

# #1





# Reset . . . #1

Issue #1, November 2013



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## C64 Dead? When did this happen?

It never ceases to amaze me that the Commodore 64 user base is still so strong and passionate. Roughly 20 years after it finally ceased production, enthusiastic users continue to embrace our little breadbin for a number of purposes and reasons. But, it's clear that whatever the reason you continue to use your C64 one thing is for sure, you are far from alone! The internet has allowed users to interact and immerse themselves in a plentiful amount of user groups, forums, web pages and databases with a wealth of information and access that any C64 user would have dreamed about in its heyday. Whether you're just reliving a nostalgic and happy past or still programming demos or games, one thing we can all agree on is that this little

machine of ours has stood the test of time and is arguably stronger now than it was at its commercial decline in the early 90's. Scene demos continue to reach new boundaries and break records, new quality games are plentiful, and the forums are going as strong as ever - not to mention the impressive new hardware that has appeared over the last few years. C64 dead, I think not!

Welcome to the first Reset, designed to give the modern C64 user a light hearted insight into the current world of the C64. I hope you enjoy the first edition.

Long(er) live the C64 and retro computing!

Sincerely,

*Unkle K*



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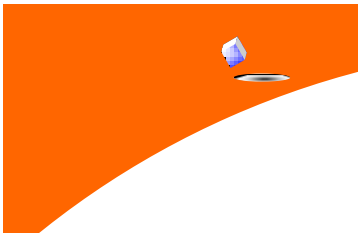
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Can you name each game on the front cover? Visit the Reset thread @ Lemon to have a go.  
Answers next issue.



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## News

### Games That Weren't



Frank put on Cisco Heat and everybody left. Go figure?

Frank Gasking had a display for GTW64 at the Play Expo 2013 in Manchester. It is always fantastic to see the C64 on display at events like this. Photos, videos and a podcast from the event have been posted on the GTW64 website. Ten new updates were posted at GTW64 on October 14th, including updates for

Breakthrough by Jon Wells (a particular favourite of mine, which Commodore Format readers may remember) and a Lord of the Rings RPG from Interplay. GTW64 continues to be an important site for unearthing and discovering unfinished, unreleased and cancelled C64 games.

<http://www.gamesthatwerent.com/gtw64>

### C64endings.co.uk

If you haven't visited this site before, [C64endings.co.uk](http://C64endings.co.uk) contains screenshots and reviews of end sequences for C64 games. At the time of writing they have 810 online game endings, 625 YouTube videos, 795 in their offline archive and a list of 454 games that have no endings at all. They also have a forum and

a list of games with 'Gold Medal' endings. C64 games are notorious for having simple message screens at the end, or even worse just looping back to the first level, so it is great to have a list of games with satisfying endings. This site is regularly updated too, which is certainly a bonus!



Turrican gets awarded a gold medal ending from C64endings.co.uk, but unfortunately the award was too late for the cover art.

### Cassiopei

The Cassiopei is an interesting new device designed by Jan Derogee for 8-bit Commodore machines. It uses the cassette port to load .PRG and .TAP files up to 50 times faster than the ordinary C2N. The Cassiopei includes a built-in file browser and can hook into the PC's USB port to download files

straight into its internal memory, as well as for updating firmware. The device also features an expansion connector. Information on its availability is a little bit sketchy, however, Jan is easily contactable from the website if you would like more information.

<http://jderogee.tripod.com/projects/Cassiopei/Cassiopei.htm>



The cassiopei - brings new meaning to the words 'Press play on tape!'

# News

## Commodore Free

Commodore Free have released their 73rd issue. Dedicated to all Commodore computers, Commodore Free is released as a PDF, ePUB, MOBI, HTML, TXT, SEQ and D64 disk image. This issue includes a special reader interview with Nigel Parker, the magazine's creator and editor. The magazine is always full of interesting news and features as well

as game reviews and competitions. It is extremely comprehensive and has gone from strength to strength since it first began. Richard Bayliss has made a call out for any exclusive games and demos to be included on future cover tapes for the magazine. See the website for more details.

<http://www.commodorefree.com>



Do yourself a favour  
and get the latest issue  
of Commodore Free.

## Psytronik

Psytronik have indicated that their next release will be The Vice Squad, which will be ready "this side of Christmas". Next year, Psytronik plan on releasing games in their Ultimate Range, which will feature big boxes with glossy artwork and also include bonus goodies. The first release in this new range will be Darkness,

which is being developed by Achim with graphics by Smila.

Kenz has also indicated that he plans on re-releasing Commodore Zone with new cover artwork and colour screenshots.

Visit the Psytronik webpage or email Kenz for more information.

<http://www.psytronik.net>



The Psytronik 20th  
Birthday celebrations.  
What happens at the  
party, stays at the party!

## Brisbane C64 Night

The Brisbane C64 night is back! The annual event is being held on Saturday 30th November, 6:00pm-11:00pm, at Bray Hall which is located about 5 minutes walk from the Petrie train station. Entry is \$5, which will help cover costs for the night. Attendees are encouraged to bring in any unique and interesting

hardware that they might like to show off, or even their favourite game, demo or utility. Previous nights have included games competitions, scene demos and coffee drinking. They have been huge successes and there is no reason why this one shouldn't be any different.

[More details @ Lemon.](#)



If you turn up to  
Brisbane, California you  
are going to be sorely  
disappointed!

# Games Scene

## Inbound!

It couldn't be a better time to be a C64 gamer, with a fine assortment of commercial and public domain games being released and due to be released in the near future. Most commercial publishers have been busy, with Psytronik and RGCD in particular delivering the goods. RGCD have released Bomberland and the sales version of Super Bread Box, both on cartridge, which have received extremely positive feedback on the forums. RGCD's 2013 C64 16kb Cartridge Game Development Competition is in full swing with 16 confirmed entries at the time of publication. The deadline is midnight GMT on the 30th November, with some great cash prizes and 1541 Ultimate II cartridges to give away to the winners. Previous competitions have produced some

stellar entries so this is definitely one competition to look out for. Psytronik released Flubble and Squij in celebration of their 20th birthday. The package comes with two versions of the game, the original version and another with minor graphical tweaks from Jon Wells and alternate music by Paul Hannay (Feekzoid). Psytronik have also shown support for the 'Made in Creative UK' initiative. This was started by the now sadly defunct Blitz Games as a way to "raise awareness of the economic and cultural contribution of the UK games sector to the global games industry." Being Commodore 64 fanatics, we should all be well aware of the massive contribution the UK games sector has made in support of our favourite 8bit!



People from the United Kingdom can be creative too, and they have the logo to prove it!

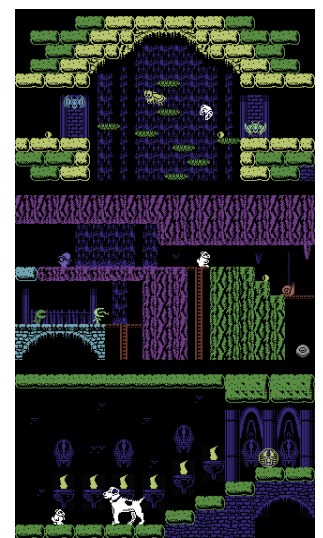
"Most commercial publishers have been busy, with Psytronik and RGCD in particular delivering the goods."



