You are now the proud owner of an official Missile Command Recharged arcade machine! Our team has worked hard to ensure that it is the best possible arcade game that will bring you years of enjoyment and profits. Built in the USA, it has been designed and built to the highest possible quality standards.

To ensure top operation for that time it is in your possession, refer to this manual for general maintenance and any repair needs.

We've had so much fun building this; we hope you have fun playing it too. We appreciate your purchase and wish you many years of happy gaming for all who play Missile Command Recharged.
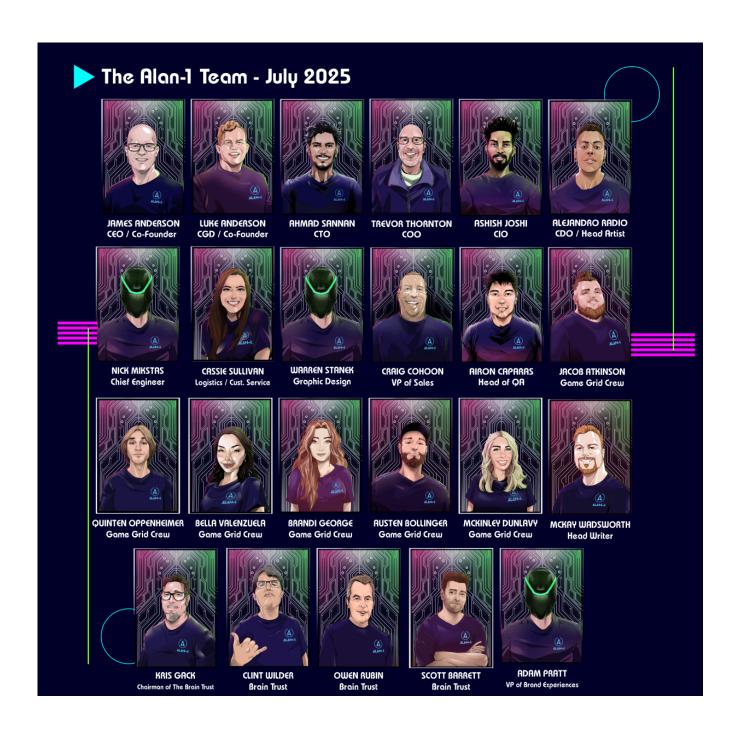

The Alan-1 Crew

The Alan-1 Team - July 2025

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Read This Manual!

This manual contains important information about your Alan-1 game machine, including details to prevent any injury to yourself, your employees, and your players. If followed properly, this advice will also help you prevent any damage to your valuable new game.

Alan-1 Inc. is not responsible for any operation or modifications that are outside of the game's original design, as delivered.

Transporting The Game

Due to the height and weight of the Missile Command Recharged game machine, along with its delicate glass and electronic components, we advise great care when moving it, whether for short or distant transport.

Before moving it, ensure that the built-in casters have been raised to prevent catching on any raised surfaces. **We recommend a minimum of two people to move the machine at all times.** Avoid any rough handling. If transporting on a truck, use proper soft packing on all of the edges when applying moving straps, otherwise it can cause severe damage to the game cabinet during transport.

If there are any game issues after moving or transport, we recommend that you check the various cables and components, which may have come loose from the movement.

Power and Grounding

Take care to avoid electrical shock. This game comes with a standard 3-prong power cord. *Do not cut off or defeat the grounding prong of the power plug!* This creates a safety hazard that could harm yourself or your guests.

On rare occasion, the power cord may fail. It is replaceable. ***Never use a damaged power cord!*** Replace it immediately. (See the "Power Requirements" subsection under "Product Specifications.")
We recommend that you plug this game into a surge suppressor.

Always power off and unplug the unit before any servicing or making adjustments unless otherwise instructed by an Alan-1 or other authorized service technician. Installing new or repairing existing components while the power is on can damage crucial components, thus voiding the game's warranty.

Water

Keep this game away from water and water sources. Do not clean it with running water.
We recommend installing against a wall with a small amount of clearance, so that the ventilation ports are not accessible to spills and sprays, but also to allow for proper ventilation and air circulation. If the unit sustains any water damage, cease using it immediately and unplug the AC power.

Monitor

The monitor contains no user serviceable parts. Only trained service technicians should attempt to service the display. If the tips in this manual do not help in solving any display issues, contact the service department at the distributor you purchased the game from for assistance.

Connectors

Connectors are often keyed and should only connect one way in these instances. When servicing the machine, ensure all connectors mate properly. If connectors do not slip in easily, do not force them as this will cause damage. Check for correct orientation. If any connector is damaged, discontinue use of the game until an authorized service technician can replace it.

Computer & Electronic Components

The computer board contains sensitive components, including an SSD hard drive. It and the other electronic components are *highly sensitive to electrostatic discharge (ESD).*

Prior to servicing the computer or components, discharge your body from any ESD, as a discharge into a component can permanently damage the part that was touched. Also be mindful of certain articles of clothing that might generate ESD, such as jackets with wool lining.

Treat all components as fragile. Call your distributor's service department before servicing. Ask about warranty information as it relates to the PC and other electronic parts.
Cycle AC power on or off with the cabinet power switch instead of unplugging it directly from the PC motherboard.

Voltage

Each game is manufactured for a specific AC voltage to ensure its proper operation. On first use, verify that the AC voltage matches the game's specified voltage rating before activating the power, Games in North America should be set for 110V/120V.

Hazard To Epileptics

A small portion of the population has an epileptic condition that may cause seizures. Individuals affected by this condition may already avoid video games, however, some may have an undetected condition that can be triggered by certain visual patterns. The game cabinet has

front-facing, bright LED flashing lights, in addition to rapid, colorful action on-screen. P*laying this game, and watching others play this game, can potentially cause seizures.* If you, your children, or anyone else you are responsible for are diagnosed as epileptic; have suffered seizures in the past; are related to someone with epilepsy; or suspect that you may be epileptic or susceptible to seizures; you should consult your physician before playing this game.

Servicing

Only authorized service personnel should access the internal components of the game.

Disconnect power before servicing unless specifically directed otherwise. This game contains no isolation transformer and there are no power interlocks.

Be mindful of Electrostatic Discharge(ESD) as previously mentioned and refer to the section on connectors when dealing with the wiring and internal connections.

Keep the back door of the game on at all times. Leaving the back open may invite snooping customers to get inside of the game, where they might injure themselves, damage the game, or steal components.

In the event of a technical issue or failure, please refer to the TROUBLESHOOTING section of this manual. You can also visit the MCP support knowledge base on alan-1.com, or contact our customer support team at 1-844-44-ALAN1.

END OF LINE

Missile Command Recharged Pro Model - 2 Player

Power Requirements

United States, Canada (ETL)
Voltage: 120VAC / 60 Hz
Operating AC Current: 2 amps continuous, 3 amps peak.
Power draw ranges from 20 watts minimum; 105 watts operating; 115 watts peak.
The power cord is IEC type 13.

Operating Conditions

Temperature 50F - 104F (10C - 40C)
Humidity < 95%

Cabinet Dimensions

Shipping (Inches)	Installed (Inches)
Height- 82 ¼" Width- 48" Depth- 40" Weight: 335lbs	Height- 77 ¾" Width- 31 ⅛" Depth- 29 ¼" Weight: 300lbs

Monitor Specifications

32" 1920x1080p HD
Connection to PC: HDMI

I/O Board

Each Alan-1 game uses a custom-designed I/O board called the 400 i/oT (for 2 player games). This board is the heart of what is called the Alan-1 Video Arcade System® (VAS). The VAS operates all controls and lighting. Modifying the i/oT board or any component of the VAS in any way will void your warranty.

Stress Testing

Each Alan-1 game undergoes stress testing as a part of the Quality Assurance (QA) process. This is done to ensure that the cabinets are up to professional standards where they can be operated on location for decades to come. Our stress testing includes:

- Once a cabinet is completed on the line, technicians check and ensure that all buttons light up and are responsive; ensure that the inputs (controls and coin door) works properly while also testing the outputs (the monitor, speakers, "cabinet toys"). There is a factory checklist that needs to be signed off by two individuals (line worker and a manager).
- Cabinets are then moved multiple times on their back wheels around the factory to ensure that they can withstand typical and practical wear-and-tear, then inspected and tested again to ensure that there are no issues. If there are, these are corrected at the factory and the game is fully tested again.
- The overall cabinet design that is being used for all Alan-1 upright 2-player models has been thoroughly tested and refined through location testing and shipping cabinets across the country, then making adjustments/corrections as needed, and applied to all future construction.

CABINET OVERVIEW

Marquee

Speakers

Vanguard

32" Monitor

Monitor Bezel

Fan outlets

Control Panel

Rumble motor
(Inside)

Coin door

FIGURE 1. MISSILE COMMAND 2 PLAYER PRO+ CABINET

Note that the only difference between this and the PRO is that the PRO models have plain black T-molding instead of the LEDs.

Unpacking

The Cabinet will be fully intact and closed during transit. There will be plastic and foam layers around the VAS that will have to be taken off for use. Please do not use any sharp knives as you remove those layers, taking caution to not mare or scratch the cabinet. A razor can be used to cut the straps, but still take care to not injure yourself or the cabinet while removing those. Any actions which damage the VAS will void any warranty work pertaining to the art or outer image. You can find the KEYS inside of a coin reject slot, behind a sticker that says KEYS. The power cord will be located inside of the coin box, while the keys to the rear door will be inside of the top coin door near the top left.

If the cabinet arrives damaged from the shipping company, DO NOT SIGN FOR IT. Otherwise, you will be held responsible for the costs of repairing the damages. Contact your distributor salesperson ASAP to follow their corporate policies regarding damaged shipments.

Inspection & Assembly Before Plugging In Your Game -IMPORTANT!-

The game comes fully assembled. However, it is possible that certain items such as cables came loose during shipping. BEFORE PLUGGING THE GAME ON, PLEASE PERFORM THIS INSPECTION:

- Find the coin door keys behind a sticker that says KEYS on a coin reject slot
- Open the coin box door and retrieve the power cord.
- Unlock and remove the rear door (keys are hanging from the top coin door)
- **Check all internal components** such as the motherboard, power supply, etc., are properly seated and attached to the cabinet
- **Check all internal cables**, such as the wiring harnesses, audio cables, USB, etc. Verify that they're still inserted and tight. Some cables might have become dislodged during transport. These include:
- HDMI cable between the mainboard and monitor
- Power cable to the monitor
- Power cable to the audio amplifier
- Speaker cables (to upper speakers and the lower subwoofer)
- USB cables between the mainboard and the I/O board
- Edge connectors from I/O board to control panel. The 2P cabinet has one.
- Check for anything else obviously out of place
- Put all keys and spares in a safe place, according to whatever system you use.

If you have purchased a game that may have been originally shipped to or intended for a different country, STOP! *Plugging it in and turning it on is dangerous due to voltage differences, and can damage the game.*

Wall Power Requirements

Missile Command Recharged Pro 2-player requires wall power at either 110-120VAC or 220-240VAC, depending on your country.

Power draw is approximately 2 amps continuous, 3 amps peak; 20 watts minimum; 105 watts operating; 115 watts peak

- ◦ Make sure you have at least Y more watts available on the circuit you're plugging it into, after taking everything else on that circuit into account, including the amperage.
- ◦ Do not overload the circuit. Circuits should also not be driven to the limit (i.e., do not operate a total of 20A worth of games on a 20A circuit, as this will wear out the breaker faster and may lead to circuit shorts or other power issues that can damage the game).

Do not cut off or defeat the grounding prong of the power plug! This creates a safety hazard.

Installing a Cashless Card Reader System

Missile Command Recharged ships with a single standard 2-slot coin door. The included coin mechs are set to 25¢ by default. **If you are using coins or intend on setting it to free play, you may skip this section.**

If your venue uses a card system, then Missile Command Recharged is compatible with the UCL standard.

Each Missile Command Recharged cabinet contains one 9-pin UCL connector per player.

All modern card systems should connect directly to the UCL connector, which provides power and ground to the card reader, as well as credit and ticket signals.

- ◦ IMPORTANT: When connecting a cashless system via the UCL connector, you must first disconnect the white COIN+ wire from the coin switch, and connect it to the white COIN+ wire on the UCL connector.
- ◦ If your card reader system does not support UCL, see the "Illustrations" section for a diagram of the UCL harness, which will provide the power and signals you must tap into.

We recommend that card readers be installed on the coin doors. Suzo Happ sells upper coin doors with mounting holes for different types of card readers:

- ◦ https://na.suzohapp.com/products/coin_doors/42-3145-10
- ◦ https://na.suzohapp.com/products/coin_doors/42-3145-03

Smaller card readers can be installed directly on the upper control panel. *Do not drill without checking clearances underneath first!* There are fans mounted underneath the upper control panel and drilling might easily damage them.

Need help? Please visit the MCP support knowledge base on alan-1.com, or contact our customer support team at 1-844-44-ALAN1.

Network Setup

Missile Command Recharged can connect to the internet for free online leaderboards, updates, remote operator access, and MLeS connectivity in one of two ways:

- Wired (Ethernet)
- Wireless (WiFi)

For WIRED connectivity:

- Remove the back door of the game machine
- Locate the RJ-11 Ethernet port on the game computer. It looks like an oversized telephone jack
- Using a CAT5e or CAT6 ethernet cable, connect one end of the cable into the computer, then the other end into your switch or router.
- Within the service menu, the game should state "Internet connected" in the top right corner if a signal is present. If not, check your type of cable and your internet switch or router ports

For WIRELESS (WiFi) connectivity

- Your game comes with a WiFi antenna that connects to the motherboard. Access this area by removing the backdoor.
- Ensure that the thin wires from this component are properly connected. If not due to shaking during transport, they are fastened using a small screwdriver.
- **Please refer to the next section below for full wireless setup by using the Alan-1 Game Grid App**
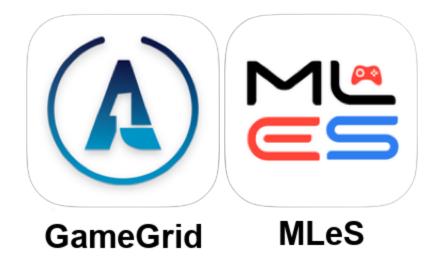
LED T-Molding [Pro+ models]

Some 2-player Missile Command Recharged models may have optional LED T-Molding installed (known as PRO+ models). There is nothing you need to do for these to be set up or to work. If they are not operating, then see the Troubleshooting section of this manual.

Alan-1 Operator Account & WiFi Setup

There are two mobile apps that will allow you to get the most out of your game, and engage players like no arcade game has ever done before. One is called Major League eSports (MLeS) and will be discussed later in this manual. The other crucial app is the Alan-1 Game Grid App.

The Game Grid app allows you to register your warranty with Alan-1, connect your game to the internet, monitor your game's performance, set up weekly tournaments, and engage with your players to bring them back. Available for both iPhone [iTunes/Apple] & Android [on the Google Play store] devices, and is required for you to be able to access these features. It will also allow you remote access to the game to register your location for customers to find you, run tournaments, see which registered MLeS users have played the game, monitor the audits, and get a FREE first time advertising run paid for by Alan-1.

You can find the app by searching for "alan-1 operators app" or "alan-1 game grid app" in either store. Here are direct links, while on the next page you will find QR codes to download (for offline versions of this manual)

Android: https://play.google.com/store/apps/details?id=com.alan1.operator
Apple/iOS: https://apps.apple.com/in/app/alan-1-operators/id6473255460

Apple/iOS QR Code:

Android/Google Play QR Code:

Once you have downloaded the app, setting up your account is simple. Follow the instructions within the app such as entering your name, location, email, and password. Required fields will be given a *.
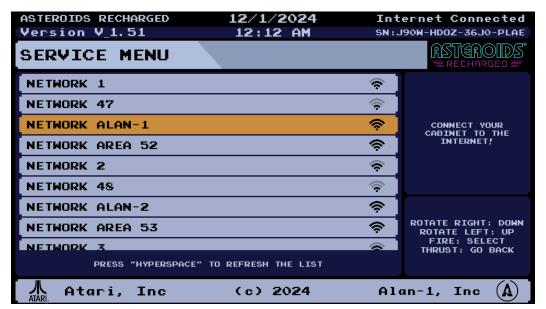
After all of the info is entered, follow these steps to connect your cabinet to the internet:

Step 1: With the game on, go to the service menu by opening up the top coin door, and set the service switch to the ON position.

