Retroelectronik Supergun Pro Gamer

User Manual V1.1 beta
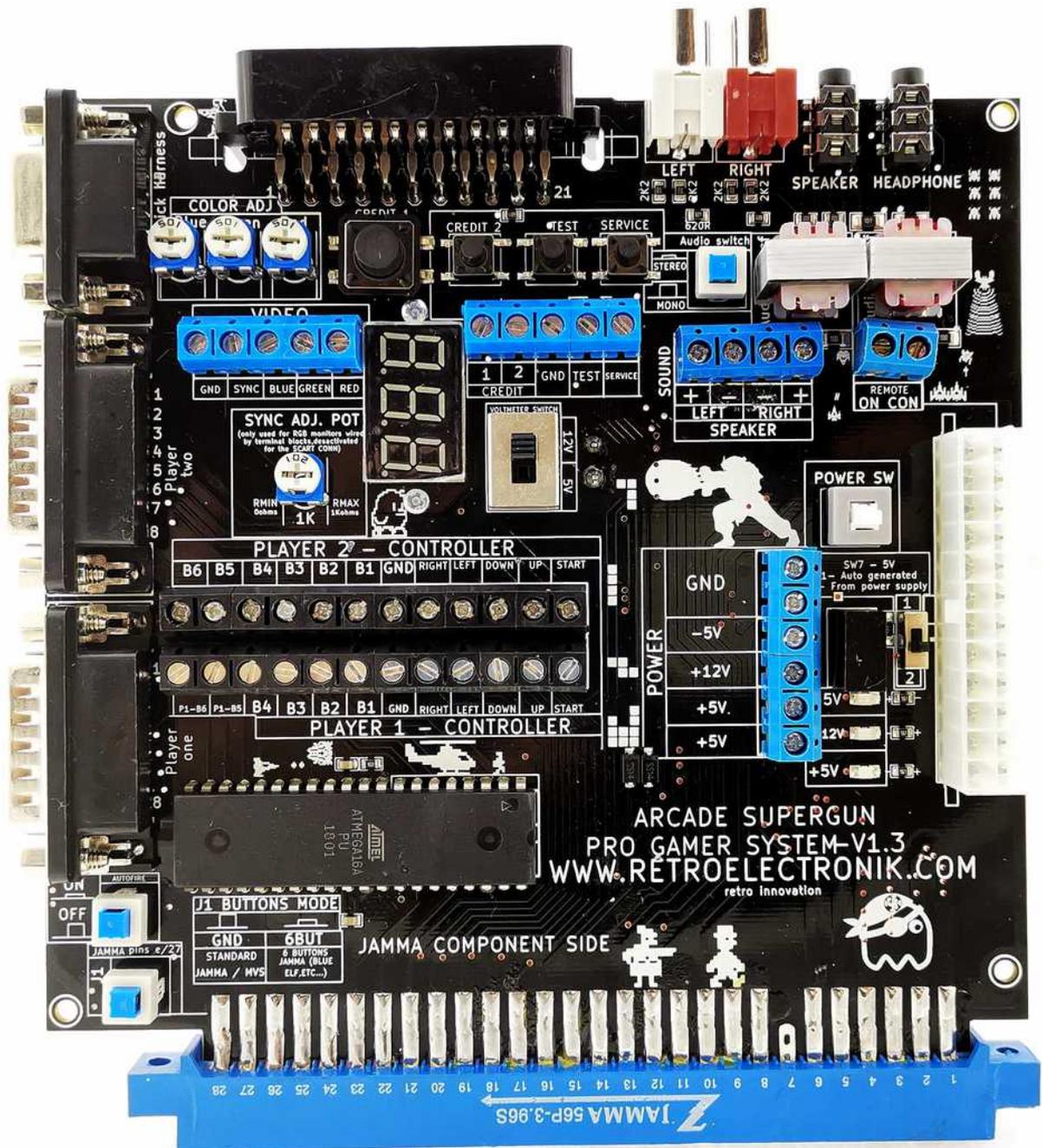
Table of Contents

I- Short word from the creators

Thank you for your interest in the Retroelectronik Supergun Pro Gamer. Our small team has tried to design with this supergun the most powerful system available at the best value for money. The versatility of this system will allow you to run all JAMMA PCBs and much derivatives (JAMMA +, MVS, PGM IGS, Pandora's box, little elf, 60in1, etc.). We also wanted to design a simple,user friendly system.Thus,no soldering, is necessary to operate your supergun, all the configuration will be done through switches.