1541 Ultimate II.  
Some say it's better than sex, but not quite as good as beer.  
You decide!

## Auf Wiedersehen Barnsley

Smila, AKA Trevor Storey, has released screenshots of another upcoming C64 game called Barnsley Badger. Created using the Soulless engine and described as a Monty Mole style game with a 'few puzzles thrown in'. Not quite sure if Smila ever sleeps or if he is in fact two separate people, as put forward by a poster on Lemon. Needless to say, the screenshots look stunning. Hopefully this one sees a release.

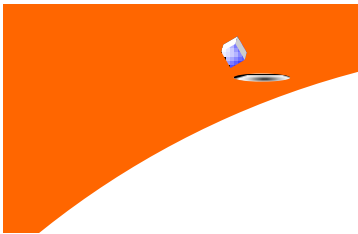


## A fine selection of future releases.

Game	Developer	Publisher
<a href="#">Armalyte II</a>	Cyberdyne Systems	TBA
<a href="#">Barnsley Badger</a>	Smila	Psytronik
Catnipped	Smila/Endurion	Psytronik
<a href="#">Crimson Twilight</a>	Arkanix Labs	TBA
<a href="#">Darkness</a>	Smila/Achim	Psytronik
<a href="#">Hyperion</a>	Smila/Endurion	Psytronik
<a href="#">Invert</a>	TND	?
Jam It	?	Psytronik Sports
<a href="#">Outrage</a>	Cosmos Designs/?	Protovision
<a href="#">Pac-It</a>	Protovision	Protovision
<a href="#">Pushover</a>	Magic Cap	?
<a href="#">RGCD C64 16kb Cartridge Game Development Competition</a>	Various	?
<a href="#">Rocket Smash</a>	?	RGCD
<a href="#">Super Carling the Spider</a>	?	Psytronik
<a href="#">Ultimate Newcomer</a>	<a href="#">CID</a>	Protovision
<a href="#">The Vice Squad</a>	Smila/Achim	Psytronik
<a href="#">Wonderland</a>	Endurion	Psytronik

Every effort has been made to make this list as accurate as possible. Please support the developers and publishers by sending them messages of support and buying their games when released.





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# Game Review



The deluxe edition will cost you an arm and a leg, but at least that still leaves you one arm to play it with.

"A 2D action game at its core, Super Bread Box plays on a static screen containing various platforms."



If you think this game is going to be a 'walk in the bakery', think again!

**Game:** Super Bread Box  
**Publisher:** RGCD  
**Release Date:** October 2013  
**Available:** [RGCD](#)  
**It's a bit like:** Bubble Bobble Vs BombJack  
**Score:** 9/10

RGCD unveils the long awaited commercial 64kb physical release edition of Super Bread Box. The 16kb edition has been out since the 2012 RGCD 16kb Games Competition (which it won). Is the new edition worth your hard earned dough? Will it rise to the occasion? Do we really knead it? Read on.

## Game Overview

Super Bread Box is an official conversion by Paul Koller of the 2010 PC indie hit, Super Crate Box. The original was very well received by gamers and critics for its fast action gameplay.

A 2D action game at its core, Super Bread Box plays on a series of static screens containing various platforms. An assortment of enemies continue to fall in from the top of the screen and make their way through the level until they fall into a fire pit located at the bottom. If this happens, they come back nastier and faster from the

top again. Your objective, other than simply surviving, is to stop the creatures from reaching the bottom as well as collecting special crates which offer various weapons to use against the enemies. Your score is a reflection of how many crates you collect, which in turn allows you to unlock new levels and playable characters.

The options menu consists of a tutorial which explains the objectives to the player. The game is available as a physical release (cartridge) or download for use in emulators/1541Ultimate/Chameleon from RGCD.





## Unkle K - 9/10

Super Bread Box is one of those games where you are literally thrown straight into the action. There is no difficulty curve, no easing you into it. You start the game and it immediately kicks your arse! One of the most important aspects of any game are the controls, and in Super Bread Box they are super tight! The physics in the game are absolutely perfect. So many platformers/shooters have been irreparably hurt by dodgy controls and collision detection. The overall frantic and unforgiving nature of the gameplay leads to a full on experience that is both fun and exciting. The inclusion of

a save state means your progress is never lost and the on-line high score chart is a C64 first! A simultaneous two player mode is sorely missed (was probably not a part of the original PC game?) but that is the only thing missing here. The graphics are exceptional and have a certain style about them and a suitable soundtrack plays throughout. The current crop of C64 games is truly amazing, taking inspiration from the strong PC indie games scene which in itself takes inspiration from the golden age of gaming. We're a real lucky bunch, aren't we!

Superb!



The original PC version. The C64 graphics compare very favourably!

## C64endings.co.uk - 9/10

I'm a little lazy when it comes to computer games; I either play them once, and then I can't be bothered; or I don't play them at all and just fiddle with the code. This means that it takes a 'special' kind of game to get my attention and really get me excited.

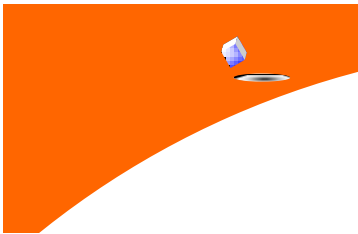
Roll out the red carpet because Super Bread Box from RGCD has got my attention. This fast paced and CRAZY shoot'em & collect style game

has got what it takes to keep us all occupied for a long while yet. With its various levels, weapons, and characters to unlock I can't work out whether I'm coming or going - which is a good thing.

And the icing on the cake? A wonderfully designed on-line Highscore chart that allows you to enter your strategy code, and see where you are in the world-wide list. Genius.

"There is no difficulty curve, no easing you into it. You start the game and it immediately kicks your arse!"





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# Game Review



**Bomberland Deluxe**  
Packaging, 100%  
guaranteed not to self  
destruct or your money  
back.

"The gameplay  
is spot on,  
with everything  
moving exactly  
as it should  
and the  
controls  
feeling natural  
and  
responsive."



**Play as Nick Brody from**  
**Homeland, rumoured to be**  
**an unlockable hidden**  
**character!**

**Game:** Bomberland  
**Publisher:** RGCD  
**Release Date:** October 2013  
**Available:** [RGCD](#)  
**It's a bit like:** Bomberman, surprisingly.  
**Score:** 10/10

**Bomberland, apparently 10 years in the making. Heavily inspired by the classic Bomberman series by HudsonSoft, it's certainly not the first game of its kind, not even on the C64. Will you be blown away by it all, or will it fail to have an impact? Either way, hopefully you have a blast finding out!**

## Game Overview

Bomberman, published by Hudson Soft, first appeared on the MSX platform and a few other Japanese computers in 1983. It was even ported across to the Spectrum as 'Eric and the Floaters'. A NES version was released in Japan in late 1985 (not in North America until 1989) and a true legend was born. Since then, ports and versions have been released on almost every home computer and console, with a couple of notable exceptions. Us C64 users received zip, nothing! A re-imaged game was released in 1990 and released in Europe as [DynaBlaster](#). Sadly, it was never released on the C64 even though it was announced. But that's about as close as we got. We did get a few fantastic unofficial versions though, including the recent [Bomberman C64](#) released in 2007, also by Samar. Now, in 2013, we get Bomberland by Samar Productions and RGCD. Despite some silly backstory about elections and

saving Bomberland, this *is* Bomberman at its core. The gameplay revolves around navigating a single screen or scrolling maze while planting bombs to blow up enemies and obstacles. Along the way there are various power-ups to collect and enemies to defeat. This is a very simplified explanation, because there is a bit more to it than that (including many ways to score and bosses to fight) but suffice to say, once a level has been cleared you need to locate the exit and off you go. Bomberland supports both the Protovision and Hitmen four player adaptors, as well as keyboard support so you can have up to five human players playing at once in manic death matches. RGCD have released Bomberland as a physical release (cartridge only) and download. Both packages include a manual, code sheet, monster sheet and poster.