Step 2: Select Online HQ, then select WiFi Setup

Step 3: Select the network that you want to connect to, if the network that you want isn't listed, refresh the list by pressing "DELTA BASE."
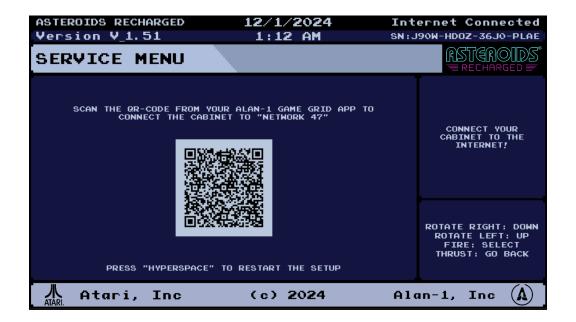
The WiFi menu when it sees active networks

Step 4: Give your Cabinet a few minutes to process the network setup, and once it's done, a QR Code will show up on your screen.

Scan the QR Code from your **Alan-1 Game Grid App**. Upon scanning, the Alan-1 app will prompt you to enter the password of the Wifi network that you selected on the cabinet. This allows you to enter the info using your phone's keyboard instead of navigating it using the arcade buttons.

```
ASTEROIDS RECHARGED          12/1/2024          Internet Connected
Version V_1.51                1:12 AM           SN:J90W-HDOZ-36JO-PLAE

SERVICE MENU                                    ASTEROIDS
                                                RECHARGED

    SCAN THE QR-CODE FROM YOUR ALAN-1 GAME GRID APP TO
         CONNECT THE CABINET TO "NETWORK 47"          CONNECT YOUR
                                                      CABINET TO THE
                                                         INTERNET!

              [QR CODE]

                                                 ROTATE RIGHT: DOWN
                                                  ROTATE LEFT: UP
                                                    FIRE: SELECT
                                                  THRUST: GO BACK

        PRESS "HYPERSPACE" TO RESTART THE SETUP

  ATARI   Atari, Inc      (c) 2024     Alan-1, Inc   (A)
```

Step 5: Once you enter the wifi password, your Alan-1 Game grid app will transfer that info to the cabinet automatically, and the cabinet will automatically attempt to connect to the wifi network that you've selected, using the password that you provided.

If the connection is successful, you'll get a success message on the cabinet, if the connection failed, you'll have the option to either try again or quit. In case of failure, the cabinet will show you the network name and the password, so that you double check whether the credentials were correct or not.

Pricing Setup

Missile Command Recharged will be set to accept four coins by default, but you can set it to what fits with your venue's needs. You can find more details on this and other settings down in the GAME OPTIONS section.

To access the pricing setting, follow these easy steps:

1. With the game powered on, use the key to open the top coin door.
2. Inside of the coin door, you will see a switch & a button, like this:
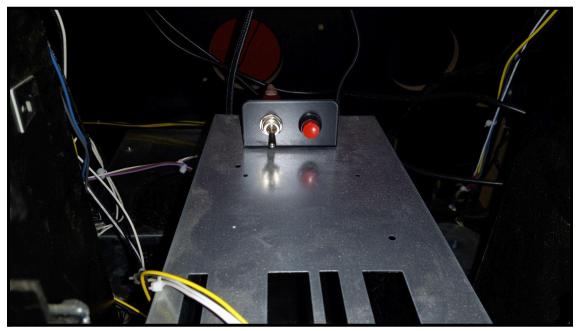
FIGURE 2. SETTINGS MENU TOGGLE SWITCH

3. Flick the Operator Menu switch to the UP position. On the monitor screen, it will load the Operator Menu.
4. Use the control panel to navigate to the Pricing Options menu
5. On this submenu, you can first set the game to one of the following options: Currency | Swipes | Taps | Tokens | Coins
6. Units per start credit can then be set to your desired amount.
7. If the game is going to be set to free play, you may also set it on this page
8. In the unlikely event that the game accumulates a large number of 'phantom credits,' you can clear this by selecting the CLEAR CREDITS option.

Initial Testing

After the game has been set up with these settings, it is highly recommended that you test the game to ensure that it is accepting payment and that all of the controls for each player are working properly. You can also go into the service menu and navigate to the TESTS to verify that all of the switches are operating correctly.
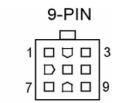
Dollar Bill Acceptor/Validators (DBA or DBV)

Missile Command ships with a standard Suzo Happ coin door, which has the wiring in place for handling a variety of DBA/DBV devices should you wish to install them into the game. A small adapter is included with the machine, but compatibility can vary upon what type of DBA/DBV you are using. If you need any assistance with the installation of your DBA with the machine, please visit the MCP support knowledge base on alan-1.com, or contact our customer support team at 1-844-44-ALAN1.

To install a 120V DBA into your game, please take the following steps:

Locate the 9-pin molex connector. It looks like this:

9-pin 120 VAC or 24 VAC connector
(view of connector)
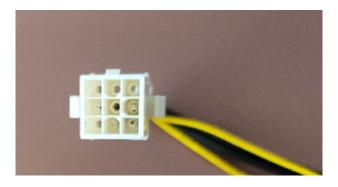
9-pin Mating Connector
Amp Mate-N-Lock 9-pin P/N 172169-1
Amp Female Pin P/N 170362-1
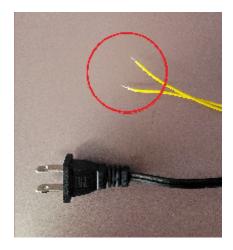
Pin	9-Pin Connector Function
1	120 VAC Neutral Inhibit
2	120 VAC Neutral Enable
3	120 VAC Hot Enable
4	120 VAC Hot Power (Not used for 24 VAC model)
5	No Connection (24 VAC hot for 24 VAC model)
6	120 VAC Neutral Power (24VAC Neutral for 24 VAC model)
7	Bill Acceptor Relay Contact (Normally Open)
8	Bill Acceptor Relay Contact (Common)
9	No Connection

Every Alan-1 Arcade cabinet comes with a bill validator installation harness; you can find it inside of the coin box. This plugs directly into the connector described above, shown here:
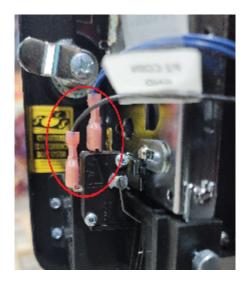
The other end of this harness has a 120V plug, and a pair of yellow wires with bare ends:

Plug the 120V in a standard receptacle; then connect the bare ends of the yellow wires to the normally open and common leaves on the coin door microswitch, as seen here:

The yellow wires need to connect to the existing wires as seen above; their polarity does not matter. It is best to use a clean wire splice connector, such as crimp-on quick connects, and not anything that would leave exposed wires, as that could result in grounding issues and/or an electrical shock to you or your customers.

Note that the provided wire harness does NOT support additional "inhibit" and "enable" signals that the DBA itself may support. These additional signals can be overridden by a DIP switch setting on the DBA. Often, DBAs will have an option for always enabling the validator. If the extra enable and inhibit signals are desired for the operation of the DBA, you will need to create your own installation harness, or see if the DBA manufacturer provides one, to satisfy that need.

Redemption Notice & Installation
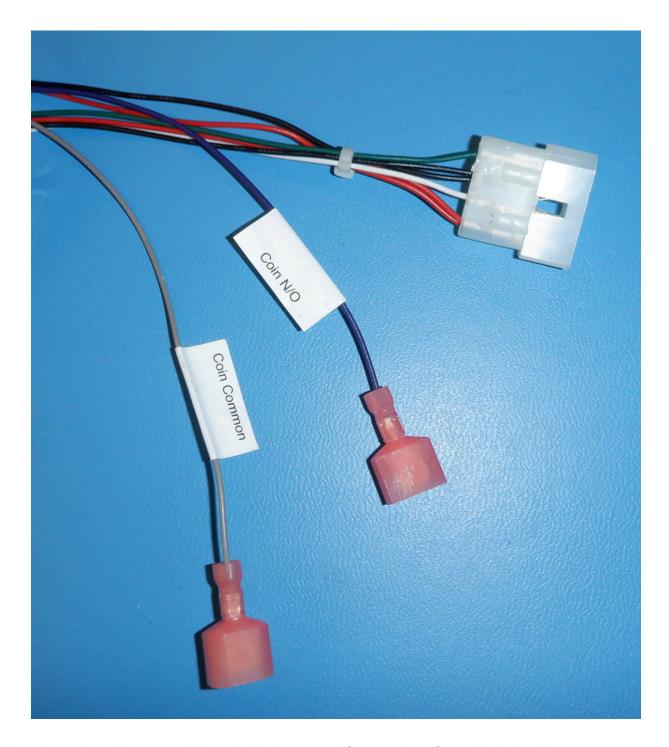
Each Alan-1 game supports ticket redemption through card swipe readers (also known as eTickets). **Systems do not ship with physical ticket dispensers, nor do they have a slot for such. While it is possible to add one, this is not supported by the warranty. Do so at your own risk!**

Please see pg. 74 in Illustrations & Diagrams for a diagram on the Ticket Dispenser Wire Harness Adapter.

To install the adapter and a physical ticket dispenser, please follow these steps:

Ticket dispensers, whether new or old, have a standard 4-pin connector for dispensing tickets. Modern ticket dispensers can also be used to coin-up a game and have two connectors for tying into the coin-up signal of the arcade game as seen below:
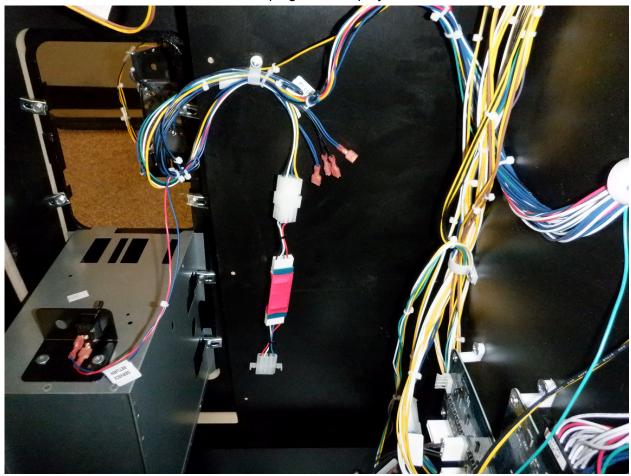
Alan-1 arcade cabinets are shipped with signal amplifiers that interface with ticket dispensers to ensure a wide range of compatibility with both mechanical and digital ticket dispensers. A signal amplifier will ship for each player. For example, if an Alan-1 arcade cabinet is 2 players, two signal amplifiers will ship with the game. A 3 player cabinet will have 3.

Here is an example of an Alan-1 signal amplifier:
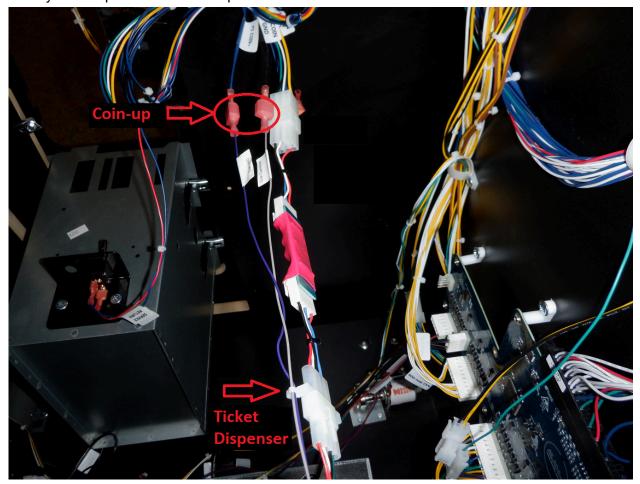
To install a ticket dispenser in an Alan-1 arcade cabinet, plug the signal amplifier into the UCL plug in the back of the machine. There is a UCL plug for each player and is labelled as such:

The ticket dispenser's ticket functionality is enabled by connecting the 4-pin connector on the signal amplifier to the 4-pin connector on the ticket dispenser. If coin-up functionality is also desired, there are spare coin-up wires in the machine The coin-up wires from the ticket dispenser may be tied directly to the spare arcade coin-up wires as shown below:

GAME DESCRIPTION

Missile Command Recharged - Arcade Edition

Missile Command Recharged is the second version of Atari's *Missile Command* to come to the arcade scene, following the original after 45 years. The player controls a trio of missile silos that are protecting six populated cities. Nuclear missiles rain down from the sky in waves, directly targeting both the cities and the silos. These are done in waves of five, followed by a boss battle, Challenge Wave then upgrade Shop. Each set of waves is located in one of the fifty States of the USA. Battle through all of the waves, finally reaching Washington D.C., saving the country from nuclear annihilation. Using the trackball controller, use precision aiming to launch your own missiles and protect your people.

In this version of Missile Command, the game includes a number of power-ups to give the player the upper hand. Simply shoot one of these icons when on screen to activate them. Read more about these power-ups below.

Thanks to the arcade cabinet, players get to use the same button controls that the original had with a TRACKBALL controller for precise aiming, then a set of three FIRE buttons (Alpha/Delta/Gamma Base) to shoot.

Arcade Exclusive Features

Thanks to our extensive refinement process, which has included feedback from casual gamers and world record classic gamers alike, the Arcade Edition of Missile Command Recharged is the ultimate Missile Command experience. These changes include:

- Physical effects (called "toys" by the game) such as a cabinet knocker, wind effect fans, and two types of rumble motors, and interactive LED lighting that reacts to events.
- Wave-based gameplay. There are 256 waves to play through, including Challenge waves that offer unique situations that put your skills to the test. If you lose a Challenge wave, it does NOT affect your available cities in normal waves. It simply affects whether you get a bonus score or not.
- **The Alpha-1 Protocol** - This applies the concept of the "Superzapper" from Tempest (a screen clearing weapon that gives you a moment of repose) into Missile Command. As the DEFCON meter builds, the Alpha-1 Protocol will become active. Press the BIG RED BUTTON with the Atari logo on it to activate the weapon, but note that may leave you vulnerable to attack for a moment.
- User selectable difficulty. When beginning a game, players can choose from Beginning, Advanced, and Expert.
- Refined gameplay that holds closer to the arcade original
- Voice overs. Mission Control guides the player in how to play the game and comments on the player's performance.
- An official comic book that works as a great promotional tool outside of the game.
- Online leaderboards and achievements through the integrated Major League eSports (MLeS) app. Find out more about the app here: https://mles.com

- Optional ticket redemption support.
- Secrets. Remember the "Konami Code" of old, and the excitement that brought to gaming? After a coin is inserted or card swiped/tapped, there will be a screen that shows the MLeS QR code. If you input a certain sequence of button presses while on this screen, a chime will play for a successful input. Then push start to see what you might have unlocked. Explore the possibilities and get people talking!

Power-Ups

One aspect about Missile Command Recharged that is unique from the original arcade versions is the addition of power-ups. These can mean the difference between in-game life and death! They appear at random by floating across the screen; hit them with one of your missiles to activate it. Some power-ups will apply to all missile bases, others just to the one that shot the power-up, then others may have their own effects.

While this aspect exists in the console version of the game, the behavior of the power-ups has changed in some instances for most, allowing them to function in a way that better fits with the expectations of a fast-paced arcade game.