II – Compatibilities

II.1- Compatible PCBs

Our supergun is certainly the most versatile in the market.Indeed it's natively compatible with:

- All PCBs conforming to the JAMMA standard (including 60 in 1)

- All PCBs conforming to the JAMMA + standard such as Street fighter 2, etc. (requires an additional kick harness cable for buttons 4,5 and 6

- Arcade Systems SNK Neo Geo MVS

- PGM IGS arcade systems (requires an accessory to play in 4 player mode)

- Modified JAMMA systems such as the Pandora's box and the little elf (on VGA video output or RGB/SCART outputs if the PCB can supply a regular 15Khz signal)

- Non-JAMMA cards using a JAMMA adapter (Jeutel, valadon, sega system, etc ...)

Be careful however some of the latest JAMMA PCBs supply a random quality video sync signal. This is the case for Pandora's Box 4. Some of them work very well but some others display a shifted image and some others supply a signal too far from the standard 15Khz to be able to display an image.

II.2- Power supply compatibility

Your supergun can be powered in different ways :

- Using a standard 20-pin or 24-pin ATX power supply thanks to its 24-pin ATX connector (also 20-pin compatible but with a better electrical charge distribution than a 20-pin connector, you deserve the best :)

- Using a standard arcade power supply, which often also allows the +5V to be adjusted. You can connect it using the integrated terminal blocks

II.3 Compatible controls

The supergun can be attached:

- To any remote arcade system (up to 2 players and 6 buttons per player) thanks to its connection terminals

- To any hacked joystick using the connection terminals

- To any a neogeo pad or compatible using the two DB15 connectors

- To any SEGA megadrive / Genesis pad 3 or 6 buttons using the Sega megadrive/genesis to neogeo adapter

The integrated autofire mode will be available regardless of the controller you'll use