## Unkle K - 10/10

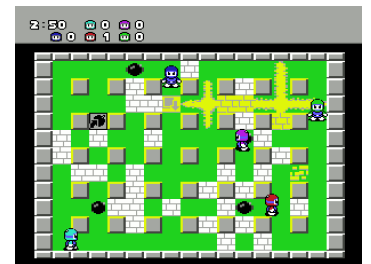
No amount of expletives can give my excitement towards this game justice. Perfect in just about every way, Bomberland is a truly exceptional release. It's the best Bomberman variant on the C64 and does the unformentioned series true justice. The attention to detail is superb, with the consoleseque presentation, the super stylish graphics and Bomberman inspired + original SID themes. My 8 year old daughter and I had a great time, and any c64 game that can hold the attention of a kid in the days of Android, iOS and consoles is proof in itself that gameplay

continues to reign supreme. We always knew it, didn't we!

There's a fantastic assortment of power-ups and maps. The gameplay is spot on, with everything moving exactly as it should and the controls feeling natural and responsive.

I haven't finished Bomberland but so far have thoroughly enjoyed playing it. Those of you that like discovering hidden features will have loads of fun.

Bomberland is a game for everyone. It truly is a game that shows off the c64's capabilities. Brilliant!



## C64endings.co.uk - 10/10

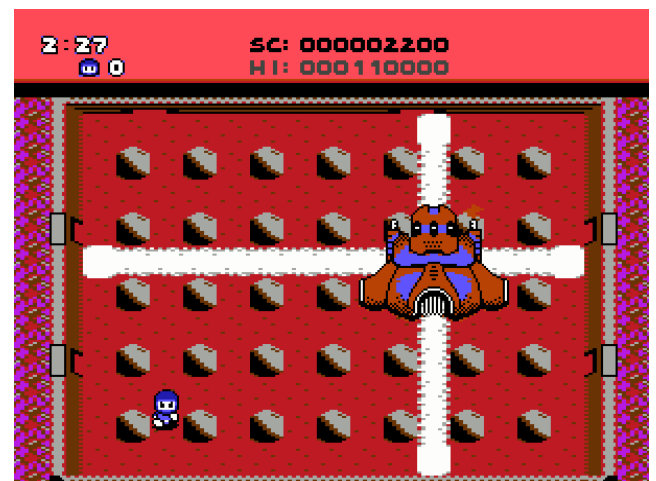
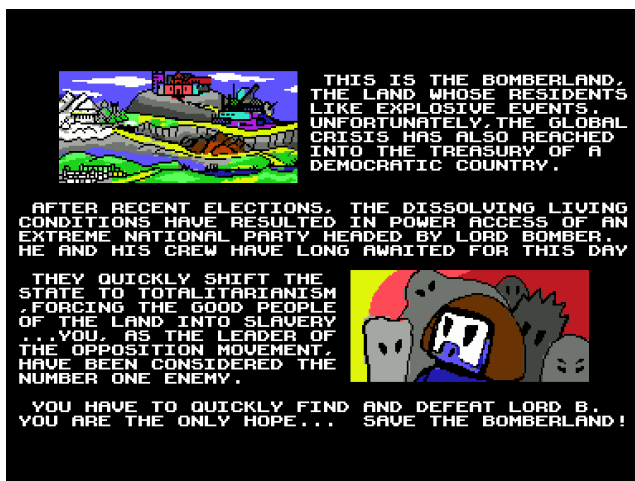
There are certain game styles throughout your lifetime that you naturally avoid. For me, it has always been RPG games, and also anything that resembles Bomberman. It's very much to do with personal taste, and also what your mind is comfortable with. But then along came Bomberland published by RGCD, and all that seemed to change.

Bomberland for the Commodore 64 is an exciting breath of fresh air. It's very much in

the style of the old Bomberman games, but at the same time it's also very different. It's fast, it's furious, it's colourful, it sounds brilliant, and most of all it's a lot of fun. I've been fortunate enough to play every level and complete the game, and I must say, I wasn't bored once and still go back for more - especially with the hidden features.

A MUST-HAVE for any Commodore 64 gamer!

"Bomberland for the Commodore 64 is an exciting breath of fresh air."



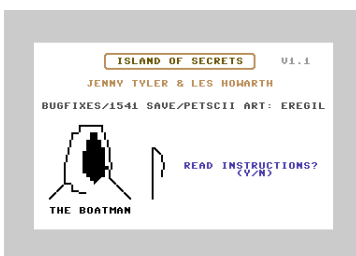


# Oldie Game Review



The game would even be more mysterious if it remained untranslated. Thanks a lot, Hokuto Force!

"The thing about type-ins is that half the fun is actually typing them in, running them, and needing to find the countless typing errors while trying to make the games run."



The Boatman kind of looks like the Grim Reaper. You'll be wishing it was after playing this for a while.

**Game:** Island of Secrets  
**Publisher:** Unknown  
**Release Date:** October 2013 (Hokuto Force crack)  
**Available:** <http://csdb.dk/release/?id=123599>  
**It's a bit like:** Early C64 text adventures  
**SCORE:** 5/10

Island of Secrets is an adventure game recently unearthed and released by the cool guys in Hokuto Force, so we thought we'd give it a go. We're just a little unsure if we're allowed to tell you anything about it though, so shh!

## Game Overview

Island of Secrets (originally published in Italy as L'Isaloe Dei Segreti) is a text adventure with slight RPG elements, written in basic but compiled in Blitz. You play the part of Alphan, your mission being to find the objects of power to restore warmth and life to the world. What the objects are you don't know. A time limit is enforced, and your strength and wisdom scores progress as you play the game. Eat food for instance, and you will increase your strength. Make good decisions, and you will increase your wisdom. These stats are essential in certain parts of the game. There are a few randomly occurring events throughout the game to keep you on your toes, 80 different locations and various characters you will meet along the way. Saving and loading your progress is enabled. The parser is as basic as it gets, usually only requiring a direction, or a verb/noun combination. Hokuto Force have provided a solution, map and enhancements to the original game.

### Unkle K - 5/10

I've always had a love/hate relationship with text adventures. I'd love to be good at them, but hate the fact that I'm not. It all began as a child playing Bastow Manor, which Island of Secrets actually reminds me of with its simple parser. Everything here is fairly basic but it's actually kind of cool considering it originated as a type-in game. Worth a quick look and won't tax the brain too much, but needless to say don't expect an Infocom or Magnetic Scrolls quality adventure. The thing about type-ins is that half the fun is actually typing them in, running them and needing to find the countless typing errors you made while entering the listing. This process enables you to form a connection with the game so the end result is more fun. Anyway, kudos to Hokuto Force for translating, modifying, and putting the package together, saving another game from being completely lost and forgotten. Fun for a single play through.