The power-ups themselves are generally given a pre-set time as to how long you can use them, instead of being based on how many shots you have, so use them quickly. A water-type wave effect fills the back of the screen that indicates how long you have until the power-up is over.

Types:

AA Gun - Fires a stream of bullets into the sky that allows you to destroy just about anything coming your way. Great for clearing out the screen quickly.

Blast - Fires a spread shot of five bullets at once. Has full-range to reach across the screen.

Bomb - Causes a massive explosion that covers about 50% of the screen from the center of where the power-up is hit.

Chain - Once the initial player missile hits an enemy one, it will then create a second missile that seeks out the next enemy missile to destroy that, then a third, etc. as long as there are other missiles on the screen, "chaining" the explosions together.

Fast - Speeds up your shots so they don't take as long to reach their mark.

Homing Missile - Each shot you fire will home in on the closest enemy missile to the mark you make, allowing for less required precision for the duration of the power-up.

Orbiting bullets - A breakable shield that orbits your ship. If one collides with an asteroid, it's removed like it had been fired.

Rapid - Allows you to fire constant missiles without any cooldown period on your missile bases.

Shield - Protects all of your cities and missile bases with an impenetrable shield for the duration of the power-up.

Time - Slows everything down except for your shots for a couple of moments.

Secrets

Long ago, many video games featured codes or other methods to unlock secrets within the game. These could reward the player with extra lives, such as with the famous "Konami code" found on many NES titles, or it could entail silly game changes, as found in Midway's *NBA Jam*. Atari themselves pioneered the whole idea of the "Easter Egg," such as with hidden elements in some of their early arcade games, or most famously within the Atari 2600 game *Adventure*.

While much of the gaming industry has discontinued the use of secrets & Easter Eggs, especially within the arcade industry, Alan-1 has brought them back in Missile Command Recharged.

There are two ways to activate a secret. 1) the player must first credit up the game. When they are presented with the MLeS login screen (where it shows a QR code for the player who pushed start, along with other MLeS tournament information), the player must enter in a sequence of button presses on the control panel (do not press the start button first!). If the correct secret sequence has been entered, the game will play a chime, then they can press start and see what is new. Only one secret can be active at any given time.

2) Completing a specific sequence of events during gameplay. The secret chime will play and the unique feature will be activated.

Aside from adding a spice of extra fun to the game, secrets are also intended to drive players out to your location either to try them, or to record themselves in a potentially "viral" moment for discovering a new sequence! This can create excellent, organic marketing for your location, so use it to your advantage - especially if your location is where a never-before seen secret is unlocked!

MAJOR LEAGUE ESPORTS

Unlock a deeper game experience with MLeS

Alan-1 has created a mobile app that brings the excitement of eSports to arcades. Called Major League eSports (MLeS), this free mobile app is available for both Android & Apple iOS devices. Every Alan-1 arcade game supports MLeS, which unlocks a richer game experience. This includes nationwide leaderboards & tournaments, League Points, the ability to continue your game from where you left off, and the app will notify a player when someone has defeated their scores!

Missile Command Recharged advertises the MLeS app in the attract mode, which your customers can download by scanning the QR code, then downloading the app.

After credits have been inserted into the game and any player pushes start, the screen will display a QR code for each player to use. Go into the app, press the QR code button in the upper right corner of the phone screen, then scan the code on the game screen. It will log you in and begin tracking your progress.

We highly recommend that you promote this feature, as we designed it to drive repeat play to your location. You will also be able to set up your own local tournaments by using the Alan-1 Game Grid app that was used for connecting WiFi and registering the cabinet.

Direct link: https://mles.com/download
You can also access the link on your phone by scanning this QR code:

A PARTNER IN YOUR SUCCESS

Driving Traffic To Your Venue

Alan-1 wants to do more than just make a game for your collection - we want to help drive customers to your venue. As long as you register in the Alan-1 Game Grid App (see below), and you keep your game connected to the internet, your venue will be listed for FREE on the following websites:

- Videogames.org
- Alan-1.com
- Mles.com
- The MLeS mobile app

The MLeS app mentioned on the previous page will be a fantastic tool for driving this traffic. Aside from the game finder map, it also has these replay features:

- Notifications about the week's new nationwide tournaments and any local tournaments that you organize through the app.
- Notifications on defeated scores, mentioning YOUR venue so they can return and reclaim those points
- League Points to participate in the annual Alan-1 World Championships.
- Continue from the last wave you had reached

The Alan-1 Game Grid App
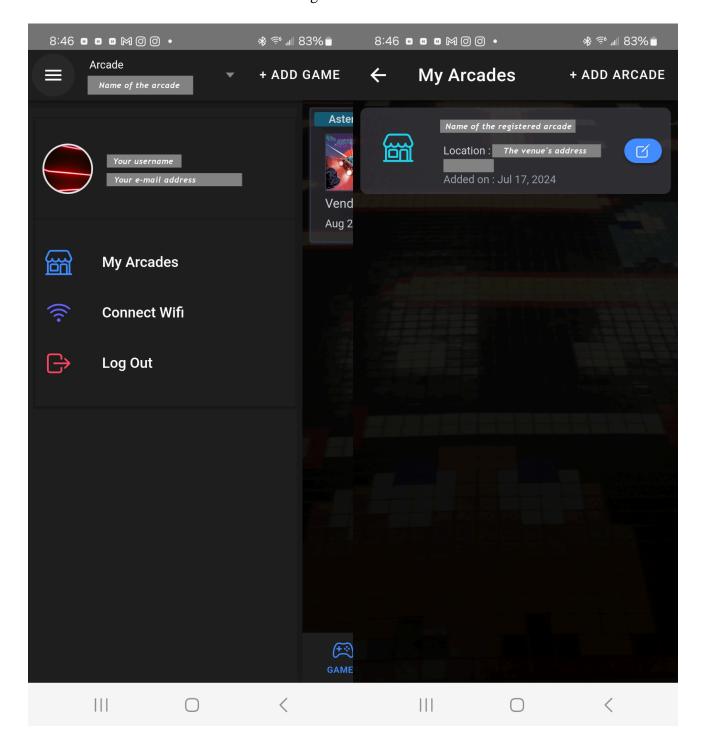
A separate mobile app (available for both Android and iOS devices) called the Alan-1 Game Grid app. Registering the game here is free and it unlocks the following benefits:

- Available software updates, which may include bug fixes and content
- Remote technical alerts (if a component doesn't get used after multiple games, etc.
- Warranty information for any Alan-1 made game
- Shows all MLeS players who have played on your machine so you can do targeted advertising to them.
- Send custom messages to those MLeS players to draw them back (tournament invitations, upcoming events/parties, etc.)
- Participate in a special, one-time Alan-1 promotion (details below)

Upon registration, it will require your venue's name & location. With that and the machine being online, Alan-1 will set up a special social media promotion - localized on Instagram and Facebook, touting that the machine is now at your location, **at no cost to you**.
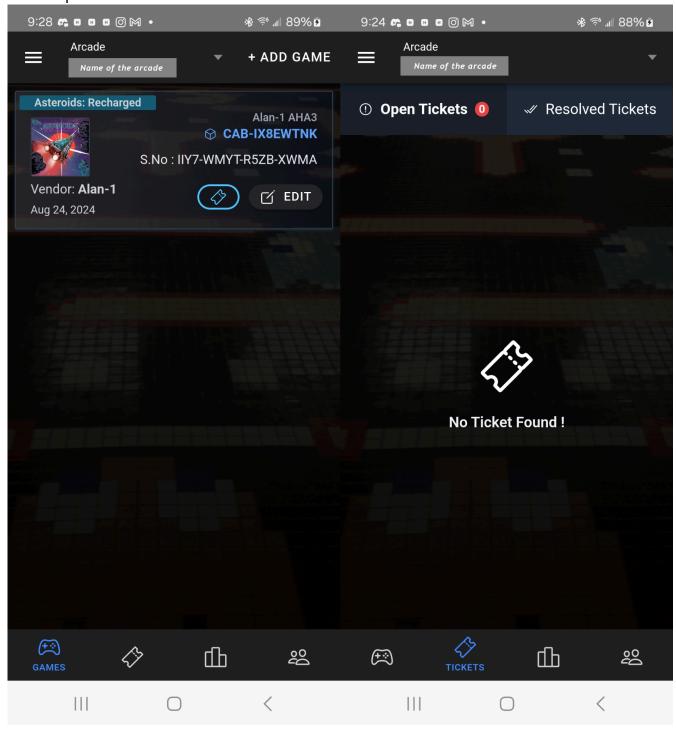
The Game Grid Operators App is straightforward to use. Here are some screenshots that allow you to familiarize yourself with the layout. You can register and track Alan-1 games across multiple locations under My Arcades. Connect WiFi is for connecting the machine to the internet in the event that there is an issue doing so on the machine itself.
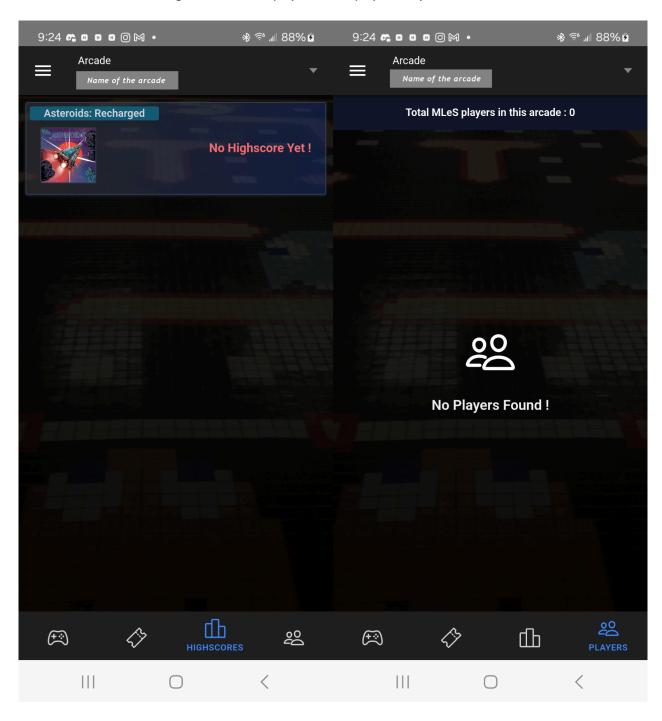
The 'Games' icon at the bottom will show all Alan-1 games within the location, along with details. Tickets are for any technical issues that the game has reported. You can switch between Open & Resolved.

The High Scores icon shows a list of the latest high scores logged onto the game. The Players icon shows which registered MLeS players have played on your machine at the location.

Accessing The Operator Menu

To access the various operator settings, follow these easy steps:

1. With the game powered on, use the key to open the top coin door
2. Inside of the coin door, you will see a switch & a button, like this:
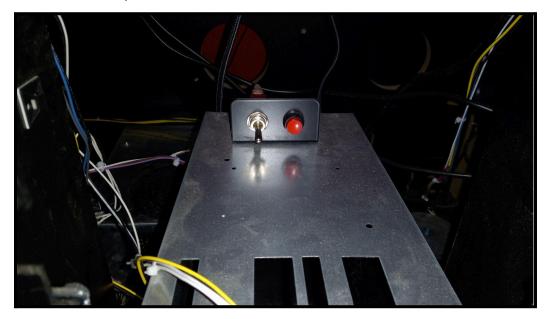
FIGURE 3. SETTINGS MENU TOGGLE SWITCH

3. Flick the Operator Menu switch to the UP position. On the monitor screen, it will load the Operator Menu.
4. The game should now be inside of the Operator Menu. Use the controls as labeled on the right hand side to navigate the menu
5. To LEAVE the Operator Menu, flick the switch back down. All your settings will have been saved.
6. Navigation controls are mentioned on the right hand side of the screen.
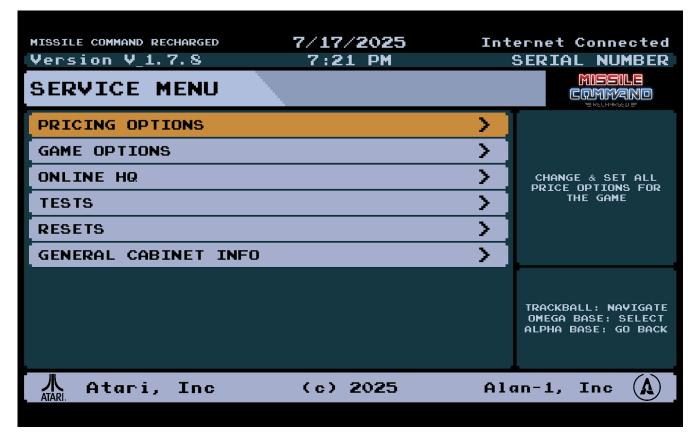
FIGURE 4. SETTINGS MENU

Pricing Options

Main Option	Available Settings (Left most column is the default)				
Credits Display Mode	Coins	Currency	Swipes	Taps	Tokens
Credit Unit Value	1	*Min = 0.05; Max= 100. Adjusts in values of 0.25, except below 1. A unit represents 1 input action by the player to insert money into the game. For example, 1 swipe = 1 unit, 1 coin insertion = 1 unit, 1 token insertion = 1 unit, 1 dollar bill inserted = 1 unit.*			
Credit Unit Currency	$	*Decides the currency branding for the Credit Unit Value. Also can display €, £, or ¥*			
Units Per Start Credit	1	*For the general game cost. Values: 1-30*			
Player grouping	Pooled	Independent	*Determines how coin slots or readers are treated, if there is a 1 slot/reader for all or per player.*		

Is Free Play	Off	On	If on, pressing start will launch the game w/o any payment needed.
Service Credit Value	Set value, 1-100. Default is 1	*What the value of a service credit is when the service credit button is pressed.*	
Grant Service Credits		*If this is chosen, it performs the same function as pushing the physical service credit button. This will instantly add whatever the service credit value is to available players each time it is pressed*	
Clear active credits		*If selected, then all credits on the virtual/game counters will be reset to 0. This is for any glitches of "phantom credits" caused by a short or other rare issue.*	

Game Options
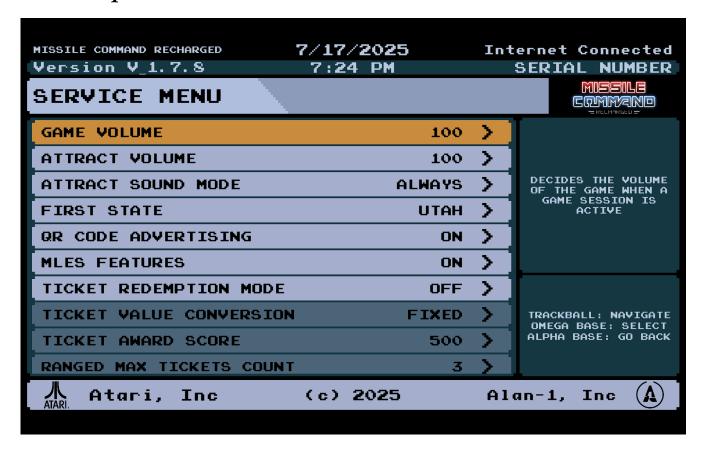
FIGURE 5. SETTINGS MENU

Main Option	Available Settings (Left-most column is default)				
Game Volume	100	Set between 0-100. Percentage value of the in-game volume. Note that the game at max (100) is loud but not loud enough to blow the speakers.			
Attract Volume	100	Set between 0-100. Percentage value of the attract mode sound.			
Attract sound mode	Always	Occasional	Seldom	Never	*How often does sound play during the attract mode?*
First State	Utah	Select any of the 50 US states where the first 7 waves take place. All 50 are available; US territories are not.			
QR Code Advertising	On	Off	When on, players will be able to scan a QR code from the attract screen to download the MLES app for competing in tournaments.		