III- Your Supergun in details
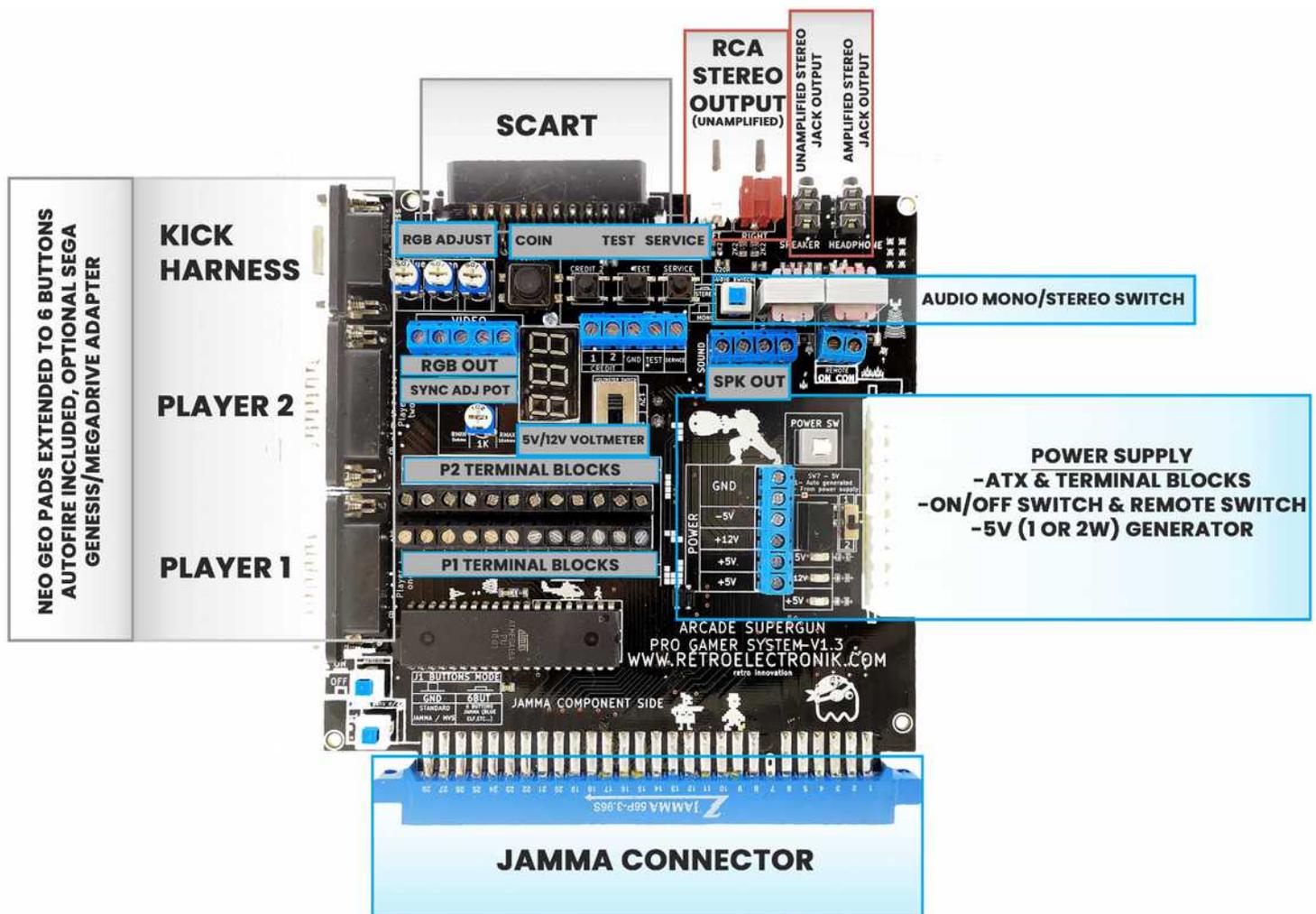
We designed the pro gamer to be as simple as possible without soldering or jumpers. Configuration can be done using 13 switches:

- The Mono / Stereo switch is used to adapt the audio output of the supergun to the type of your PCB. If your JAMMA PCB is a mono sound card, switch it to mono, otherwise switch it to stereo.

- Switches J1 and J2 control the availability of the +5V respectively on the DB15 pad of player 1 and player 2. If the pad require to be powered electrically, switch it ON, otherwise switch it to OFF. Except in rare cases, it's advisable to leave them at the ON position.

– The P1 and P2 switches allow you to choose between standard JAMMA / MVS mode and extended 6-button JAMMA mode. The JAMMA 6 buttons mode is useful for some very recent cards like the famous Pandora's Box,it is dedicated to these «Xin1» PCBs with 6 buttons available. On the other hand, for older cards such as Street Fighter 2 (CPS / 2), the 3 additional buttons must be wired using a kick harness and P1, P2 must be switched to "Standard JAMMA"

– The Voltmeter switch is used to define whether the voltmeter should display the exact value of + 12V or + 5V

– The three RGB switches control the Red, Green and Blue color respectively.
They activate the potentiometer of the corresponding color and allow fine adjustments.

– The Autofire ON / OFF switch enables or disables the autofire function. To be able to put a button in autofire, it's necessary that the autofire is ON. Then press simultaneously Start and the concerned button during 2 seconds.

– The switch SW7 activates the self-generation of -5V by the supergun. If your power supply has its own -5V or your PCB does not require it, it is recommended to set it to position 2 by default. If you decide to set it to 1, make sure that your PCB don't need more than 1W or 0.25 Amperes (or 2W or 0.5A depending on your model), or you could burn the transformer that generates it!