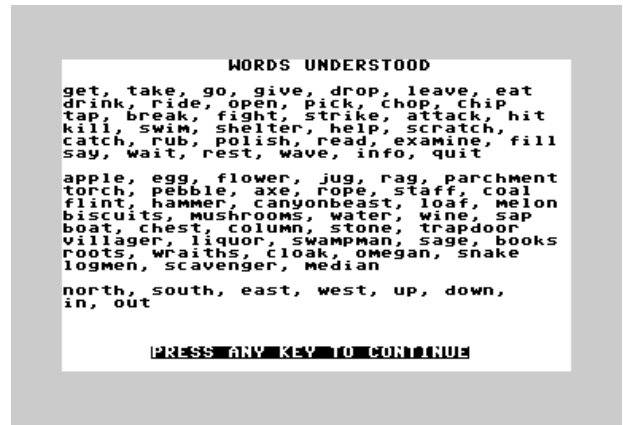
## The Mighty Brain - I will not lower myself by rating this so called game just to satisfy the curiosity of mankind.

Greetings lowly humanoid species. It is I, The Mighty Brain. You will remember me as the superior intellect who answered your whiney letters and wrote outstanding articles in that terrible excuse of excremental wipe 'Commodore Format' for 61 painfully average issues. I was also the brain who inspired Stephen Hawking's 'A Brief History of Time' (we had lunch), and wrote the unpublished sequel myself, which never appeared due to the in-capabilities of your pathetic language to properly articulate the secrets of the universe. Also, there weren't enough trees left on your disgusting planet to finish printing the first chapter. Too bad!

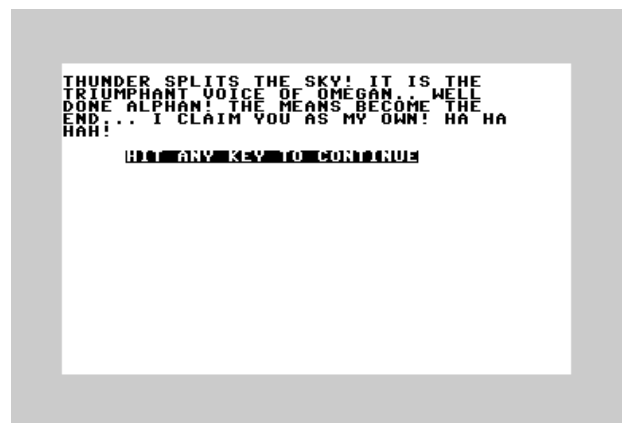
I made a trans dimensional jump from Galaxy 3542.7a of the Gamma Quadrant just to review this game. Frankly, a being of such a large intellect as myself is far beyond participating in such trivial matters, but as the C64 gave me my start in video game journalism all those Earth years ago (a long time for you, but merely a small fraction of my time in this puniverse), I thought I'd make a reappearance and say hi.

Island of Secrets is not the most perplexing of adventures, in fact it only took me 1/100th of a Nano second to complete, barely worth loading it up really. But it was either that or adhering to Mrs. TMB's constant nagging about cleaning out the Horse Head Nebula. So is Island of Secrets worth your time? It's all relative really. It depends on how much time you have, and what else you could be doing with it. It is certainly preferable to sitting through a Tom Hanks and Meg Ryan rom-com movie marathon with the wife, but not quite as good as the thrill of travelling through a black hole beyond the speed of light and having your innards infinitely ripped apart and put back together at the sub-atomic level to travel back in time. I hope this helps.

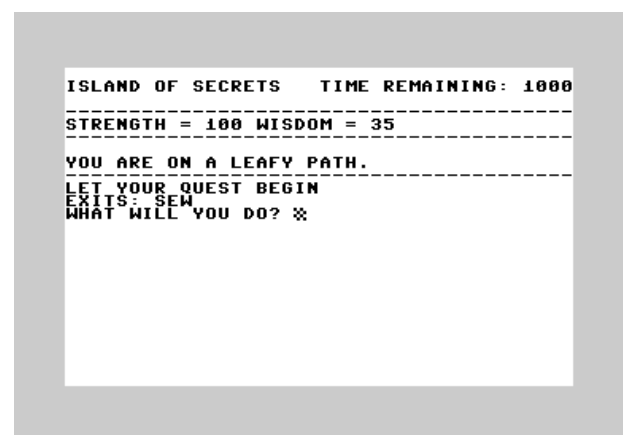
Farewell, TMB.



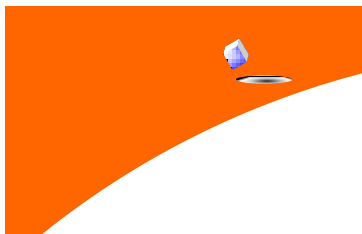
It's just a shame that 'quit' isn't in there too. Oh well.



Not your traditional game over screen. Ha Ha  
Hah indeed, Omegan.



With 1000 time, 100 strength and 35 wisdom points remaining, that leaves us plenty of moves to try out some naughty instructions. Like you've never done it!



# Hardware Review



**Name:** 64JPX (purple) adaptor  
**Manufacturer:** Nick Coplin  
**Available from:** <http://www.64hdd.com>  
**Price:** US\$19.95 (red, blue) – US\$23.95 (purple, orange)

New joysticks for the C64 don't grow on trees, and with every session of Decathlon played, another joystick leaves this world forever. In comes Nick Coplin and his 64JPX adaptor, which allows you to use gamepads safely from other systems and consoles. Genius!

It is common knowledge that plugging in a MegaDrive/Genesis controller directly into the C64 joystick port could harm chips inside the computer. The purple 64JPX purple adaptor alleviates this problem and makes using these controllers safe to use. It's clever enough to auto detect whether you are using a Sega or Nintendo controller, although the Nintendo controllers will require a pin adaptor to be able to connect to the 64JPX. The other great thing is that the adaptor also pre-programs the buttons on the controller so unlike regular C64 joysticks, you have more than one fire button. For example, on the modified SNES controller that I use (also purchased from 64hdd), b is used for regular fire, y is up, a is down and x is auto fire. As up on the c64 is usually reserved for

jumping in a lot of games, having a separate button for jump (or accelerate in racing games) and fire is a clear advantage for gamers.

My MegaDrive controller also works flawlessly on the purple JPX being reviewed.

The adaptor is well constructed and does not come with any casing, which is not necessary. Nick offers optional heat sink wrap to protect the electronics, although mine work fine without it.

The modified SNES controllers that Nick sells are cheap bootlegs (photo on left) but do the job, I have not had a problem with either of mine since they were purchased about a year ago.

The 64JPX adaptors are a fantastic idea and work perfectly. I certainly recommend this great product.

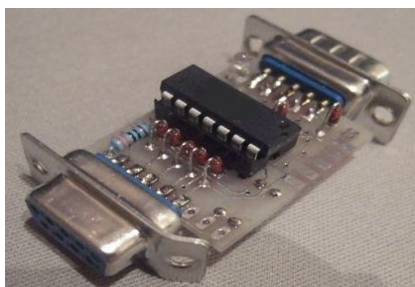
**RED:** for users who only want to connect their Sega Genesis or MegaDrive controllers. Works with 3 and 6 button controllers. The Start button allows the different enhancement modes to be selected. The Sega controller directly connects to the 64JPX interface.