MLES Features	On	Off	When on, players will be able to login to their MLES accounts. It is highly recommended that this be left on.
Ticket Redemptio n Mode	Off	On	*Enable or Disable ticket redemption. This adds new graphics and language to the attract mode to indicate that users can earn tickets by playing. This will also enable other menus if active(marked by a * below). Only eTickets through a card swipe system are available.*
*Ticket Value Conversion	Fixed	Ranged	*Ranged offers a variable number of tickets. Fixed is a set amount.*
*Ticket Award Score	500	Set value: 100-100 00	*Decides how many score points are needed to win a new number of tickets*
**Ranged max tickets count	3	Set value: 2-10000	*Sets the maximum range for tickets. A random number will be picked between 1 and the value you set here. ONLY FOR RANGED MODE*
*Mercy Tickets	0	Set value: 0-10000	*If ON, guarantees a number of tickets awarded, regardless of the player's score.*
*Tickets Upper Limit	100	Set value: 1-10000	*Decides the max number of tickets a player can win within a single game session, excluding the Bonus Tickets Award.*
*Bonus Tickets Award	OFF	ON	*Activate the Bonus Ticket Award feature. Setting this to ON will also activate*
*Bonus Tickets Awarded	100	Set value: 1-10000	*How many tickets will be awarded for reaching the high score as set below the option of this one*
*Bonus tickets required score	100000	Set value: 500-100 000000	*How many points are required to earn the Bonus Award. Max is 100 million*
LED Toys Brightness	100	Set value: 20-100	*Percentage value of the LED brightness intensity. Min = 20%*

Online HQ

```
MISSILE COMMAND RECHARGED        7/17/2025        Internet Connected
Version V_1.7.8                   7:24 PM          SERIAL NUMBER
```

SERVICE MENU

MISSILE COMMAND RECHARGED

| GAME GRID APP SETUP |
| WIFI SETUP |
| CHECK FOR UPDATES |

CHECK IF THERE ARE
ANY NEW SOFTWARE
UPDATES

TRACKBALL: NAVIGATE
OMEGA BASE: SELECT
ALPHA BASE: GO BACK

Atari, Inc   (c) 2025   Alan-1, Inc

Main Option	Available Settings (Left-most column is default)
Game Grid App Setup	*Choose this to get a QR code that will allow you to download the Alan-1 Operators app where you can easily set up the online connectivity on location and register your cabinet. You must register within 15 days of receipt to get full warranty coverage.*
WiFi Setup	*Connect your cabinet to the internet. You must use the Alan-1 Game Grid app to send the network information to your machine, but you must activate this first for the cabinet to generate a WiFi hotspot that your phone can connect to.*
Check for Updates	*Select this to check for and install the latest software. The MCP operator app will notify you when an update is available.*

Tests
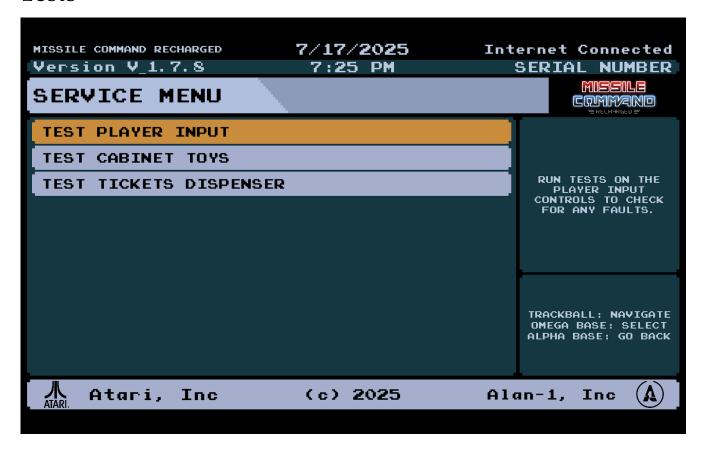
FIGURE 5. SETTINGS MENU TESTING PAGE

Main Option	Available Settings (Left-most column is default)
Test Player Input	*An interactive method for testing the inputs on the control panel*
Test Cabinet Toys	*Select this to then trigger the highlighted test on: Control panel lights; Door lights; Fans; Knocker; Marquee lights; Monitor lights; Small shaker motor; Large shaker motor.*
Test tickets dispenser	*Shows how many tickets are detected as dispensing*

Resets

Main Option	Available Settings (Left-most column is default)
Reset local leaderboard	*Resets the game's own leaderboard with a randomly generated one*
Reset Settings to Default	*Puts all game settings back to their default values*
Factory Reset	*Replenish the game to factory defaults on all options. **Does not back up data***

General Cabinet Info

Select this option to view some basic information on your cabinet, including the serial number, cabinet model, and the firmware version. Note that this screen shot was taken off of a cabinet so it doesn't display a cabinet nor serial number. Your game should be showing that information there.

Exiting the Settings Menu

All options are saved when selected. To return to the game, please flip the SETTINGS MENU TOGGLE SWITCH as shown in figure 3 to GAME MODE. The system will reboot into the game with the settings selected saved.

Regular Maintenance – Read First

In addition to following the safety tips found earlier in this manual, the best way to prevent issues with your game is to regularly perform machine maintenance. We recommend these basics:

- Clean the glass by using a non-ammonia based glass cleaner
- Keep the control panel clean and any vents clean from dust
- Occasionally clean the interior of of the machine by blowing it out with a can of air

Inspecting Your Game

A quick visual glance over the machine might be able to identify any obvious issues, such as an LED light being out, or trouble with the monitor. An in-depth inspection will be required to identify any serious issues however.

Be sure to check the LED lighting, glass front, coin door, and control panel for anything that may be out of place, loose, or damaged. If a component such as a control or the monitor is no longer functioning, you may need to open the back door and see if any basic components such as a power or video cable have come detached from its socket. Note that a loose cable may look like it's inserted correctly but it is not, thus causing the component to malfunction.

In the case of the video or power cable to the monitor, the game can be on for reseating them. In any other instance, the power should be off to the cabinet to avoid potential electrical shock. Also take care to discharge any static from your body before touching the components.

Finally, play the games to ensure everything works correctly and all I/O functions are tested. Be sure to re-calibrate any controls and replace parts as needed.

Cleaning Requirements

This Cabinet may be cleaned with any non-abrasive cleaner. Make sure that there is minimal to no water being used, as it can damage the wood beneath the vinyl. Absolutely no running water should come into contact with the machine as this may cause physical and technical issues with the integrity of the cabinet.

The interior of the cabinet should be vacuumed occasionally. Some games, by design, develop more dust and dirt and need to be cleaned more frequently than others. If there are visible "dust bunnies" coming out of the game fans on the front or cabinet vents on the back, it is time to vacuum the interior.

Much like the exterior, ensure no loose items are in the cabinet. This can cause a short or block the ventilation fans, which can cause more severe issues down the line. IF your game is using coins, it is

normal for a coin to accidentally bounce or fall outside of the coin mechanism system and into the cabinet. Remove these ASAP to prevent shorts.

To summarize:

> First, give your game a good visual safety inspection.
> Clean the cabinet's exterior; use a mild general-purpose cleaner.
> Only use a soft rag, such as a microfiber towel.
> Check and clean all cabinet vents and fans.
> The interior cabinet should be vacuumed occasionally.
> Compressed air blows out the ticket notch sensor on all ticket dispensers.
> Games should be played, and all I/O functions should be tested.
> Replace any parts as required.

Opening the Control Panel

Unlock and remove the rear access panel. Reach up through the rear of the cabinet to the bottom of the control panel. Release the hinge that is locked onto the back side of the cabinet. These will release the cabinet from the control panel to have it open. Lift the control panel upward and this should let you access the connections tied to the game's buttons.

While operators may be used to accessing the control panel latch through the coin door, this is not recommended as there is a potential for minor injury and/or damage to the components as you cannot see what you are doing.

Basic Maintenance Items

Before performing one of these tasks, make sure that you have the proper tools in hand and have taken safety precautions.

Cleaning and Changing the Glass
- As dust tends to accumulate behind the glass, it may be necessary to remove it and clean both sides. Note that cleaning the LCD screen itself should be done using a light amount of warm water and a soft cloth OR a certified LCD screen cleaning solution.
- To remove the glass, unlatch the control panel from the back of the machine (the latch is located in the center underneath the shelf for the fans).
- Once the latch is loose, the control panel will hinge away from the cabinet
- There are 2 cutout tabs about 3 inches in from either side. This is where you can use your finger to carefully slide the glass towards you.
- Use protector corner covers or set the glass down on a soft surface, away from any foot traffic.
- Proceed to clean it and the LCD monitor; take care to not leave fingerprints on the back side of the glass

Replacing Monitor LEDs
- Remove the front monitor glass by following the instructions preceding this step.

- Remove the LED diffuser material from the track that is wrapped around the screen by using a knife or thin flat head screwdriver.
- Use the tool to lift the diffuser at either the left or right bottom.
- The LEDs will now be exposed and you can pull out the old track and replace them with the new.

Troubleshooting the 800 IOT
- Flip service switch to go to the Service Menu
- Navigate to the Tests Tab and enter it
- Test the functionality in question with the associated options

Control Panel Button replacement
- Unlatch the control panel from the back of the machine (the latch is located in the center underneath the shelf for the fans). You also might be able to reach the latch by opening up the coin door and reaching for it.
- Once the latch is loose, the control panel will hinge away from the cabinet
- Find the button that needs to be replaced. Disconnect the two wires, making a note of their positions on the present switch.
- Loosen and remove the plastic nut that holds the button in place.
- It should pop out. Reverse the process with your replacement button to install the new one.

Got a problem? Stuck? Please visit the MCP support knowledge base on alan-1.com, or contact our customer support team at 1-844-44-ALAN1.

TROUBLESHOOTING

Please refer to the Safety Guide section before commencing any repair work on the game. Always start with the simplest solutions first and work your way up from there to save yourself time and money.

ALWAYS INSPECT THE CABINET INTERNALLY AFTER SHIPPING TO ENSURE NO CABLES OR DEVICES HAVE COME LOOSE.

Problem	Possible Cause	Potential Solution
The game will not power on	The power cord is loose or disconnected	Plug the power cord firmly into a working wall socket
	The game is not turned on	Flick the power button on the lower back to the ON or | position
	Power supply fuse has blown	Replace the fuse(s). See fuse replacement guide on page 24 for instructions
	The power cord has failed	Replace with new or working power cord
	The power socket on the game is burnt or otherwise damaged	Replace the power supply
	No power to the wall receptacle	Test the AC outlet to verify power; Ensure that the circuit hasn't tripped and that the breaker is active and working properly. Contact a professional electrician if there is an issue.
	Power is flowing through the power cord but not past the power supply into the game.	Ensure that the voltage setting is correct for your region (110V/120V for North America); Replace the power supply
The controls don't work	Faulty wiring	Turn the game off and verify all connections are in their proper places. A wire such as the ground may have come detached from a spade on the

		microswitch - reconnect it. You may have to press on the prongs with a pair of needle nose pliers to increase tension to hold (usually when the game is old this happens); Check for frayed & burnt wires or grounding shorts. Discuss with a technician on replacement for any damaged wires.
	Faulty microswitch Use the input test menu to help verify connectivity.	First verify that the wires are on the correct metal spades when testing. If any wires have changed, it will result in no connection. You can also test the wiring on a known working switch to rule out a wiring issue. If the above fails, replace the microswitch and re-test.
The controls don't work	Faulty 400 IOT PCB	Turn the game off and verify all connections going to the 800 IOT board. Check for any potential debris that may be causing a short (use a can of air to blow this out). Reseat any of the black edge connectors with wires going into them and DO NOT install these backwards (it can fry the board). Ensure that the connectors are snug and not loose. Verify connections between the 800 IOT & PC motherboard, such as USB. Verify power is going to the 800 IOT. If it still does not work, replace the PCB.
	Volume dials or software volume levels are set to 0 or low	Return these to their proper range. Do not put at max
No sound or bad audio	Attract mode is set to "Silent"	Choose a different option under

		Attract Sound Frequency
Problem	**Possible Cause**	**Potential Solution**
No sound or bad audio	Poor or no connection; Faulty wiring	An audio cable may be loose, incorrectly set, or disconnected. Reseat and reconnect firmly on both ends of the cable. Ensure that the PC audio cable is also firmly seated. Check cables for fraying or damage; Replace the cables
	Blown speakers	Verify that no dial on the audio equalizer is set to max, nor set to max volume in the software; Use the output tests to ensure which speaker is at fault; Check connections; Remove speaker and inspect for any damage or debris; If still blown sound, replace the speaker
	Weak or muffled sound	Check all volume settings; Check for sources of localized interference; The speaker wires may have been reversed; Remove and reapply in their proper places
	Faulty audio amp	Verify that all audio connections are set firmly in their proper ports; Verify that the audio cable from the green audio jack on the motherboard is inserted properly.
	Faulty audio jack on the motherboard	Plug in a pair of working headphones or speakers to the green audio jack on the motherboard and play the game or do a sound test; Ensure volume in software is in the mid-range; Try swapping the male-to-male audio cable out

		with a new or working one; Replace motherboard if still no sound
Problem	**Possible Cause**	**Potential Solution**
Constant, low or loud audio hum	Local interference	Check for sources of interference that may be picked up by the speakers, such as certain types of radios, antennas, any device that uses high-end magnets; Remove the offending equipment or move the machine to another spot in the venue.
	Faulty power supply	Check both the DC external power and the power supply itself to ensure they are operating within normal parameters. If not, replace the power supply
	Open ground	Check all ground wires inside the cabinet. Ensure that the AC wall outlet is properly grounded.
No video, video corruption, or sound plays, no video	The motherboard is not on	Press the PC power button to make sure it is on. Ensure that the power cable to the motherboard is firmly plugged in; If the rest of the cabinet is getting power but the motherboard is not, test the PSU for proper operation. If bad, replace the PSU; If fine, replace the motherboard
	Video cable not secure or has gone bad	Ensure that the DisplayPort cable is firmly plugged in on both ends (monitor and PC). Replace cable with new or working one.
		Check power and video cabling

Problem	Possible Cause	Potential Solution
	Monitor has gone bad	to ensure firm connections; Plug a power cable directly from an AC outlet into the monitor's outlet; Connect another video
No video, video corruption, or sound plays, no video		source (game console, laptop) into the monitor's DisplayPort (you may need to use a DisplayPort-to-HDMI adapter for this).
	Bad video card (Discolored blocks and "gibberish" video can be a symptom of this.)	See if the corrupted graphics appear on the screens when the machine starts (before the game loads). If it is only in-game, there might be an issue with the card. To verify it isn't a monitor problem, connect a different device to your monitor and see if there are different results. You should also try a different monitor (any with a DisplayPort should work) and connect the game's video cable to it while on. If the corrupted graphics still show up on the other monitor, then try a different video cable; If the issue persists, perform a full factory restore (see pg. 13 for instructions on a manual launch). This can fix a bad video driver. If the issue is still present after these steps, replace the motherboard.
If you encounter one of these errors: Game Doesn't Load Game loads partially, then crashes Gets stuck in a "boot loop" of constant resets	Hard drive corruption or failure	Attempt to restore the game to its original factory settings by following the Manual Launch instructions (pg. 13 in this manual); Replace the SSD on the motherboard

Any message about file system errors Game resets at random Unstable attract mode (freezing, stuttering)		
Problem	**Possible Cause**	**Potential Solution**
An incorrect number of credits are awarded when inserting coins/bills or swiping a card	Incorrect price settings	Make adjustments in the Pricing Options menu inside of the Service Menu
	Faulty wiring	Disconnect the cabinet from AC power. Verify wires are firmly connected to coin mech and bill validator and ground wires are properly connected. Verify no wires are frayed or shorting to ground.
	Faulty microswitch	If wiring is properly setup, remove the connectors from both of the coin switches, then try the wires on the problem side with the known working switch. If it still works, then replace the microswitch.
	Faulty coin mech or card reader	Check the coin mechanism for any jams or other issues that might be causing the switch to work improperly; check with your card reader's technical support on troubleshooting the reader. Replace the mech or reader.
Toys don't activate	Incorrect setting	Check the GAME OPTIONS menu to ensure that all toys are turned ON.
	Faulty wiring	Check the wiring to each toy to ensure no frayed or shorted wires. Replace the toy which will come with its own wiring harness.