– The Power switch allows you to turn ON the supergun and the PCB. Be careful, it only works with ATX power supply and when the SW5 switch is OFF. Using an arcade supply,it will be useless and always ON. It must be OFF if you want to remote the power button.

– The switch SW5 is used to force the power ON of the supergun. When ON, the supergun switches to "always ON" mode and disables the ON / OFF switch. It is usually switch OFF and must be OFF if you want to remote the power button.

III.1 – JAMMA CONNECTOR

The JAMMA connector allows you to connect any type of PCB whether JAMMA or not (see compatibility section). Be sure to plug your card in the correct direction, this may seem self-evident but the lack of mechanical coding is an element to take into account and plugging a PCB upside down could destroy it. Commonly, a PCB is defined by a component side and a solder side.

The compatibility between the different types of cards (little elf, JAMMA, JAMMA +, IGS, MVS, etc ...) and supergun is ensured by switches and jumpers.

The jamma connector used here is a 56P edge blue. It was used in the last arcades of origin and defined by the standard for its robustness. Indeed it can support several thousand connections / disconnections and is resistant to time.

III.2 - Controls

The most important part of a supergun! We have worked here to give you total freedom. The supergun pro gamer has neo geo pads connectors but also terminal blocks. That way,you can for example integrate it in a customized arcade panel or an arcade cabinet; in short, the only limit is your imagination.

You want to build an ultimate supergun with sanwa buttons and seimitsu joysticks?
This supergun is for you!

4 small integrated buttons allow you to access to credits validation,test mode and service features of your PCB. Each of these buttons can also be easily remoted using their respective terminal blocks.

The neo geo pads connectors are 100% compatible with SNK NEO GEO AES pads but are also compatible with extended to 6 buttons pads.

Here are the wiring diagrams (you can freely distribute if you wish) :

Neo Geo AES Pad connector Pinout (DB15 Standard)
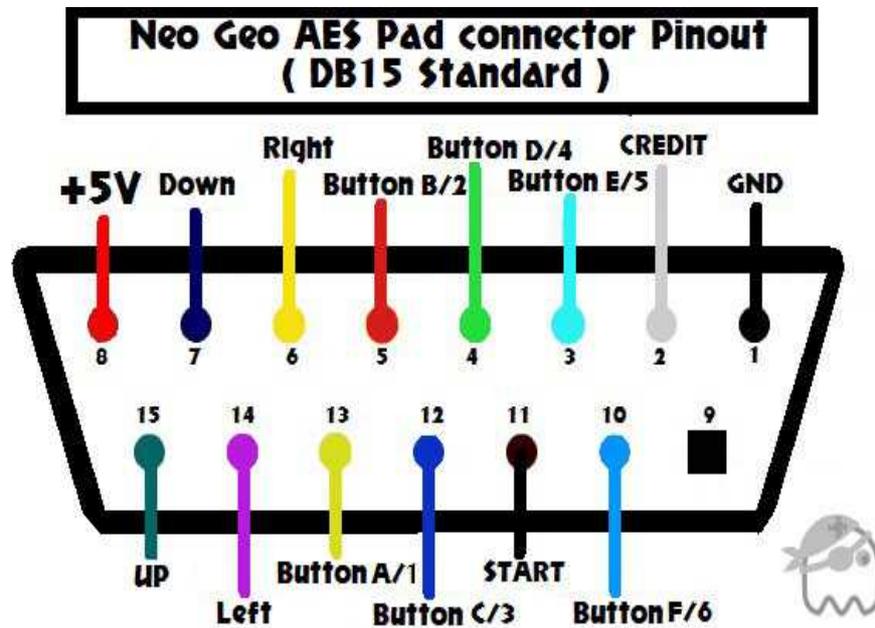
- **The autofire is integrated**

  It is available on both DB15 connectors and terminal blocks. This for the 6 buttons available to the 2 players.

  To activate it, it is enough that the switch "autofire" is ON at the start of the supergun. From there, press simultaneously Start and the concerned button during 2 seconds. Do the same to remove the autofire.