**BLUE:** for users who only want to connect their Nintendo controllers. Works with SNES and NES button controllers. The Start and Select buttons toggle the different enhancement modes available. You will need a pin-adaptor to connect your Nintendo controller to the 64JPX interface.

**PURPLE\*:** a combination of RED and BLUE interfaces. The 64JPX interface auto-detects which controller is attached (Sega/SNES/NES) and configures itself for it. You will need a pin-adaptor to connect your Nintendo controller to the 64JPX interface, or you can order the bundle which includes a modified controller. A flexible alternative if you want to use different controllers.

**ORANGE\*:** a combination of the RED (Sega) interface and support for analog PC type controllers (DB15 connectors). The 64JPX interface auto-detects which controller is attached (Sega/PCanalog) and configures itself for it. You will need a pin-adaptor to connect your PC analog controller to the 64JPX interface. A flexible alternative if you want to use different controllers.

This table, taken from the 64hdd website, shows the different 64JPX version available to buy.





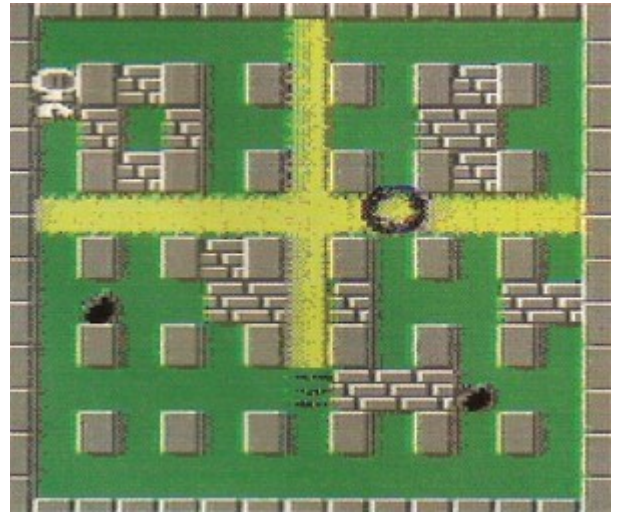
# Deep Thoughts

By Merman

I've been thinking about bombs a lot recently. They make a great gameplay mechanic, blowing up obstacles, revealing secret passages or getting rid of enemies. And there have been some great bombs making an impact on the C64.

For issue 121 of Retro Gamer I wrote a Making of Bombuzal, talking to Tony Crowther and David Bishop about how they created the brilliant puzzle game. One of the most interesting aspects is the choice of viewpoint. The 2D overhead view is useful for planning routes, but the 3D isometric view is more impressive. David even admitted it looked better for magazine screenshots. If you've not played it, the aim is to clear all the bombs on the level without being blown up or falling off the floating platforms. Several well-known programmers created special levels, including Jeff Minter and Andrew Braybrook.

At the end of the article the unreleased Bombuzal sequel is mentioned. And unreleased C64 games were the subject of my article in issue 122. This included a boxout on games with bombs - the official Dynablaster (aka Bomberman, see screenshot on right) never made it to the C64. I was personally involved in an attempt to revive



Scanned screenshot of the unreleased C64 version of Dynablaster, as seen on Games That Weren't 64.

Penguin Tower. I wrote several new tunes with the Falco Paul/20CC music player, but the progress stalled. We had to wait for the brilliant Bomb Mania from Classical Games to fill the void, with Protovision's 4-player interface making it so much fun to play. At retro events in the UK it attracted plenty of attention.

Another unreleased game was Boombastic Benny, but that has finally arrived after many years' work in the form of Bomberland (see review in this issue of Reset). It's a fantastic piece of work by the guys from Samar, perfectly recreating the action and fun of the classic Super Bomberman on the C64. The graphics and music are brilliant, and it all comes wrapped in a fantastic package thanks to James Monkman of RGCD. The orange cartridge, instruction manual and fold-out poster (complete with monster list) are a slick addition. Grab it, plug in joysticks and drag your friends around for some explosive fun!



# Hardware

There has been lots of talk on Lemon recently about homemade C64 power supplies being sold on eBay and through various forums. Some of these may not be quite as safe as you are led to believe. Ray Carlsen is a Commodore enthusiast and has been involved in electronics for 60 years. His 'computer saver' may just be the mod you're looking for while still using your old power supply.



Ray Carlsen's computer saver could stop this from happening to you.

"The Saver protector is essentially a fast-acting electronic circuit breaker."



One of the more common 250407 boards.

This over-voltage protection unit is designed to prevent damage to the Commodore 64 computer due to a failing power supply. One of the ways the Commodore "brick" power supply can fail is from a shorted internal 5 volt regulator. That fault puts excessive voltage into the computer and damages chips such as RAM very quickly, and silently. The Saver protector is essentially a fast-acting electronic circuit breaker. It functions to quickly cut off the 5 volt supply line to the computer if the voltage exceeds about 5.3 volts. It is not a "crowbar" device but opens the line from the supply to the computer before the voltage gets high enough to do damage. That's the safest way to do it. After-market power supplies, even switching types, can fail at any time. Switchers are more reliable and less prone to catastrophic failures but can still cause damage to the computer when they fail.

Early versions of this protector were wired "downstream" from the power switch. That method later proved to be problematic because, as the computer was switched on, the relay engaged but its contacts would often "bounce" and the computer would not always start up properly due to the resulting power "glitch". Wiring the Saver modification ahead of the switch enables the relay to be engaged all the time the power supply is plugged in to AC power, whether the computer is on or off.

There are several ways to add the protection device to your system. One way is to install the components inside the computer itself. That way, it is protected

from any supply that is plugged into it. If you have more than one computer, a protector can be installed in each one. Cost of parts should be less than US\$20 for each unit. Since the parts count is low, I didn't bother making a circuit board for my internal protectors although I did use a "perf" board for my prototype. In later ones, I used some silicone rubber sealer as glue to hold the relay in place on the motherboard, then wired the other components on top of it. Wires to and from the added components complete the installation. I took photos of installations in several versions of the C64 and C64C.

To install the protector circuit inside a C64, it is necessary to open the +5 volt line on the circuit board. Input and output lines of the protector are wired to each end of the now-open circuit. If your C64 board differs from the pictures on my site, you will have to locate the correct area of your board to make the connections. In all versions, the correct point is electrically between the power connector and the power switch. There are at least five board versions of that computer, each with a different PC board layout, so the physical connections will be specific for each board.

The most common board appears to be the 250407 version B ([see photos on website](#)), so I will describe how to implement the modification of that board first because it is the most difficult. A modification must be done to the bottom of the board. Therefore, it's necessary to remove the board from the case bottom and then remove the metal shield

(unsolder all tabs) from the bottom of the board. NOTE: As an alternative, you can unsolder just one of the tabs at the right rear side of the board and bend up the shield to access that area of the board. I now use a Dremel tool with a thin cutting blade to open the copper circuit trace between the power connector and the power switch. The Saver connections can be made to the nearest solder pads of the open ends or connections can be made on the top of the board at the rear of the power connector and one leg of the power switch. With those wires in place, the bottom shield and board can be re-installed and the Saver components wired in.

Other common versions of the C64 include board numbers [326298](#) (very early model), [250425](#) and [250466](#). The Saver modification can be added to those boards without removing them from the case because everything can be done on the top of the board and no foil traces need be cut. Look for a small coil labelled L5. Disconnect one end of that part and install the input and output connections of the Saver across the open circuit.