	Power issue	Check the power supply voltages to ensure that they are within their proper ranges; Check fuses; Replace the PSU
	Component failure	Replace the toy in question
WiFi won't connect	WiFi Antenna disconnected from main board	Ensure that the two small black wires are connected to their proper place on the motherboard.
	Improper setup in Alan-1 Operators app (wrong password or network)	Inside the Online HQ, choose WiFi Setup, then follow the instructions. Within the app, you can find where it asks to setup WiFi on a game. This is where you'll enter the network ID and the password. Ensure that all of the information is correct
	No WiFi hotspot detected.	Check antenna wire connections; Check your phone to ensure that WiFi is on (no Airplane mode) to find the network; ensure that your phone is seeing other networks to eliminate the issue on the phone. If everything is in place and still not hotspot, replace the antenna

-=> ORIGINAL VERSION RESTORE / RESET! <=-

In the extremely rare event that the software to the game becomes corrupted, you can perform a clean reset of the machine to put it back to the original software state. This includes the game code as well as the settings.

When the operator turns Missile Command Recharged on for the first time, the Alan-1 App Launcher activates before launching the next app (such as the game) based on the service menu switch status. However, each time the game starts, the operator has a small time window where they can interrupt the automatic launch, and go into "Manual launch" mode by pressing any button 3 times, quickly.

In the manual launch mode, you can reset the game back to the original version & settings instead of running the updated version.

This is intended so that if the updated software version is corrupted, thus leaving the game inoperable, the operator still has the chance to clear that and go back to the version that the cabinet shipped with.

Trouble? Please visit the MCP support knowledge base on alan-1.com, or contact our customer support team at 1-844-44-ALAN1.

ILLUSTRATIONS & DIAGRAMS

Exploded Cabinet View
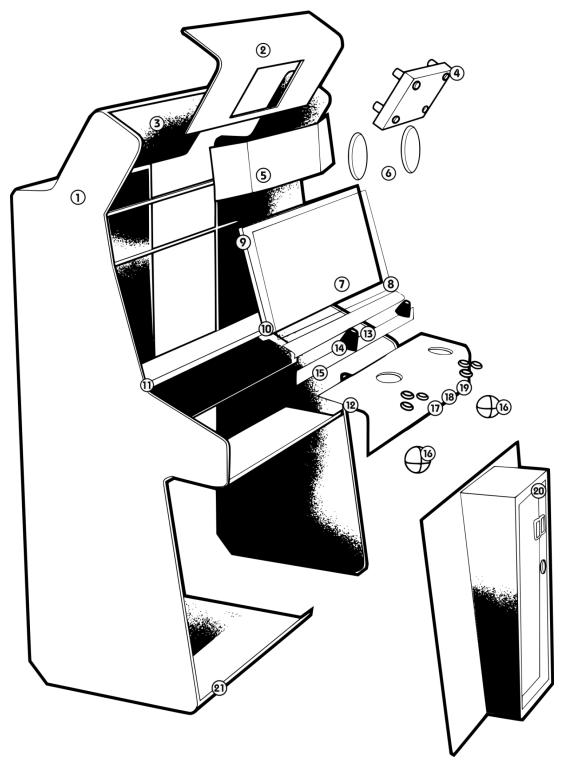
FIGURE 6. ARCADE CABINET FRONT VIEW

Exploded Cabinet View Part Numbers

Item	Part No.	Description	Quantity
1	AK2-RAW-1	Raw Game Cabinet (various pieces)	1
2	AR2P-VYL-133	Missile Command Recharged 2P Pro Hood vinyl	1
3	AK2-LED-1	Marquee LEDs / Backlight (4 / 2p cabinet)	4
4	AR2P-GLS-100	Missile Command Recharged 2P Marquee	1
5	AR2P-VYL-100	Speaker panel vinyl	1
6	AR2-AUD-4	Speakers (These go behind the speaker panel, part of the Telstar Audio system)	2
7	AK2-VAS-1	VAS Portal (32" Monitor 4K)	1
8	AR2P-GLS-101	Missile Command Recharged 35" Monitor Glass w/ Bezel	1
9	AK2-LED-2	Diffuser LEDs (8 ft/ 2P cab)	8
10	AK2-LED-3	LED Channel/Strip	0.75
11	AK2-CAB-3	T-Molding (38' total per cabinet)	2
12	AK2-CAB-17	Control panel door latch	1
13	AK2-I/P-4	Volcanic start push buttons	2
14	AK2-I/P-5	Volcanic start button nut	2
15	AK2-ACR-1	Player acrylic fan protector	1
16	MC2P-I/P-14	RGB-backlit trackball	2
17	AK2-I/P-7	Blue button with nut (Four Pin) D-LED, Blank Button	4
18	AK2-I/P-8	Red button with nut (Four Pin) D-LED, Blank Button	2
19	AR2-I/P-9	White Button with nut (Four Pin) D-LED, Blank Button	2
20	AR2-CAB-2	Coin door & coin box	1
21	AK2-CAB-16	Leg levelers	2

Cabinet - Rear
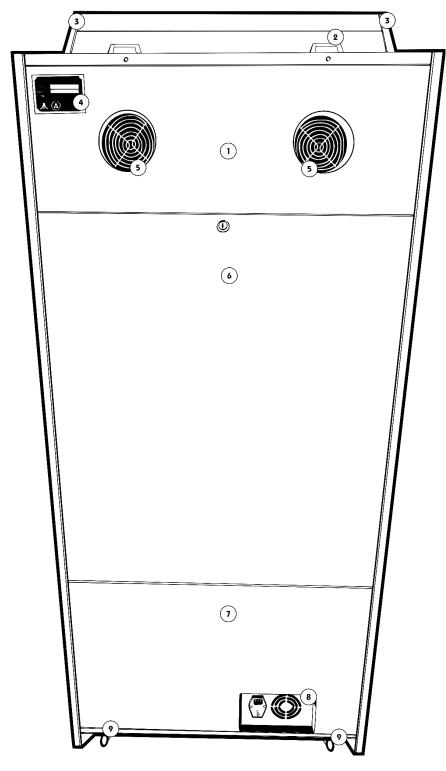
FIGURE 7. ARCADE CABINET REAR VIEW

Cabinet - Rear Parts Numbers

Item	Part No.	Description	Quantity
1	AK2-CUT-2	Back (upper)	1
2	AK2-CAB-28	Handles	2
3	AK2-CAB-3	T-Molding (38' total per cabinet)	2
4	AK2-VAS-9	VAS Cabinet s/n tag	1
5	AK2-CAB-18	Rear cabinet air flow grill protector	2
6	AK2-CUT-3	Back door	1
7	AK2-CUT-1	Back (lower)	1
8	AK2-VAS-7	VAS Energy Distribution Unit (PDB-JH-01)	1
9	AK2-CAB-9	3" caster wheels	2

Open From The Back
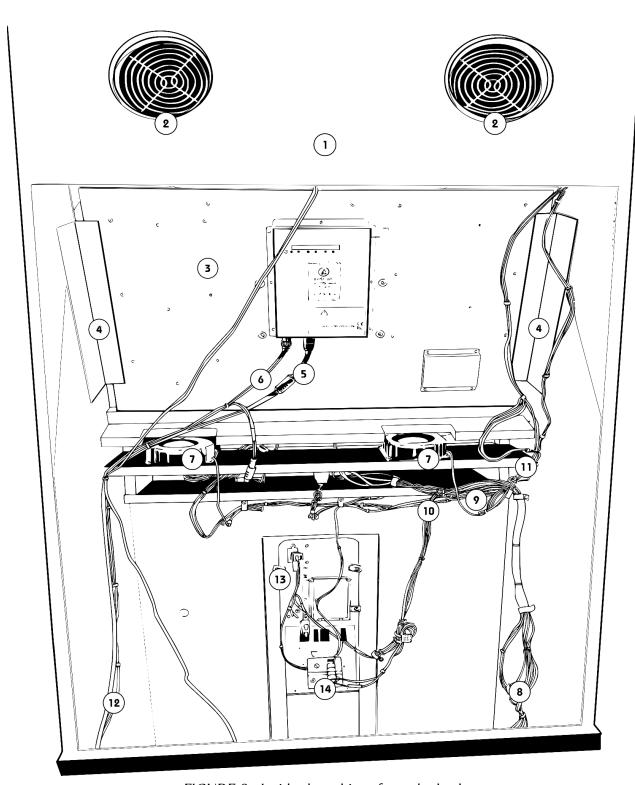
FIGURE 8. Inside the cabinet from the back

Open From The Back Parts Numbers

Item	Part No.	Description	Quantity
1	AK2-CUT-2	Back (upper)	1
2	AK2-CAB-18	Rear cabinet air flow grill protector	2
3	AK2-VAS-1	VAS Portal (32" Monitor 4K)	1
4	AR2-CAB-22	Metal Monitor mount brackets for 32" monitor	2
5	AK2-W/H-21	HDMI Cable, 4K, 4' length	1
6	AK2-W/H-10	Monitor power cable	1
7	AK2-TOY-4	Control panel fans	2
8	AK2-W/H-12	HDRV Harness (CAS-ALN2001-005)	1
9	AK2-W/H-13	MDRV 1-6 Harness (CAS-ALN2001-008)	1
10	AK2-W/H-14	MDRV 7-11 Harness (CAS-ALN2001-009)	1
11	AK2-W/H-15	MDRV 12-18 Harness (CAS-ALN2001-012)	1
12	AK2-W/H-16	I/o T Power Harness (CAS-ALN2001-004)	1
13	AR2-CAB-2	Coin door & coin box	1
14	AK2-I/P-3	Settings Toggle switch panel	1

Inside the cabinet - From The Back
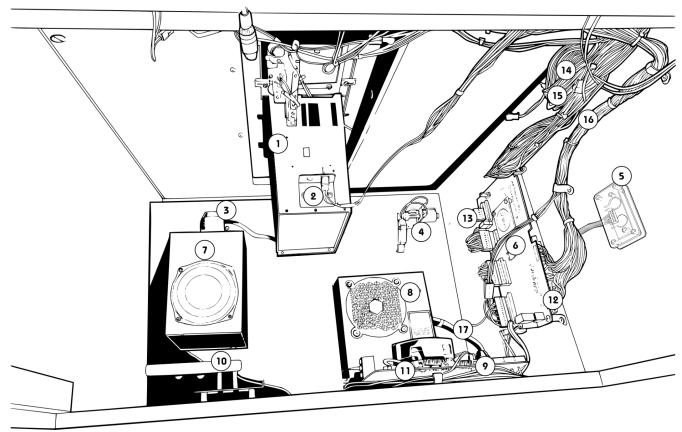
FIGURE 9. INSIDE THE CABINET | THE VIDEO ARCADE SYSTEM® (VAS) VIEW

Inside The Cabinet - From The Back Parts Numbers

Item	Part No.	Description	Quantity
1	AR2-CAB-2	Coin door & coin box	1
2	AK2-I/P-3	Settings Toggle switch panel	1
3	AK2-TOY-3	VAS Big shaker motor	1
4	AK2-TOY-1	VAS 24 Volt pinball knocker	1
5	AK2-W/H-1	On/off power/reset switch	1
6	AK4-VAS-6	VAS 800 i/o T rev 1.4XL	1
7	AR2-AUD-4	Audio kit with amp, speakers, base, and wires	1
8	AK2-VAS-7	VAS Energy Distribution Unit (PDB-JH-01)	1
9	AK2-VAS-10	Wi-Fi Card (M.2)	1
10	AK2-VAS-25	Intel WiFi Antenna	1
11	AR2P-VAS-100	VAS MCP Missile Command Recharged Pro 2P (mb, cpu, memory, ssd, wifi, standoffs)	1
12	AR2-W/H-17	Missile Command Recharged Edge Connector Harness for 1-2 Players (CAS-ALN2002-006)	1
13	AK2-W/H-12	HDRV Harness (CAS-ALN2001-005)	1
14	AK2-W/H-13	MDRV 1-6 Harness (CAS-ALN2001-008)	1
15	AK2-W/H-14	MDRV 7-11 Harness (CAS-ALN2001-009)	1
16	AK2-W/H-15	MDRV 12-18 Harness (CAS-ALN2001-012)	1
17	AK2-W/H-16	I/o T Power Harness (CAS-ALN2001-004)	1

Control Panel - Inner/Open View
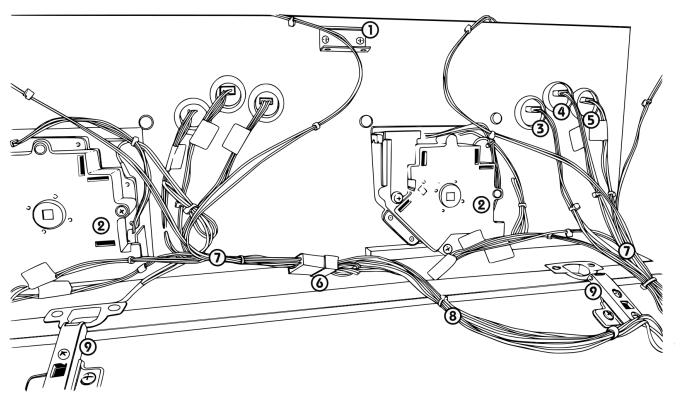
FIGURE 10. UNDER THE ARCADE CONTROL PANEL

Control Panel - Inner View Part Numbers

Item	Part No.	Description	Quantity
1	AK2-CAB-17	Control panel door latch	1
2	MC2P-I/P-14	Trackball assembly	2
3	AK2-I/P-9	White button with nut (Four Pin) D-LED, Blank Button	2
4	AK2-I/P-8	Red button with nut (Four Pin) D-LED, Blank Button	2
5	AK2-I/P-6	Green button with nut (Four Pin) D-LED, Blank Button	2
6	AR2-WH-006	AR2 EC1 (P1+P2 Edge)	1
7	AR2-WH-006	MDRV 7-11 Harness (CAS-ALN2001-009)	1
8	AR2-WH-006	MDRV 12-18 Harness (CAS-ALN2001-012)	1
9	AK2-CAB-10	Hinges	2

LDVR, MDVR, HDVR Wiring Harness, 800 IOP Information

As mentioned above, there are three principle wiring harnesses found in each Missile Command Recharged machine. The harness connects to the 800 IOP board, which is pre-installed into the cabinet, with the wire edge connectors facing upwards. Edge connectors are keyed to prevent improper installation. **Note that forcing an improper install will damage the 800 IOP board.** Input and output wires for the 5 voltage lines are contained within the 40-pin wiring harness (see next page). The 12 volt wires are connected to 18 of the output connectors on the I/oT board—which makes up the heart of the Video Arcade System. Lastly, there are six 24 volt lines available on the lower level output panel of the i/oT.

Figure x. I/oT rev 1.4XL Front Side

There will only be one edge connector+harness used in a 2-player cabinet. Two connectors are only used in 3p/4p games.

Yellow wires are always +12V; Red are always +5V; Black & White are always GND. (Though sometimes it may be a switched GND through MDRV or HDRV.) Note that LDRV, MDRV, and HDRV all switch the ground leg of the circuit.