- **As an option, the SEGA controllers are also compatible**

  Our supergun is also planned to be able to benefit from many improvements, among them, in the register of the controls we propose for the hardcore gamers : the megadrive / genesis to NEO GEO which makes it possible to connect on this supergun any pad / joystick SEGA megadrive / genesis 3 or 6 buttons on the DB15 connection of the Supergun Essential Retroelectronik. You benefit from the best "made by SEGA" controllers or compatible from the king of the arcade at a much lower cost than a neo geo pad, the autofire being integrated into the SEGA / Genesis 2neogeo adapter (see its own manual for more details, it is available on www.r2tronik.com)

- **Kick Harness expands the range of possibilities**

  [For the academic definition of the term, I refer you to the excellent Wikipedia article here :](https://en.wikipedia.org/wiki/Kick_harness)
  https://en.wikipedia.org/wiki/Kick_harness

  The JAMMA standard originally provided for 2 players and 3 buttons per player. When the arcade PCB manufacturers started to launch advanced combat games, they had to increase the number of buttons to offer a wide range of shots and combos.

  CAPCOM was thus in a dilemma when Street Fighter 2 was developed. As a member of the JAMMA association, it had to comply with it but needed 3 more buttons.
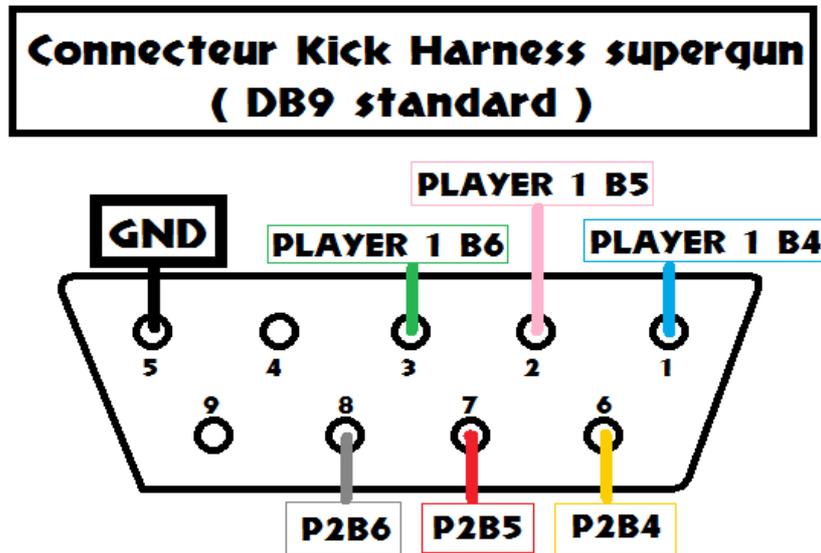
  To stay compatible JAMMA, CAPCOM has decided to add a connector that included buttons 4, 5 and 6 of each player. On these cards therefore, the additional buttons are not available directly on the JAMMA port. This problem mainly affects CAPCOM cards (CPS1 / CPS2 / CPS3) but also other cards such as Fighter's History from Data East or Mortal Kombat.

  For the development of other systems (MVS, IGS, Little Elf, Pandora's Box, etc ...), their respective creator chose not to comply with the standard to 100% to put all the controls on the connector, the use kick harness is not necessary in this case.

  In order to allow you to use these cards, we have added a Kick Harness to the Supergun Retroelectronik. This female DB9 connector allows you to add a link cable buttons 4, 5 and 6 of each player for cards that need it.

  We offer these cables for sale on www.r2tronik.com but you can also make it yourself easily.

Here is the wiring diagram of the Kick Harness of our supergun (drawn by me and that you can freely distribute if you wish) :

Connecteur Kick Harness supergun (DB9 standard)

GND | PLAYER 1 B6 | PLAYER 1 B5 | PLAYER 1 B4

5 4 3 2 1
9 8 7 6

P2B6 | P2B5 | P2B4

III.3 - The Scart socket

The scart socket of the supergun essential retroelectronik is wired in audio and video.

The video cabling is RGB (a Scart socket can be wired in composite or RGB, the RGB offers an image of much better quality because conveyed on 4 separate wires instead of one).