On a C64C 250469 short board, a connection on the input filter coil can be cut ([see photos on web site](#)) to install the Saver, which makes removing the PC board unnecessary, although there isn't much coil wire to work with. A better way is to cut the trace on the bottom of the board (as in the above description) between the power connector and power switch. When adding the Saver circuit to this computer board, note that the area under that top metal shield (heat sink) is very small and you must mount the Saver components as low as possible so the metal shield doesn't short to anything underneath it when it's put back. Alternatively, you can cut a portion of the shield out over the new components, if

that's easier.

As an alternative to mounting the protector inside a computer, one can be built in a small box as a stand-alone device. That way, you can use it with any supply or computer, but that has the disadvantage of needing two DIN connectors and an enclosure. If the protector box is wired directly onto a power supply cable, that eliminates the need for the added connectors, but it will work with only that supply unless physically transferred. You can choose the implementation that works best for you. The circuit is the same regardless of how it's installed. The stand-alone protector requires a 7 pin male DIN plug that fits the power socket on the computer, and a 7 pin female DIN socket on the other to receive the plug from the power supply. Note that although a 7 pin connector is used, only four pins are active. The socket can be an in-line or chassis mount connector, but the plug should be wired to a short length of cable which allows the protector box to be moved out of the way of the user. My prototype model used a cut off 2' length of cable from an old dead power supply. It's not advisable to use a full length cable since its added resistance would drop the supply voltage and the computer might not function properly. For my prototype, I found a chassis mount female DIN socket from a junked piece of electronics gear and installed it in the protector box. The male DIN plug cable was "pigtailed" out of the other side of the box. A failure indicator LED can be installed in the box if desired. Another LED can be wired to monitor the 9VAC line as well, but that PS failure is quite rare.

If the protector is going to be added directly to a supply cable: route the cable through the box by notching the ends of

the box to allow a loop of cable to go through it when the cover is reattached. Cut open the outer jacket of the loop of cable in the box. Note that there are several different manufacturers of those bricks, and so the wire colours can be different! The most common bricks use the following wire colours: brown or red for +5VDC, blue for - (ground), and two black wires or yellow and white for the 9VAC. The +5V wire inside the cable needs to be cut and the ends wired to the protector input and output lines. The end from the supply goes to the input of the protector and the one to the computer goes to the output end. The uncut ground or negative lead can have a small bit of its insulation removed so it can be attached to the protector circuit ground. The other two wires of the supply cable are the 9VAC lines and they need not be opened unless you want to add a voltage monitor LED to that source. Just install a 220 ohm resistor in series with the LED to limit the current to it and connect a diode across the LED to prevent reverse voltage from the AC source which could eventually damage the LED. Wire the diode so its anode goes to the cathode (minus side) of the LED and the diode cathode to the anode (plus side) of the LED.

#### How it works:

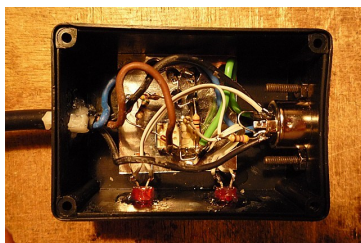
The circuit for the protector is simple and straightforward. A 4.7 volt zener diode on the 5 volt line continuously monitors that DC level. The resistor in series with the zener diode limits the current to the base of the first transistor Q1, and the resistor from base to ground keeps the transistor cut off until the threshold voltage is exceeded. The zeners 4.7 volts plus Q1 transistors 0.6V B to E drop totals slightly over 5 volts, the trip point of the device. If the supply voltage rises above that level, the zener diode conducts, turns





Ray produces a custom external computer saver which he makes in small quantities. It runs between the power supply and computer.

"Use of a power hungry add-on like a RAM expansion unit is not recommended using the original CBM brick power pack."



Inside the cased external computer saver. Someone once cut the blue wire instead of the green. BOOM!

on the transistor and pulls its collector lead to ground. That lead is wired to a normally conducting second transistor Q2 which drives the relay. When Q2 turns off, the relay opens. The relay is de-energized only during an over-voltage condition. If the supply fails in that manner, the relay drops out and opens the previously closed contacts cutting off the +5VDC supply voltage to the computer. The circuit is designed to keep the 5 volt line open only as long as the fault persists. It is self-resetting.

There is one fuse inside the C64 that protects the 9VAC line (and another embedded inside the supply) but neither the C64 nor its supply are fused on the regulated 5 volt line. One fuse can be added to the protector circuit if desired. That fuse will open if an external overload or short circuit is accidentally applied to the computer ports.

The new fuse protects the Saver relay (too much current can weld the contacts together) as well as the power supply from excessive current draw. However, that failure is unlikely and a fuse isn't really needed since the power supply regulator IC itself has a feature called "fold-back current limiting". If too much current is drawn for whatever reason, the voltage automatically drops down to limit the current. If on the other hand the regulator shorts and its output voltage rises, the Saver will "trip" and protect the computer and itself from damage.

#### Some notes about the parts used:

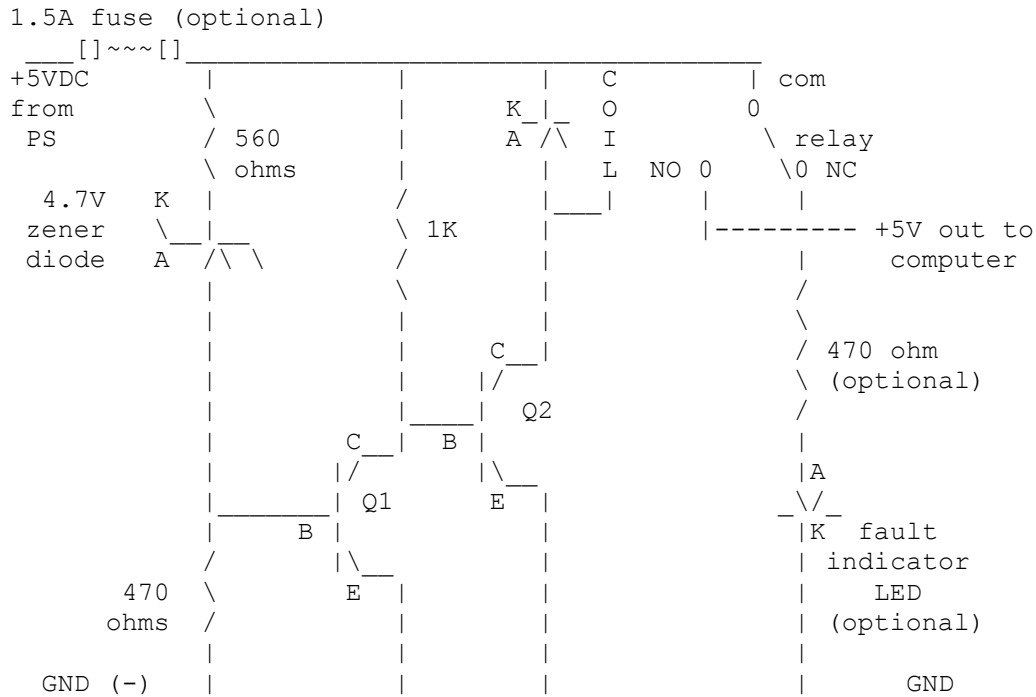
The relay can be an SPST (single pole single throw) if the indicator LED is not used. An SPDT (single pole, double throw) or DPDT (double pole, double throw) will also work. The relay selected must have a five volt coil and contacts rated at 2 Amps. Since the computer only draws about 850mA (more when a cartridge is used), a 1 Amp relay would also work but a margin of safety is a good idea. This design is different than a previous one that turned on the relay during an overvoltage fault condition. The main problem with that design is that a 5 volt

relay will overheat and eventually burn out if left connected to a failed (internal regulator shorted) power supply. That is because the voltage goes upwards to 11 volts during such a supply failure, which will be more than twice normal operating voltage for the relay. In such a case, if the coil burned out, the relay would deactivate and the computer would not be protected. That's why the design was changed.

