCREEN OVERLAY CONNECTOR



MONITORS:

Eygo CGA

Type 2, 3, 4, 5, 6

No power up:

R103 & R104 change to 75K ohm - 1 watt each

IC1 – TDA8380 & Q101 – 2SC4742

No vertical defection:

Related capacitors to be replaced:

C412 - 10 uf / 25 vdc C403 - 2.2 uf / 16 vdc

C413 - 4.7 uf / 160 vdc C404 - 1 uf / 50 vdc

C414 - 1 uf / 25 vdc C407 - 100 uf / 16 vdc

C501 - 10 uf / 25 vdc C408 - 8.2 uf / 50 vdc

C806 - 100 uf / 100 vdc

Note: If C806 is missing, leave it empty.

Wells Gardner CGA

Type 13, 34.

No power up:

C011- From: 22 uf / 35 vdc

22 uf / 160 vdc

C015 - From: 100 uf / 35 vdc

To: 100 uf / 160 vdc

Ducksan CGA

Type 19, 20

No power up:

C804 - From: 1 uf / 50 vdc

To: 10 uf / 50 vdc

Ducksan VGA

Type 55

No power up:

C804 - From: 1 uf / 50 vdc

To: 10 uf / 50 vdc

Ducksan VGA

Type 52

Dim tube: Replace tube

Video Display – 1-800-241-5005

M34KUK-35X03, tube replacement.

Telco VGA

Type 51

Color problem:

Replace IC 601: color amplifier

Replace FR102: 2.2 ohm 1 watt resistor

Video problem:

Dim screen, dark screen, lack of color, washed out color, over driven color, or no color

Possible solution:

Replace video amplifier chip on the neck board of the monitor:

LM1203, GL1160, DBL2056 & NTE7081.

Service numbers

Tatung – 800-827-2850

Telco – 800-678-3526

Wells Gardner – 800-336-6630

Eygo TUV CGA

Type 10, 11, 12.

No power up:

Replace Q502 - 2SC4769-2

Replace C814 - 100 uf 35 vdc