Be careful, some SCART cables are simply not wired in RGB, make sure yours is, otherwise you will not have an image. Retroelectronik also offers guaranteed cables running on our supergun.

Audio cabling is compatible with Mono and Stereo televisions. It has a galvanic isolation to optimize the sound quality and to protect all devices (JAMMA card, TV, speakers) in case of malfunction or overvoltage on one of them.
This protection / optimization, is extremely rare on the superguns but nevertheless primordial with regard to old cards of collection

III.4-Audio part of the Supergun

III.4.1 - Stereo audio Jack connector «Headphone»

The headphone stereo audio jack connector is connected directly to the sound output of the jamma connector of your card, it's amplified directly by the PCB, its sound is not attenuated and it's very strong and can directly power a headphone or unamplified speakers.
Be careful, however, because this output is not protected by supergun isolation transformers.

III.4.2 - Stereo audio Jack connector «Speaker»

The jack connector "speaker" of the supergun pro gamer is non-amplified, stereo, format 3.5mm standard.

It has a galvanic isolation to protect your jamma card from improper handling (for example if you plug the + on the mass following a DIY project poorly welded or the use of a cable jack of poor quality making a short circuit, your JAMMA game card will still be protected, which is not the case with most superguns on the market).

It allows you to connect a pair of self powered speakers (PC for example) easily and seamlessly. The sound it produces is however too weak to use it with headphones for example.

III.4.3 – Stereo Audio RCA connectors LEFT and RIGHT

Both RCA Right and Left connectors are either not or slightly amplified.

It has a galvanic isolation to protect your jamma card from improper handling and improve the sound reproduction.

They allow you to connect the supergun to a monitor or audio amp easily and seamlessly. The sound they produce, however, is too weak to use with non-amplified speakers for example.

III.4.4 - Mono / Stereo audio switch, details of its operation

When the JAMMA standard was defined, its designers had not planned anything other than two audio outputs. Thus, all the cards at the beginning had a Mono sound (one speaker) and these two output corresponded to + and - of the single speaker. Then, quickly, the jamma cards became stereo and these two outputs matched the left speaker and the right speaker, the lesser of the two speakers becoming the common mass.

In these wonderful times or abound arcade terminals, operators had to remake the wiring and soldering JAMMA connectors directly into the terminal to adapt to the new stereo cards.

The Supergun Pro Gamer avoids these tedious tasks; a simple switch allows you to switch from a mono card to a stereo card.

Do not know if your card is mono or stereo? Have a look at http://www.arcade-museum.com, find your game.

For example, I wanted to play Express Riders, one of my favorite cards, arcade-museum direction. I see this in the technical part:

Sound: Amplified Mono (one channel)

Hop, I spend my supergun in mono and I play!

Then, a small part of Street Fighter II I see this in the technical part:

Sound: Amplified Stereo (two channel)

Hop, I spend my supergun Stereo, I plug my kick harness and I play!

III.4.5 – Speaker Connectors Right and Left on blocks

These two connectors are directly connected to the amp of your game card.
The audio quality and the power of the amplification therefore depend directly on the integrated amplifier.

This is the only amplified output of the supergun.

However, we have provided the supergun progamer to output the sound on both left (right) and right (right) speakers, whether you are in Mono or Stereo mode. In mono mode, the same sound will be output on both speakers while in stereo, each speaker will play its own score.

III.5 - Power supply part of Supergun

III.5.1 - General information on the power supply of an arcade PCB

Video game cards consume to run a current of 5V but also of 12V and sometimes (but much less frequently) of -5V.

When defining the JAMMA standard, the consortium therefore included these 3 voltages in its standard to ensure maximum electrical versatility.

Over time, the -5V became less and less important, until the most recent JAMMA cards disappeared.