You need a relay with a 5 volt coil, and one that has a high DC resistance is preferred. Relays used in my early protectors had coil resistances of about 60 ohms. One drawback to that is it puts an additional load on an already marginal power supply. The higher the DC resistance of the relay coil, the less load it represents, so a coil-resistance of 150 ohms or higher is preferable in this application. NOTE: small relays often have a coil that is sensitive to the polarity of its input voltage! If the coil is wired backwards, the contacts will never pull in and the computer will not get power.

The transistors can be any low power silicon NPN type rated at 500mA or more. The voltage rating is not critical either. Generic types such as the 2N2222, 2N3565 and 2N3904 are OK as is their equivalent such as the old Sylvania ECG123A or NTE123A. A higher power NPN transistor will also work, such as tab mount or TO-220 "flat pack" types, although they are physically larger. Note also that the metal tab or case of such a transistor is normally connected to one internal element, usually the collector, so its metal case must be isolated from surrounding metal or wiring.

The zener diode can be a 1/2 or 1 Watt but its voltage rating is important since it sets the basic "trip" point of the device. The two resistor values at the zener are likewise critical. See special note at the end of this article! The silicon diode across the relay coil can be a standard power diode (1N2004) or a small signal type such as a 1N914. Its current and voltage ratings are not critical as



it's only there to absorb "spikes" from the coil when it de-energizes. Polarity is critical for any diode. They usually have a band around the cathode (K) end. The resistors are all 1/4 to 1/2 Watt carbon or carbon film types. 1 Watt resistors of the same resistance value can also be used although they will be physically larger. Space is limited inside the computer, especially in the C64C which has a metal shield over the PC board. Make sure nothing shorts out when you put that metal cover back on!

If desired, an LED (shown in the diagram but not seen in my photos) or a buzzer can be used to monitor the relay status and indicate a fault condition, but their use is optional. If the red LED on the computer goes out, it's likely a power supply problem, either low or high level of the 5V line.

NOTE: Use of a power hungry add-on like a RAM expansion unit is not recommended using the original CBM brick power pack. That RAM unit originally shipped with its own power supply, one that provided 2.5 Amps for the 5 volt line. That

beefier supply makes the Computer Saver unnecessary since it's a switcher like the C128 supply, and is therefore not vulnerable to over-voltage failure like the C64 brick. If you have an expander but no supply for it, consider getting a C128 power supply and installing a power connector that fits your C64. With that hook-up, again, you don't need a Saver. A C64 power connector can be "pigtailed" onto the existing C128 power cord in a Y formation or wired directly into the supply case like the 128 cable. With both cables attached, that supply could be used with either computer (one at a time, of course). Just make sure to insulate all the wires after making the connections to the cable if you decide to pigtail the 64 power connector.

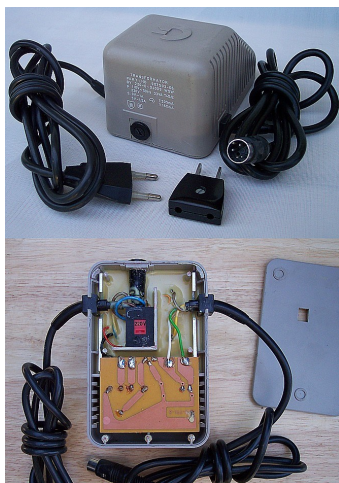
SPECIAL NOTE: Because of fairly wide Saver component tolerances and to accommodate the normal voltage variations of even good power supplies, the Saver circuit must be "trimmed" so the voltage cuts off at about 5.4 volts DC. If set too high, it will not protect the computer; if too low it will

trip prematurely even with a good PS. I've gotten feedback from a few users indicating the Saver would trip when they turned their computer off and remained in failsafe mode until unplugged from the PS. Apparently some power supplies output can jump up past the failsafe point when the load on them is suddenly removed (computer off). That's why the trip point is set as high as it is. 5.4 volts is still under the "absolute maximum rating" specification for the RAM chips. To ensure correct operation, I use a variable bench DC supply and a very accurate voltmeter to test and adjust all my Saver circuits after construction and before I connect it to a computer. The Saver trip point is often too high with the standard resistor values shown. To trim the voltage trip point down, I add a higher value resistor in parallel with the 560 ohm one. That resistor value can vary between 1.8K and 3.3K. To test the circuit afterwards, I slowly increase the supply voltage until I hear the relay cut in (voltage appears on the relay output side) and continue advancing it until the relay



**Repairable C64 power supply.**

**"The original Commodore "black brick" power supply was marginal to begin with and is a frequent failure item.."**



**European power supply.**

cuts out again. The voltage at that instant is the trip point of the device. One alternative to trimming with an added resistor: substitute one of the two divider resistors with an adjustable resistor or "pot", the 470 ohm resistor with a 1K pot, for example. That would make the trip point easily adjustable. That said, fixed resistors are more stable over time, so that's what I use.

Since the 5VDC minus line is usually tied to ground of the three wire AC cord, it's a good idea to include the connection if you are constructing an external Saver. That ensures the computer is properly grounded in case the transformer in the PS goes electrically "leaky".

If you use an LED to monitor the 9VAC source from the power supply, use a diode such as a 1N914 across the LED to protect it from reverse current "spikes" from the transformer. A standard power supply diode is not fast enough. Wire the diode as follows: anode to LED negative and cathode to LED positive. Use a current limiting resistor in series from the 9VAC to the LED: 220 ohms.

I have a European power supply that uses pin 4 rather than pin 5 for the 5VDC into the computer. A C64 has those pins tied together in the computer so either PS will work. However, unless the two pins are likewise connected in an external Saver female connector, your PS may not work with the Saver.