They control the following components, with their labels and expected voltages listed below:

- LDVR - Low Voltage (5V) channels control the LEDs found in the control panel buttons
  - All player input controls
  - LED output for all player's controls
  - Players start buttons
  - Coin mechanism triggers
  - Settings switch toggle
  - Ticket notch output
- MDVR - Medium voltage (12V) channels control the brighter lights and most cabinet toys.
  - Monitor flashers + diffuser lights around the monitor (RGB light)
  - The white marquee lights
  - The front lights under the control panel and over the control deck
  - The coin door lighting
  - Player fans
  - Big & Small shaker motors
- HDVR - High voltage (24V) channels for high powered toys
  - Pinball knocker (solenoid)

There is an intermediate connector between the edge connector and each individual player's controls. It serves two purposes:
- It allows the operator to disconnect the player controls and remove the control panel entirely.
- It "fans out" several wires, like COLX, +5V, and GND. The edge connectors can't safely hold multiple wires in their crimps, whereas the intermediate connectors can.

The MDRV and HDRV connectors are the .396 pin sockets across the bottom of the PCB. The amperage is written on the PCB next to the connector, along with an identifier (see figure _)
- Each has a different number of pins. **Plug each connector into the pin socket with the same number of pins, or you can damage the 800IOP**.
- The connectors are half-shrouded, so it'll be difficult to push them in backwards. The locking tabs on both the socket and the connector housing face the outside edge of the PCB.
- **Be very careful to NOT plug in the connector housings offset by a pin!** This is nearly guaranteed to damage the 800IOP once the game powers up.
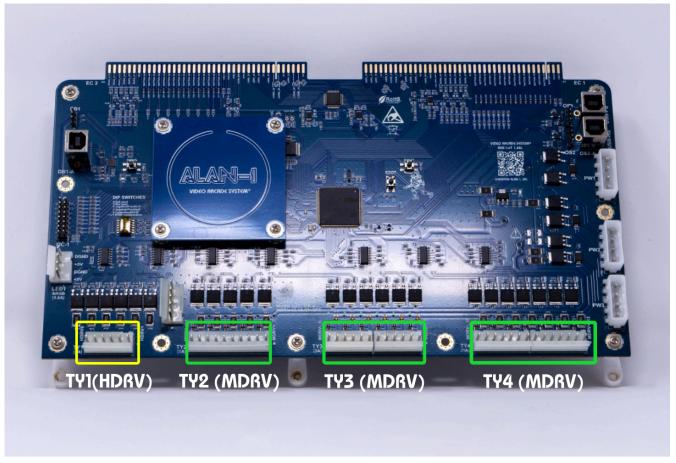
Figure x. I/oT rev 1.4XL with indicators

TY1 (HDRV; 1A)
- The HDRV connector goes only to the pinball knocker.
- The other side of the pinball knocker connects to a 24V power output of the PDB.
- The coil used has a coil diode pre-installed, so you must hook the wires up correctly or you will blow the +24V supply.
    - The diode should conduct in reverse, from HDRV (switched ground) to +24V. It should NOT conduct from +24V to GND.

TY2 (MDRV 7-11; 1A)
- 2-player cabinets do not use P4 Front and P4 Down
- Marquee Light is a string of white COB LEDs that shine through the back of the marquee plex. ◦ Each COB is ~200 lumens.
- Fan 1 L/Fan 2 L/Fan 1 R/Fan 2 R are the centrifugal fans that mount to the underside of the upper control panel. The 2P cabinet has only one each of Fan L and Fan R.
- BIGSHAKE goes to the big shaker motor.
    - The coil diode is already in the harness, so you can hook either wire to either terminal of the motor.

TY3 (MDRV 1-6; 3A)

- Mon LED 1-2 are the COB LED strips that go above and below the monitor. They live inside the black plastic LED channel with the milky white diffusers.
- Marq LED 1-2 are the COB LED strips that light up the diffusers on each side of the marquee. The gray plastic channel clamps the LED strip onto the back of the diffusers without requiring adhesives.
- P1-P3 Front and P1-P3 Down are the frontlights and downlights for each player, respectively. The 2P cabinet has only P1 and P2 frontlights and downlights.

TY4 (MDRV 12-18; 1A)

- The harness at TY4 has 4-pin square Molex sockets on very short wires. These connect to the 4-pin plugs on the edge connectors that terminate near the edge connector itself. (They provide power to the UCL connector.)
- L MiniShk and R MiniShk are the small shaker motors. These are designated as such as the 2P cabinet has only one MiniShk, the 3P cabinet has two.
- L Coin Lite 1 and 2, and R Coin Lite 1 and 2, connect to the coin return lights on the coin doors. The 2P cabinet has only L Coin Lite 1 and 2.
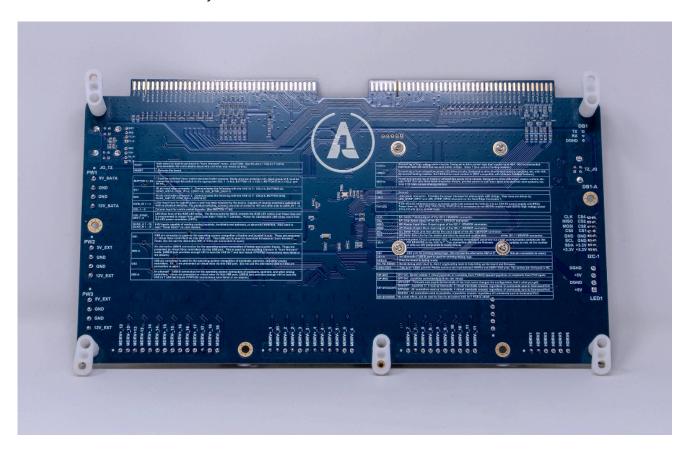
Figure x. I/oT rev 1.4XL Back Side

Dual Player 40 pin Wiring Harness Diagram
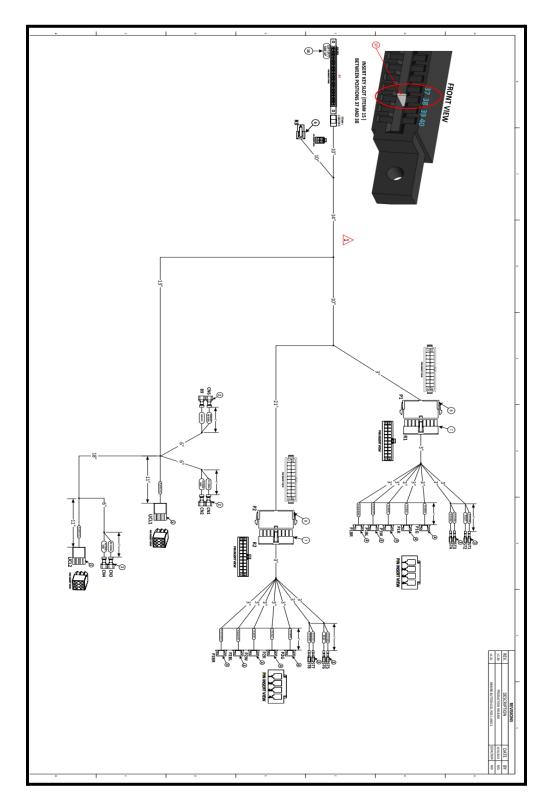
FIGURE 11. 40 PIN WIRING HARNESS DIAGRAM

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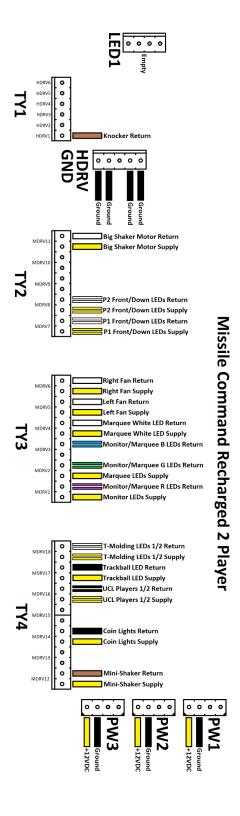
Wiring Harness pinouts:

Missile Command
Bottom Side   P7   Top Side

Bottom Side	Pin	Top Side
LDV18	1	LDV15
LDV17	2	LDV14
LDV16	3	LDV13
P2 Delta/Big Red LED Power — 5V0	4	5V0 — P2 Start LED Power
P2 Alpha LED Return — LDV12	5	LDV9 — P2 Big Red LED Return
P2 Omega LED Return — LDV11	6	LDV8 — P2 Ticket Motor
P2 Delta LED Return — LDV10	7	LDV7 — P2 Start LED Return
5V0	8	5V0 — P1 Alpha/Omega LED Power
P1 Alpha LED Return — LDV6	9	LDV3 — P1 Big Red LED Return
P1 Omega LED Return — LDV5	10	LDV2 — P1 Ticket Motor
P1 Delta LED Return — LDV4	11	LDV1 — P1 Start LED Return
LED Driver/P2 Trackball/P2 Alpha/Omega LED Power — 5V0	12	5V0 — P1 Trackball/Delta/Big Red LED Power
P2 Coin In — COIN2	13	COIN1 — P1 Coin In
Coin Ground — GND	14	GND — P1 Trackball Ground
LED2	15	LED1 — LED Strip Drive 1
QB6	16	QA6 — P2 Ticket Notch
P2 Trackball Y2 — QB5	17	QA5 — P2 Trackball Y1
P2 Trackball X2 — QB4	18	QA4 — P2 Trackball X1
QB3	19	QA3 — P1 Ticket Notch
P1 Trackball Y2 — QB2	20	QA2 — P1 Trackball Y1
P1 Trackball X2 — QB1	21	QA1 — P1 Trackball X1
LED Driver/P2 Trackball Ground — GND	22	5V0 — P1 Start LED Power
BTN32	23	BTN24
BTN16	24	BTN8
BTN31	25	BTN23 — P2 Start Button
BTN15	26	BTN7 — P1 Start Button
BTN30	27	BTN22
BTN14	28	BTN6
BTN29	29	BTN21
Service Button — BTN13	30	BTN5
BTN28	31	BTN20 — P2 Big Red
BTN12	32	BTN4 — P1 Big Red
BTN27	33	BTN19 — P2 Alpha
BTN11	34	BTN3 — P1 Alpha
BTN26	35	BTN18 — P2 Omega
BTN10	36	BTN2 — P1 Omega
BTN25	37	BTN17 — P2 Delta
BTN9	38	BTN1 — P1 Delta
COL4	39	COL3 — P2 Button Return
Service Button Return — COL2	40	COL1 — P1 Button Return

FIGURE 12. 40 PIN WIRING HARNESS PINOUT P7

Power & Drive pinouts:

LED1 — Empty

TY1
Pin	Signal
HDRV6	
HDRV5	
HDRV4	
HDRV3	
HDRV2	
HDRV1	Knocker Return

HDRV GND — Ground, Ground, Ground, Ground

TY2 — Missile Command Recharged 2 Player
Pin	Signal
MDRV11	Big Shaker Motor Return
	Big Shaker Motor Supply
MDRV10	
MDRV9	
MDRV8	P2 Front/Down LEDs Return
	P2 Front/Down LEDs Supply
MDRV7	P1 Front/Down LEDs Return
	P1 Front/Down LEDs Supply

TY3
Pin	Signal
MDRV6	Right Fan Return
	Right Fan Supply
MDRV5	Left Fan Return
	Left Fan Supply
MDRV4	Marquee White LED Return
	Marquee White LED Supply
MDRV3	Monitor/Marquee B LEDs Return
MDRV2	Monitor/Marquee G LEDs Return
	Marquee LEDs Supply
MDRV1	Monitor/Marquee R LEDs Return
	Monitor LEDs Supply

TY4
Pin	Signal
MDRV18	T-Molding LEDs 1/2 Return
	T-Molding LEDs 1/2 Supply
MDRV17	Trackball LED Return
	Trackball LED Supply
MDRV16	UCL Players 1/2 Return
	UCL Players 1/2 Supply
MDRV15	
MDRV14	Coin Lights Return
	Coin Lights Supply
MDRV13	
MDRV12	Mini-Shaker Return
	Mini-Shaker Supply

PW3 — +12VDC, Ground
PW2 — +12VDC, Ground
PW1 — +12VDC, Ground

BILL OF MATERIALS

ITEM#	PART #	DESCRIPTION	QTY	MFR
1	1-583718-5	80 Position Card Edge Connector Housing Black 0.100" (2.54mm) Panel Mount	1	TE
2	19003-0105	0.250" (6.35mm) Quick Connect Female 18-22 AWG Crimp Connector Fully Insulated	6	MOLEX
3	19030097	0.110" (2.79mm) Quick Connect Female 18-22 AWG Crimp Connector Fully Insulated	8	MOLEX
4	XHP-4	4 Rectangular Connectors - Housings Receptacle Natural 0.098" (2.50mm)	10	JST
5	03-09-1093	9 Rectangular Connectors - Housings Receptacle Natural 0.198" (5.03mm)	2	MOLEX
6	39-01-2040	4 Rectangular Connectors - Housings Receptacle Natural 0.165" (4.20mm)	1	MOLEX
7	39-01-2240	24 Rectangular Connectors - Housings Receptacle Natural 0.165" (4.20mm)	2	MOLEX
8	39-01-2241	24 Rectangular Connectors - Housings Plug Natural TABS (4.20mm)	2	MOLEX
9	2091117	Socket Contact Tin Crimp 18-22 AWG Power	10	MOLEX
10	SXH-001T-P0.6N	Socket Contact Tin 22-26 AWG Crimp Stamped	40	JST
11	39-00-0038	SOCKET CONTACT TIN 18-24 AWG CRIMP POWER	52	MOLEX
12	39-00-0040	PIN CONTACT TIN 18-24 AWG CRIMP POWER	48	MOLEX
13	583853-3	Edge Terminal Non-Gendered 20-24 AWG Crimp Gold	38	TE
14		SELF LAMINATING LABEL	30	
15	583274-3	Connector Keying Plug (Intercontact) For AMP-LEAF Series	1	TE
16		WIRE, STRANDED, PVC INSULATION, 18 AWG, UL1007		
17		WIRE, STRANDED, PVC INSULATION, 22 AWG, UL1007		
18		WIRE, STRANDED, PVC INSULATION, 24 AWG, UL1007		

REVISIONS			
REV.	DESCRIPTION	DATE	BY
v1.3b	PRODUCTION RELEASE	9/15/2023	MD
v1.3c	REWIRE BUTTON LED, POS 1 AND 2	6/24/2024	MD

FIGURE 13. 40 PIN WIRING HARNESS BOM

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Wiring harness, 800IOP, Coin Door LEDs & Ticket Disp.