Your supergun has been designed to ensure maximum electrical versability. However, because game cards consume a lot of power and your power supply must at least provide 12V and 5V (but also to be universal of -5V), the most suitable power sources are:

- ✗ ATX-format PC power supplies that offer unbeatable value for money with high reliability

- ✗ Arcade power supplies that also have the option to adjust the 5V by a potentiometer to plus or minus 20% to satisfy the most capricious arcade cards (some will start at 5.1V, d ' other 5V precisely, etc ...). Note however that the most modern cards (601in1, pandora's box, little elf, etc ...) and

maps of the 90s (street fighter II, fighter's history, etc ...) are not affected by these 5V adjustment problems. So for most gamers, an ATX power supply is definitely the best.However, because game cards consume a lot of power and your power supply must at least provide 12V and 5V (but also to be universal of -5V), the most suitable power sources are:

III.5.2 - The ATX connector of the supergun

The Supergun Pro Gamer has an integrated 24-pin ATX connector.
The ATX standard started with a standard 20-pin connector but with the increase in power consumption of computers, it quickly became necessary to upgrade to 24 pins to better distribute the electrical load and ensure greater reliability of the powered equipment.

Indeed, the more an electrical product consumes amps and more his tracks heat, it's also the operating principle of an electric heater, an iron, an oven, etc ... But what is very good for a waffle maker is particulary damaging for a supergun whose goal is not to cook an egg but to be sustainable in time.

So that's the equation: the less the supergun heats up, the more reliable it will be in time.

For this, the electric tracks must offer the electric current as much space as possible to circulate freely. If the current is blocked by tracks too narrow, it heats. So, the more connections, the wider tracks and the better the current is distributed.

That's the basis of our thinking, which led us to make the choice to be the first supergun manufacturers (to my knowledge) to incorporate a 24-pin ATX connector rather than 20, for increased reliability and longevity.

Note that 24-pin connectors are backwards compatible with 20-pin connectors, so you can always plug an old ATX 20pins power supply into the supergun.

Thanks to the built-in keys in the ATX standard, you can only connect it to the right place, here is a 20-pin ATX power supply connected to the supergun essential (the other Retroelectronik model which has exactly the same power connector.) :
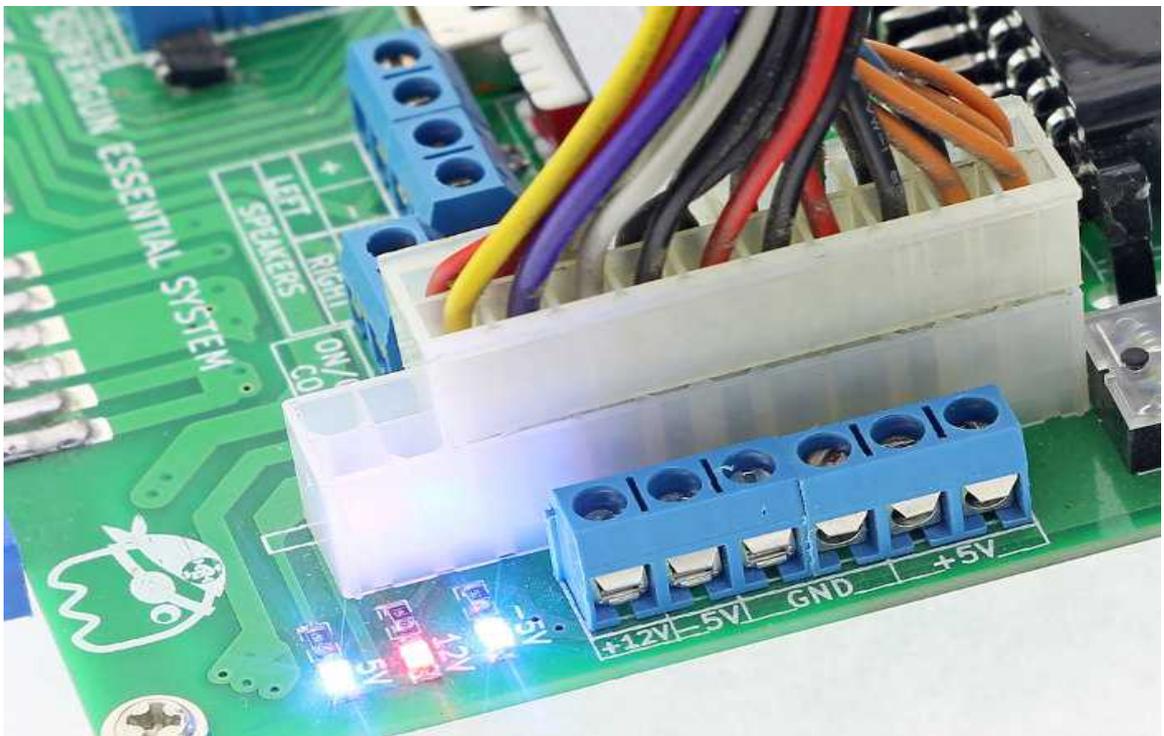
To ensure maximum compatibility with the most power-hungry cards, the ideal is to use a power supply of 350 watts or more.

Finally, note that just like for JAMMA, -5V tends to disappear from recent ATX power supplies. It does not matter if you want to use a map from the 90s to the present day but if you want to use an older card, it may require a -5V power supply; in this case prefer an older ATX power supply. This information is always on the label stuck to your ATX power supply. Take for example an old HEDEN brand food that I had on hand. The label clearly informs me that I have a -5V up to 0.6 amps which will be more than enough for my needs.

III.5.3 - The ON / OFF button and its deportation terminal

The on / off button in the supergun allows you to simply turn the system on or off. Note that it is connected to the ATX connector and will only work if your supergun is powered by an ATX power supply.

It does not work when you use an arcade power supply. Therefore, if you are using an arcade type power supply, its position (ON / OFF) does not matter; the super gun will come on when your power supply provides power.

If you decide to integrate your supergun into an arcade, and it is powered by an ATX power supply, just leave it in the ON position so that it comes on at the same time as your terminal.

Finally, if you want to integrate your supergun into a home-made arcade controller, you'll want to add a discreet ON / OFF button.

You can do this using the integrated ON / OFF terminal block. To do this, simply turn the ON / OFF switch to OFF (up position) and pull two wires to your new button.

III.5.4 - Connection of the power terminal blocks

The 12V / 5V / -5V and GND power terminal blocks can have two distinct functions:

In case you decide to power your supergun with an arcade power supply:
Simply connect your power supply to the respective terminals of the terminal blocks to power the Supergun.

In cases where you power your supergun with an ATX power supply:
Each of the terminal blocks acts as an electrical output. For example, you can use the terminal block 12V 16A to power the lamps of the decoration of your arcade terminal or to supply light buttons with the 5V.

IV - Available accessories

Our goal is to become the seller of the supergun that will have the most extensions available, this to always push its limits and be the first supergun 100% universal!

The list of accessories available for supergun Retroelectronik is bound to grow rapidly. You would like an accessory that does not exist yet? Contact us! We are always looking for new projects and new ideas to explore!

Those presented to you here are not all available yet, some are still under development, but all will be before mid 2017!

Kick harness connectors:

- **Kick Harness for PCB CPS2 / CPS3**
- **Kick Harness for PCB CPS1**
- **Custom Kick Harness for specific cards**

Adapter Megadrive/Genesis 2 Neogeo :

Allows you to connect a megadrive 3/6 button directly to the two ports neo geo controller of your supergun.
In addition, it adds autofire on all buttons by following the operation of the neo geo autofire system described below.

IGS PGM 4 Players adapter :

Dedicated to IGS PGM system which offered the possibility to play 4 players on some of its games (Oriental Legend, Knights of Valor).Allows you to effectively and easily play at 4!

Scanlines Generator :

Small accessory unpretentious to play your arcade games on a recent TV by finding this effect "scanlines" retro clean CRT screens.Every other line is darker, limiting pixelation of the image.

3.5mm Stereo Audio Jack Adapter to RCA :

To easily connect the supergun's non-amplified jack output to a hi-fi system.

And many more to come,
We have left you want long nights of video game with the best of arcade