WIRE RUN LIST

WIRE#	TERMINAL LT	FROM	TO	TERMINAL RT	COLOR	AWG	LENGTH (in)	FUNCTION
1	8520112	P2-1	W5		YELLOW	18	56.00	MDRV12+
2	8520112	P2-2	W6		BROWN	18	56.00	MDRV12-
3	8520112	P2-3	W7		YELLOW	18	86.00	MDRV13+
4	8520112	P2-4	W8		BROWN	18	86.00	MDRV13-
5	8520112	P2-5	CTL1	190030097	YELLOW	22	66.00	MDRV14+
6	8520112	P2-6	CTL2	190030097	BLACK	22	66.00	MDRV14-
7	DOUBLE CRIMP	CTL1	CTL3	190030097	YELLOW	22	6.00	MDRV14+
8	DOUBLE CRIMP	CTL2	CTL4	190030097	BLACK	22	6.00	MDRV14-
9	8520112	P2-7	CTR1	190030097	YELLOW	22	78.00	MDRV15+
10	8520112	P2-8	CTR2	190030097	BLACK	22	78.00	MDRV15-
11	DOUBLE CRIMP	CTR1	CTR3	190030097	YELLOW	22	6.00	MDRV15+
12	8520112	CTR2	CTR4	190030097	BLACK	22	6.00	MDRV15-
13	8520112	P2-9	P1-1	39-00-0040	YELLOW	22	4.00	MDRV16+
14	DOUBLE CRIMP	P2-10	P1-2	39-00-0040	BLACK	22	4.00	MDRV16-
15	8520112	P2-11	P1-3	39-00-0040	YELLOW	22	4.00	MDRV16+
16	DOUBLE CRIMP	P1-4	P1-4	39-00-0040	BLACK	22	4.00	MDRV16-
17	8520112	P2-11	P2-1	39-00-0040	YELLOW	22	4.00	MDRV17+
18	DOUBLE CRIMP	P2-11	P2-2	39-00-0040	YELLOW	22	4.00	MDRV17+
19	8520112	P2-11	P2-3	39-00-0040	BLACK	22	4.00	MDRV17+
20	DOUBLE CRIMP	P2-12	P2-4	39-00-0040	BLACK	22	4.00	MDRV17-

BILL OF MATERIALS

ITEM#	PART #	DESCRIPTION	QTY	MFR
1	09-50-8143	14 Rectangular Connectors - Housings Receptacle Natural 0.156" (3.96mm)	1	MOLEX
2	39-01-3043	4 Rectangular Connectors - Housings Plug Natural (4.20mm)	2	MOLEX
3	19003097	0.110" (2.79mm) Quick Connect Connector Fully Insulated	8	MOLEX
4	8520112	Non-Gendered Contact Tin 18-22 AWG Crimp	12	MOLEX
5	39-00-0040	PIN CONTACT TIN 18-24 AWG CRIMP POWER	8	MOLEX
6		SELF LAMINATING LABEL	10	
7		WIRE, STRANDED, PVC INSULATION, 22 AWG, UL1007		
8		WIRE, STRANDED, PVC INSULATION, 18 AWG, UL1007		

REVISIONS

REV.	DESCRIPTION	DATE	BY
v1.3b	PRODUCTION RELEASE	9/15/2023	MD

FIGURE 14. COIN DOOR LED & TICKET DISPENSER DIAGRAM

LED Wiring Connections

WIRE RUN LIST

WIRE#	TERMINAL LT	FROM	TO	TERMINAL RT	COLOR	AWG	LENGTH (in)	FUNCTION
1	8520112	P3-1	J1-1	39-00-0040	YELLOW	22	10.00	MDRV1+
2	8520112	P3-2	J1-2	39-00-0040	PURPLE	22	10.00	MDRV1-
3	8520112	P3-4	J1-3	39-00-0040	GREEN	22	10.00	MDRV2-
4	8520112	P3-6	J1-4	39-00-0040	BLUE	22	10.00	MDRV3-
5	8520112	P3-3	J1-5	39-00-0040	YELLOW	22	10.00	MDRV2+
6	DOUBLE CRIMP	P3-2	J1-6	39-00-0040	PURPLE	22	10.00	MDRV1-
7	DOUBLE CRIMP	P3-4	J1-7	39-00-0040	GREEN	22	10.00	MDRV2-
8	DOUBLE CRIMP	P3-6	J1-8	39-00-0040	BLUE	22	10.00	MDRV3-
9	39-00-0038	R1-1	W1		YELLOW	22	38.00	MDRV2+
10	39-00-0038	R1-2	W2		PURPLE	22	38.00	MDRV1-
11	39-00-0038	R1-3	W3		GREEN	22	38.00	MDRV2-
12	DOUBLE CRIMP	R1-4	W4		BLUE	22	38.00	MDRV3-
13	39-00-0038	R1-5	W5		YELLOW	22	86.00	MDRV1+
14	39-00-0038	R1-6	W6		PURPLE	22	86.00	MDRV2+
15	39-00-0038	R1-7	W7		GREEN	22	86.00	MDRV3+
16	39-00-0038	R1-8	W8		BLUE	22	86.00	MDRV4+
17	8520112	P3-7	W9		YELLOW	18	78.00	MDRV4+
18	8520112	P3-8	W10		WHITE	18	78.00	MDRV4-
19	8520112	P3-9	W16		BLUE	22	86.00	MDRV3-
20	DOUBLE CRIMP	P3-10	W15		GREEN	22	86.00	MDRV2-
21	8520112	P3-8	W17		YELLOW	22	48.00	MDRV1-
22	8520112	P3-9	W18		BLUE	22	48.00	MDRV4+
23	8520112	P3-10	W17		WHITE	22	48.00	MDRV5-
24	DOUBLE CRIMP	LF2-1	LF2-2	350539002	YELLOW	22	60.00	MDRV5-
25	DOUBLE CRIMP	LF1-1	LF1-2	350539002	WHITE	22	48.00	MDRV5+
26	8520112	LF1-2	LF1-1	350539002	YELLOW	22	60.00	MDRV6-
27	8520112	RF1-1	RF1-2	350539002	WHITE	22	72.00	MDRV6+
28	8520112	RF1-2	RF1-1	350539002	YELLOW	22	72.00	MDRV6+
29	DOUBLE CRIMP	RF2-1	RF2-2	350539002	WHITE	22	84.00	MDRV6-
30	DOUBLE CRIMP	RF2-2	RF2-1	350539002	WHITE	22	84.00	MDRV6+

BILL OF MATERIALS

ITEM#	PART #	DESCRIPTION	QTY	MFR
1	09-50-8123	12 Rectangular Connectors - Housings Receptacle Natural 0.156" (3.96mm)	1	MOLEX
2	39-01-2080	8 Rectangular Connectors - Housings Receptacle Natural 0.165" (4.20mm)	1	MOLEX
3	39-01-3083	8 Rectangular Connectors - Housings Plug Natural (4.20mm)	1	MOLEX
4	39-00-0040	SOCKET CONTACT TIN 18-24 AWG CRIMP POWER	8	MOLEX
5	39-00-0038	PIN CONTACT TIN 18-24 AWG CRIMP POWER	8	MOLEX
6	8520112	Non-Gendered Contact Tin 18-20 AWG Crimp	13	MOLEX
7	350539002	Pin Contact Tin 22-28 AWG Crimp	8	MOLEX
8	351840200	2 Rectangular Connectors - Housings Plug Natural 0.098" (2.50mm)	4	MOLEX
9		SELF LAMINATING LABEL	9	
10		WIRE, STRANDED, PVC INSULATION, 22 AWG, UL1007		

REVISIONS

REV.	DESCRIPTION	DATE	BY
v1.3b	PRODUCTION RELEASE	9/15/2023	MD
v1.3c	ADD FANS AND REMOVE MRQ LEDS	6/15/2024	MD

FIGURE 15. LED WIRING CONNECTIONS DIAGRAM

Shaker motor harness

WIRE RUN LIST

WIRE#	TERMINAL LT	FROM	TO	TERMINAL RT	COLOR	AWG	LENGTH (in)	FUNCTION
1	8520112	P4-1	W1		YELLOW	22	48.00	MDRV7+
2	8520112	P4-2	W2		WHITE	22	48.00	MDRV7-
3	DOUBLE CRIMP	P4-1	W3		YELLOW	22	48.00	MDRV7+
4	DOUBLE CRIMP	P4-2	W4		WHITE	22	48.00	MDRV7-
5	DOUBLE CRIMP	P4-3	W5		YELLOW	22	66.00	MDRV8+
6	8520112	P4-4	W6		WHITE	22	66.00	MDRV8-
7	DOUBLE CRIMP	P4-3	W7		YELLOW	22	66.00	MDRV8+
8	DOUBLE CRIMP	P4-4	W8		WHITE	22	66.00	MDRV8-
9	8520112	P4-5	W9		YELLOW	22	78.00	MDRV9+
10	8520112	P4-6	W10		WHITE	22	78.00	MDRV9-
11	DOUBLE CRIMP	P4-5	W11		YELLOW	22	78.00	MDRV9+
12	DOUBLE CRIMP	P4-6	W12		WHITE	22	78.00	MDRV9-
13	8520112	P4-7	W13		YELLOW	22	96.00	MDRV10+
14	8520112	P4-8	W14		WHITE	22	96.00	MDRV10-
15	DOUBLE CRIMP	P4-7	W15		YELLOW	22	96.00	MDRV10+
16	DOUBLE CRIMP	P4-8	W16		WHITE	22	96.00	MDRV10-
17	DOUBLE CRIMP	P4-9	R2-3	39-00-0038	YELLOW	18	72.00	MDRV11+
18	8520112	P4-10	R2-1	39-00-0038	WHITE	18	72.00	MDRV11-

BILL OF MATERIALS

ITEM#	PART #	DESCRIPTION	QTY	MFR
1	09-50-8103	10 Rectangular Connectors - Housings Receptacle Natural 0.156" (3.96mm)	1	MOLEX
2	39-00-0038	SOCKET CONTACT TIN 18-24 AWG CRIMP POWER	2	MOLEX
3	8520112	Non-Gendered Contact Tin 18-20 AWG Crimp	18	MOLEX
4	39-01-4030	MINI-FIT JR. RECEPTACLE HOUSING, SINGLE ROW, 3 CIRCUITS	1	MOLEX
5		DIODE PCB	1	SMTE
6		SELF LAMINATING LABEL	1	
7	Q2-F-3/4-01-SS200FT	Heat Shrink Tubing, Flexible 0.750" (19.05mm) 2 to 1 Black 200.0' (61.0m)	2	
8		WIRE, STRANDED, PVC INSULATION, 22 AWG, UL1007		
9		WIRE, STRANDED, PVC INSULATION, 18 AWG, UL1007		

REVISIONS

REV.	DESCRIPTION	DATE	BY
v1.3b	PRODUCTION RELEASE	9/15/2023	MD
v1.3c	REMOVE FAN CONNECTORS	6/15/2024	MD

FIGURE 16. SHAKER MOTOR HARNESS DIAGRAM

IO/T Power Harness

WIRE RUN LIST

WIRE#	TERMINAL LT	FROM	TO	TERMINAL RT	COLOR	AWG	LENGTH (in)	FUNCTION
1	39-00-0038	R1-1	J1-1	61117-1	YELLOW	16	36.00	+12V_PWR1
2	39-00-0038	R1-5	J1-2	61117-1	BLACK	16	36.00	GND
3	39-00-0038	R1-2	J2-1	61117-1	YELLOW	16	36.00	+12V_PWR2
4	39-00-0038	R1-6	J2-2	61117-1	BLACK	16	36.00	GND
5	39-00-0038	R1-3	J3-1	61117-1	YELLOW	16	36.00	+12V_PWR3
6	39-00-0038	R1-7	J3-2	61117-1	BLACK	16	36.00	GND

BILL OF MATERIALS

ITEM#	PART #	DESCRIPTION	QTY	MFR
1	39-01-2080	8 Rectangular Connectors - Housings Receptacle Natural 0.165" (4.20mm)	1	MOLEX
2	1-480424-0	4 Rectangular Connectors - Housings Plug Natural 0.200" (5.08mm)	3	TE
3	39-00-0038	SOCKET CONTACT TIN 18-24 AWG CRIMP POWER	6	MOLEX
4	61117-1	Socket Contact Tin 14-20 AWG Crimp	6	TE
5		SELF LAMINATING LABEL	5	
6		WIRE, STRANDED, PVC INSULATION, 16 AWG, UL1007		

REVISIONS

REV.	DESCRIPTION	DATE	BY
v1.3b	PRODUCTION RELEASE	9/11/2023	MD

FIGURE 17. IO/T POWER HARNESS DIAGRAM

Monitor Power Harness

WIRING DIAGRAM

PIN	COLOR
1 CENTER	BLACK WITH STRIPE
2 SLEEVE	BLACK

WIRE RUN LIST

WIRE#	TERMINAL LT	FROM	TO	TERMINAL RT	COLOR	AWG	LENGTH (in)	FUNCTION
1	FACTORY	J2-1	R1-1	39-00-0038	BLACK/STRIPE	18	60.00	+24V_MONITOR
2	FACTORY	J2-2	R1-4	39-00-0038	BLACK	18	60.00	GND_MONITOR
3	SOLDER	J1-2	R1-2	39-00-0038	VIOLET	18	60.00	+24V_MONITOR
4	SOLDER	J1-1	R1-5	39-00-0038	BLACK	18	60.00	GND_MONITOR
5	SOLDER	J1-4	R1-3	39-00-0038	VIOLET	18	60.00	+24V_MONITOR
6	SOLDER	J1-3	R1-6	39-00-0038	BLACK	18	60.00	GND_MONITOR

BILL OF MATERIALS

ITEM#	PART #	DESCRIPTION	QTY	MFR
1	39-01-2060	6 Rectangular Connectors - Housings Receptacle Natural 0.165" (4.20mm)	1	MOLEX
2	DC-262	2.5mm DC Power Plug to Strip & Tin Pigtail Wires 6 Feet 18 AWG	1	Jameco
3	KPPX-4P	4 (Power) Position Circular Connector Plug, Male Pins Solder Cup	1	Kycon, Inc.
4	39-00-0038	SOCKET CONTACT TIN 18-24 AWG CRIMP POWER	6	MOLEX
5		SELF LAMINATING LABEL		
6		WIRE, STRANDED, PVC INSULATION, 18 AWG, UL1007	4	

REVISIONS

REV.	DESCRIPTION	DATE	BY
v1.3b	PRODUCTION RELEASE	9/10/2023	MJD

FIGURE 18. MONITOR POWER HARNESS DIAGRAM

Audio Power Harness

WIRING DIAGRAM

PIN	COLOR
1 CENTER	BLACK WITH STRIPE
2 SLEEVE	BLACK

WIRE RUN LIST

WIRE#	TERMINAL LT	FROM	TO	TERMINAL RT	COLOR	AWG	LENGTH (in)	FUNCTION
1	FACTORY	J2-1	R1-1	39-00-0038	BLACK/STRIPE	18	48.00	+24V_AMP
2	FACTORY	J2-2	R1-4	39-00-0038	BLACK	18	48.00	GND_AMP

BILL OF MATERIALS

ITEM#	PART #	DESCRIPTION	QTY	MFR
1	39-01-2060	6 Rectangular Connectors - Housings Receptacle Natural 0.165" (4.20mm)	1	MOLEX
2	DC-260-18	2.1mm DC Power Plug to Strip & Tin Pigtail Wires 6 Feet 18 AWG	1	JAMECO
3	39-00-0038	SOCKET CONTACT TIN 18-24 AWG CRIMP POWER	2	MOLEX
4		SELF LAMINATING LABEL	3	

REVISIONS

REV.	DESCRIPTION	DATE	BY
v1.3b	PRODUCTION RELEASE	9/10/2023	MD

FIGURE 19. AUDIO POWER HARNESS DIAGRAM

Pinball Knocker (HDRV) Harness

WIRE RUN LIST

WIRE#	TERMINAL LT	FROM	TO	TERMINAL RT	COLOR	AWG	LENGTH (in)	FUNCTION
1	39-00-0038	R1-1	R2-3	39-00-0038	VIOLET	18	60.00	+24V KNOCKER
2	39-00-0038	R1-4	P4-1	8520112	BLACK	22	60.00	GND +24V
3	DOUBLE CRIMP	R1-4	P4-2	8520112	BLACK	22	60.00	GND +24V
4	39-00-0038	R1-5	P4-4	8520112	BLACK	22	60.00	GND +24V
5	DOUBLE CRIMP	R1-5	P4-5	8520112	BLACK	22	60.00	GND +24V
6	8520112	P5-6	R2-1	8520112	BROWN	18	60.00	KNOCKER-
7	39-00-0038	R0-4	CN1	39-00-0038	VIOLET	18	5.00	+24V KNOCKER
8	39-00-0038	R0-1	CN2	2-520181-2	BROWN	18	5.00	KNOCKER-

BILL OF MATERIALS

ITEM#	PART#	DESCRIPTION	QTY	MFR
1	39-01-2060	6 Rectangular Connectors - Housings Receptacle Natural 0.165" (4.20mm)	1	MOLEX
2	39-01-4030	3 Rectangular Connectors - Housings Receptacle Natural 0.165" (4.20mm)	1	MOLEX
3	39-01-4040	4 Rectangular Connectors - Housings Receptacle Natural 0.165" (4.20mm)	1	MOLEX
4	09-50-8053	5 Rectangular Connectors - Housings Receptacle Natural 0.156" (3.96mm)	1	MOLEX
5	09-50-8063	6 Rectangular Connectors - Housings Receptacle Natural 0.156" (3.96mm)	1	MOLEX
6	2-520181-2	0.187" Quick Connect Female 18-22 AWG Crimp Connector Fully Insulated	2	TE
7	39-00-0038	SOCKET CONTACT TIN 18-24 AWG CRIMP POWER	7	MOLEX
8	8520112	Non-Gendered Contact Tin 18-20 AWG Crimp	5	MOLEX
9	Q2-F-3/4-01-SS200FT	Heat Shrink Tubing, Flexible 0.750" (19.05mm) 2 to 1 Black 200.0' (61.0m)	2	
10		SELF LAMINATING LABEL	1	
11		PCB DIODE 3P TO 4P OUT	1	
12		WIRE, STRANDED, PVC INSULATION, 22 AWG, UL1007	5	
13		WIRE, STRANDED, PVC INSULATION, 18 AWG, UL1007		

Note 2: ADD HEAT SHRINK TUBING TO PCB BOARD. CONNECT R2 and R0.

REVISIONS

REV.	DESCRIPTION	DATE	BY
v1.1c	PRODUCTION RELEASE	6/20/2024	MD

FIGURE 20. PINBALL KNOCKER (HDRV) HARNESS DIAGRAM

Ticket Dispenser Wire Harness Adapter

Ticket Dispenser Wire Harness Adapter

Populated With:
Sockets 02-09-1119

Populated with:
Pins 02-09-2118

R1

4"

P1

03-09-1042

03-09-2092

Front View

Front View

Wire #	From	To	Color	AWG	Length
1	R1-1	P1-6	Blue	22	4"
2	R1-2	P1-9	Black	22	4"
3	R1-3	P1-8	White	22	4"
4	R1-4	P1-1	Red	22	4"

Notes:
1. Use sockets part# 02-09-1119 in R1
2. Use pins part# 02-09-2119 in P1

PARTS LIST

Part Name	Quantity	Part Number	Part Description/Web Link
VAS MCP (Motherboard)	1	AK2-VAS-8	ASUS-brand motherboard that operates the game.
VAS Missile Command Recharged Pro 2p Game Grid: M.2 Hard Drive	1	AR2P-VAS-16	SSD hard drive that is plugged into the M.2 slot on the motherboard.
RAM	2	AK2-VAS-12	G.SKILL Ripjaws V Series 16GB (2 x 8GB) 288-Pin PC RAM DDR4 3200 (PC4 25600) Desktop Memory Model F4-3200C16D-16GVKB
CPU	1	AK2-VAS-11	AMD Ryzen 5 5600X 6-core, 12-Thread Unlocked Desktop Processor with Wraith Stealth Cooler
Wi-Fi Card (M.2)	1	AK2-VAS-10	M.2 style WiFi board. WiFi antenna plugs into this.
PCB Standoffs	4	AK2-VAS-13	Feet that keep the motherboard above the wood, prevents ground issues
VAS 800 IO/T	1	AK4-VAS-6	The proprietary Alan-1 I/O board
Control Panel Vinyl	1	AR2P-VYL-101	Printed vinyl artwork for the control panel
Hood Vinyl	1	AR2P-VYL-103	Printed vinyl artwork for the top portion of the game cabinet
Speaker Vinyl	1	AR2P-VYL-100	Printed vinyl for the speaker section between the monitor and marquee hood
Trackball Assembly	2	MC2P-I/P-14	Fully enclosed trackball assembly
Buttons (Start)	2	AR2P-I/P-4	"Volcano cone" shaped start buttons
Buttons (Start nut)	2	AR2P-I/P-5	Nut that holds the Start buttons in place
Buttons (Blue)	4	AR2P-I/P-7	D-LED backlit game button in blue
Buttons (Green)	2	AR2P-I/P-6	D-LED backlit game button in green
Buttons (Red)	2	AR2P-I/P-8	D-LED backlit game button in red
Buttons (White)	2	AR2P-I/P-9	D-LED backlit game button in white
Acrylic Fan Guard	1	AK2-ACR-1	Black piece that sits between the fans and the outer control panel
Acrylic Hood Diffusers	2	AK2-ACR-2	LED diffusers for lighting effect

Acrylic Light Covers		AK2-ACR-3	LED covers
Hinges		AK2-CAB-10	Hinges that are used inside of the control panel
Hinge Plates		AK2-CAB-105	Plates that the hinges attach to
Hood LEDs		AK2-LED-1	White LEDs inside of the marquee/hood area
Raffix Screws		AR2P-CAB-12	
Raffix Cams		AR2P-CAB-11	
T-Molding (lnft)	2	AK2-CAB-3	Purple T-molding that protects the sides of the cabinet
Monitor Bezel Glass Screen	1	AR2P-GLS-101	Protective glass with printed art around the edges
Coin Box	1	AR2-CAB-2	Metal container that securely houses the coin bucket
Marquee (2P Pro)	1	AR2P-GLS-100	Printed art that shows the game title
Marquee Hardware		AK2-CAB-13	LED & spacer hardware for the marquee
Handles	2	AK2-CAB-28	Handles for moving the game cabinet
Leg Levelers	2	AK2-CAB-16	
Casters	2	AK2-CAB-9	
LED Channel		AK2-LED-3	
LED Strips		AK2-LED-2	
LED Strip Connectors			
VAS Portal (32" Monitor 4K)	1	AK2-VAS-1	Wei-ya brand, open frame 32" 4K monitor
Audio amplifier	1	AK2-AUD-1	Includes subwoofer & controls
Left/Right Speaker pair	2	AK2-AUD-2	
VAS Energy Distribution Unit (PDB-JH-01)	1	AK2-VAS-7	Main power supply
Pinball Knocker	1	AK2-TOY-1	Solenoid that hits the cabinet when activated by the game.
Small Shaker	1	AK2-TOY-2	Small "rumble effect" motor which creates a smaller effect than the large shaker.
Large Shaker	1	AK2-TOY-3	Large "rumble effect" motor which creates a larger effect than the small shaker.
Fans	2	AK2-TOY-4	A centrifugal fan device for blowing air onto the player's hands.

Settings Switch	1	AK2-I/P-3	Also known as the service switch, this activates the Operator Menu when the game is on.
Control Panel Latch	1	AK2-CAB-17	Metal latch that holds the control panel in place
I/O Edge Connector	1	AR2P-W/H-100	Black plastic connector that houses wiring pins and connects the wire harness to the I/O board.
HDVR 1		AK2-W/H-12	Part of the Wiring Harness system (24V)
MDVR 1		AK2-W/H-13	Part of the Wiring Harness system (12V)
MDVR 2		AK2-W/H-14	Part of the Wiring Harness system (12V)
MDVR 3		AK2-W/H-15	Part of the Wiring Harness system (12V)
Monitor Power	1	AK2-W/H-10	Power cable to the monitor
HDMI Video cable	1	AK2-W/H-21	HDMI Cable, 4K, 4' length
USB-B		AK2-W/H-4	Powered USB cable for the I/O board
Audio Cable		AK2-W/H-2	3.5mm audio cable
		1	

LIMITED WARRANTY

Alan-1 Inc. ("Alan-1") warrants to the Distributor that each Arcade Machine delivered to Distributor is free from defects in workmanship and free from defects in materials, pursuant to the terms and conditions set forth in this Limited Warranty.

COVERAGE: The Limited Warranty covers defective workmanship and materials as follows to original purchaser of Machine: All parts of the Arcade Machine, excluding standard wear & tear parts, for 90 days from the date of invoice or shipment by Distributor; and the LCD monitor for 1 Year from the date of invoice or shipment by Distributor.

CONDITIONS: The original purchaser must register the Limited Manufacturer's Warranty by completing the Product Registration Form on the Alan-1 Operators App (available on iOS/Android) within fifteen days of purchase or invoice. In the event of a warranty for the above Coverage to apply, the Original Purchaser must open a trouble ticket on www.alan-1.com or call 844-44-ALAN-1. Service related questions can also be sent via email to support@alan-1.com

Defective parts need to be sent to Alan-1 at the purchaser's expense, if the defective parts cannot be removed, the entire Arcade Machine will need to be returned to the Distributor for repair or replacement. All parts returned must be properly packaged with an RMA tag/Trouble ticket then returned freight prepaid to the Seller's facility. Any modification of the Arcade Machine or its software, improper repairs or attempts at repairs with non-Alan-1 parts will void the Limited Warranty.

EXCLUSIONS: The Limited Warranty does not cover service, labor, or shipping and handling. Damage, wear, and/or breakage not caused by defective materials or workmanship shall not be covered by the Limited Warranty. Damage incurred during shipping and handling shall not be covered by the Limited Warranty.

DISCLAIMER OF IMPLIED WARRANTY: The Limited Warranty, as set forth in this document, is the only warranty. ALL IMPLIED WARRANTIES ARE DISCLAIMED. THE WARRANTY OF MERCHANTABILITY IS DISCLAIMED. THE WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE IS DISCLAIMED.

DISCLAIMER OF DAMAGES: This Warranty does not apply to any parts damaged due to improper handling or due to improper installation, usage or alteration. In no event shall the Seller be held liable for any anticipated profits, loss of profits, loss of use, accidental or consequential damages or any other losses incurred by the customer regarding the purchase of an Alan-1, Inc. product.

GLOSSARY OF TERMS

AC
Alternating current; from zero it rises to a maximum positive level, then passes through zero again to a maximum negative level.

ACTIVE STATE
The true state of a signal. For example:
The active state for START is low.

ADDRESS
A value that identifies a specific location of data in memory; normally expressed in hexadecimal notation.

ANALOG
Measurable in an absolute quantity (as opposed to on or off). Analog devices are volume controls, light dimmers, stereo amplifiers, etc.

ANODE
The positive (arrow) end of a diode.

AMPLIFIER
A device used to increase the strength of an applied signal.

AMPLITUDE
The maximum instantaneous value of a waveform pulse from zero.

ASTABLE
Having no normal state. An astable device will free-run or oscillate as long as operating voltage is applied. The oscillation frequency is usually controlled by external circuitry.

AUXILIARY COIN SWITCH
A momentary-contact pushbutton switch with a black cap located on the utility panel. The auxiliary coin switch adds credits to the game without activating a coin counter. Better known as the **SERVICE CREDIT** button

BEZEL
A cut, formed, or machined retention device, such as the conical device used to mount a pushbutton switch to a control panel, or the formed device used to frame the video display screen.

BIDIRECTIONAL
Able to send or receive data on the same line (e.g., the data bus of a microprocessor).

BINARY
A number system that expresses all values by using two digits (0 and 1).

BIT
A binary digit; expressed as 1 or 0.

BLOCK DIAGRAM
A drawing in which functional circuitry units are represented by blocks. Very useful during initial troubleshooting.

BUFFER
1. An isolating circuit designed to eliminate the reaction of a driven circuit on the circuits driving it (e.g., a buffer amplifier).
2. A device used to supply additional drive capability.

BUS
An electrical path over which information is transferred from any of several sources to any of several destinations. Found on PCBs like motherboards and I/O boards.

CAPACITOR
A device capable of storing electrical energy. A capacitor blocks the flow of DC current while allowing AC current to pass. Look like small, round cylinders.

CARD READER
A device, usually with a color LCD screen, which allows the machine to use a specially programmed card to pay for the game, as opposed to coins.

CASH BOX
The lower portion of the coin door which contains a bucket that catches the coins. Secured to help prevent theft.

CATHODE
The negative end of a diode.

CHIP
An integrated circuit comprising many circuits on a single wafer slice.

CLOCK
A repetitive timing signal for synchronizing system functions.

COIN COUNTER
A 6-digit electromechanical device that counts the coins inserted in the coin mechanism(s).

COIN MECHANISM
A device on the inside of the coin door that inspects the coin to determine if the correct coin has been inserted. Slang terms: **Coin Mech** or just **Mech**

COMPLEMENTARY
Having opposite states, such as the outputs of a flip-flop.

CPU
Central Processing Unit. These are the brains of a computer, where principle calculations take place. They require an elaborate cooling system. CPUs are designed by companies like Intel and AMD.

CREDIT
A digital measurement unit that counts as one play for one person based on the game switch settings.

DATA
General term for the numbers, letters, and symbols that serve as input for device processing.

DBA or DBV
Short for Dollar Bill Acceptor or Dollar Bill Validator

DC
Direct current, meaning current flowing in one direction and of a fixed value.

DIAGNOSTICS
A programmed routine for checking circuitry. For example: the self-test is a diagnostic routine.

DIODE
A semiconductor device that conducts electrical current in only one direction.

DISCRETE
Non-integrated components, such as resistors, capacitors, and transistors.

DOWN TIME
The period during which a game is malfunctioning or not operating correctly due to machine failure.

GRAPHICS CARD
A device which contains a Graphics Processing Unit (GPU) and other components made to draw the frames of a screen. The more powerful the graphics card, the higher fidelity graphics a computer can produce. Also known as the video card. Alan-1 Arcade games use an integrated card, meaning it cannot be removed/separated from the motherboard.

HARNESS
A prefabricated assembly of insulated wires and terminals ready to be attached to a piece of equipment. Also known as the "**WIRING HARNESS**."

HEXADECIMAL
A number system using the equivalent of the decimal number 16 as a base. The symbols O-9 and A-F are usually used.

I/O
Input/Output. Within Missile Command Recharged, the I/O board is also known as the 800 IOT

KNOCKER
An electronically-driven solenoid device that will create a loud "knocking" sound when activated

LED
The abbreviation for a light-emitting diode. "RGB LED" refers to multi-colored LEDs

MARQUEE
The top space of the arcade kiosk, generally with artwork and the title of the game

MOTHERBOARD
The complex printed circuit board (PCB) which contains the CPU, RAM, SSD, video/graphics card, and various ports that the game needs to function. Features a fan on top of the CPU.

PCB
The abbreviation for a printed-circuit board.

POTENTIOMETER
1. A resistor that has a continuously moving contact which is generally mounted on a moving shaft. Used chiefly as a voltage divider. Also called a "pot" (slang).
2. An instrument for measuring a voltage by balancing it against a known voltage.
These are frequently used in arcade controls for analog input (mounted guns, shifters, yoke controls)

POWER SUPPLY UNIT (PSU)
A metal box that contains the components for driving power to the arcade cabinet.

RANDOM ACCESS MEMORY (RAM)
 A device for the temporary storage of data. These are long, thin, and rectangular and are located on the motherboard. Usually measured in gigabytes of capacity (ex. 8GB or 16GB).

RESISTOR
A device designed to have a definite amount of resistance. Used in circuits to limit current flow or to provide a voltage drop.

ROM
Read-only memory. A device for the permanent storage of data. Older games had "ROM chips" to store game data, whereas Missile Command Recharged uses an SSD device for storing data, which can both read and write data for use.

RUMBLE FEEDBACK
An effect produced by a specialized motor with an off-set weight to create the sensation of shaking the cabinet. Used in all game console gamepads on a smaller scale, whereas Alan-1's rumble motors are larger.

SOLID STATE DRIVE (SSD)
Semiconductor-based data storage medium. As opposed to hard drives, there are no moving parts nor magnets, meaning that data access is much faster. These connect using the "M.2" standard.

TOYS
Alan-1's term for the special hardware features that are used on our cabinets, such as the cabinet knocker, rumble feedback motors, and wind effect fans.

TROUBLESHOOT
The process of locating and repairing a fault.

WATCHDOG
A counter circuit or program designed to protect the microprocessor from self-destruction if a program malfunction occurs. If a malfunction does occur, the counter applies continuous pulses to the reset line of the microprocessor, which causes the microprocessor to keep resetting.

NOTES

A place for notes like your game's serial number, major milestones like high earnings, repair notes, etc.

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NOTES

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