#### **Some notes on the Commodore C64 power pack:**

The original Commodore "black brick" power supply was marginal to begin with and is a frequent failure item because its internal components run hot normally. It is inadequate to supply external devices such as RAM expansion units. The brick is potted with epoxy and therefore unrepairable when it fails. The internal components are cooled by convection through the case, not a very efficient way to do it. The internal supply regulator IC runs hot and fails, sometimes taking the computer with it due to overvoltage

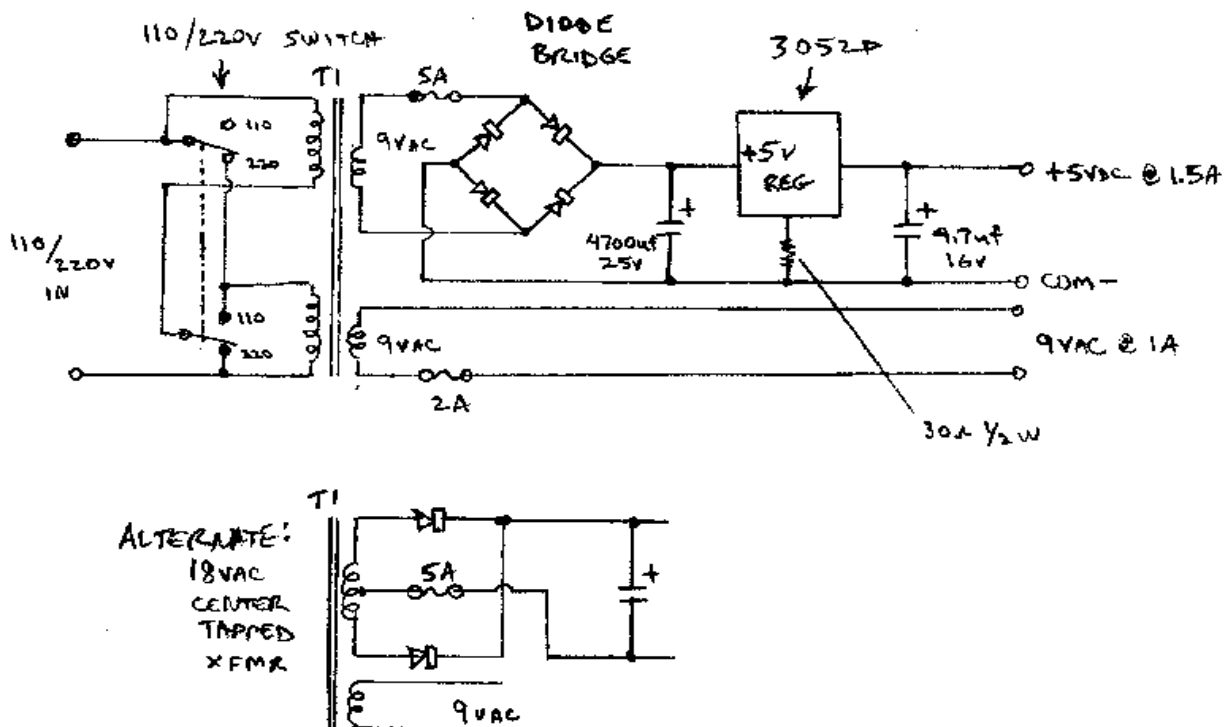
on the 5 volt line. Anything you can do to keep the PS case cool while the computer is running is a good idea. Put it on the floor where it's cooler and will not get covered up with anything that would restrict air flow around it. Dried out electrolytic capacitors in the supply is another kind of failure but that doesn't damage the computer, it just produces insufficient voltage to run it. That's why it's important to "load test" a power supply. Checking the voltage without a proper load is meaningless.

After-market C64 power supplies are designed "beefier" with heavy duty regulators and larger internal (but still air-cooled) heat sinks. Some supplies are not much larger than the CBM brick, and a few were made with metal cases. If the regulator is mounted on the case, the waste heat is radiated from the entire case directly into the air, a better way to do it. All of those units kept the "analogue" or "linear" design and so are large and heavy. Building such a unit from scratch is not too difficult if you can find a power transformer with two 9 volt secondaries that can carry at least 1.5 Amps each. As an alternative, two transformers can be used, but of course your supply will be that much bigger and heavier. The more power required, the bigger the transformer and regulator needed. Other components such as filter capacitors remain the same. Note that a beefier supply means the +5 volt output can carry more current, not the 9VAC. The original supply has the same 1.5 Amp spec for all versions of the C64. The supply for the 128 has a 4.5 Amp rating for its 5 volt output and the same 1 Amp rating for the 9VAC.

Switchers are lighter in weight and run cooler than the previous linear C64 supplies. Building your own switcher is not recommended. Finding the correct parts would be the worst of it and the design of a switcher is complex. Places like [DigiKey \(www.digikey.com\)](http://www.digikey.com) and [Mouser Electronics \(www.mouser.com\)](http://www.mouser.com) sell ready-made small, high current +5 volt switching supply boards



## C64 REPAIRABLE POWER SUPPLY

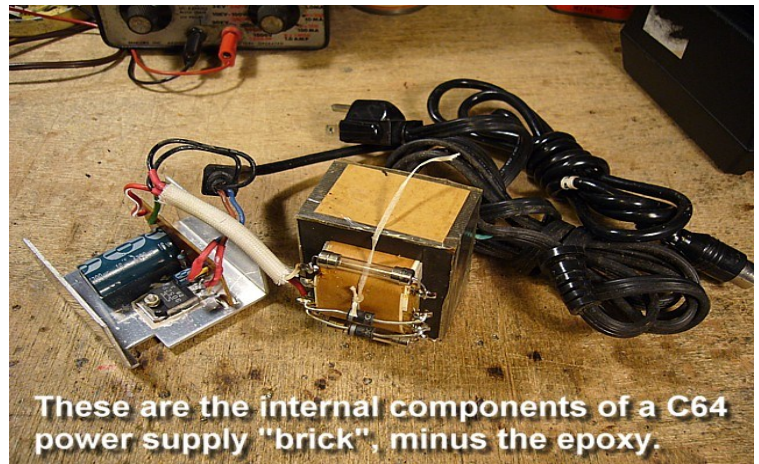


cheaper than you could buy the parts to build one. One of those boards plus a 9 volt 1 Amp transformer and a case would get you a better supply than you could ever build. That's how I would do it if I were starting from scratch.

Ray Carlsen

[rcarlsen@tds.net](mailto:rcarlsen@tds.net)

<http://personalpages.tds.net/~rcarlsen>



These are the internal components of a C64 power supply "brick", minus the epoxy.

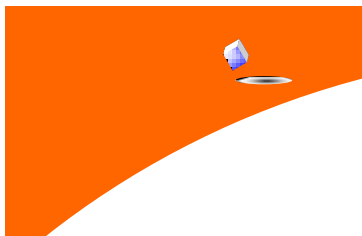
#### Note:

(European power supply) I own one of these 110/220V power supplies and I discovered only recently that it uses pin 4 for +5V, unlike the standard C64 black or white "brick" that connects it to pin 5. Both supplies work on the C64 because the power connector inside the computer has those pins tied together! Note that if the square connector is changed to a round one on a Plus/4 so a standard CBM supply can be used, those pins are already tied together by traces on the motherboard, and both USA and European supplies will work.

Ray Carlsen 2013

**For more information and many more helpful photos, please email Ray Carlsen and visit his web-site.**

Reset and Ray can obviously take no responsibility for any inaccuracies or damage caused to your equipment by following the advice in the article. Ray would love to hear from anyone about any errors, omissions or ideas relating to his articles.



## Next Issue

Thanks for reading Reset. I hope you had as much fun reading this first issue as I had producing it. I would like to thank everyone who contributed to this issue. Vinny and TMB for their mini-reviews, Ray for his outstanding computer saver article, Cameron for his (very funny!) comics and Merman for his editorial. Please support them by visiting their various webpages and/or emailing. A big thanks to everyone who enjoyed reading and supported the magazine. If you enjoyed reading this issue, would like to contribute, or even join the Reset team, drop me an email at [resetc64@gmail.com](mailto:resetc64@gmail.com). Feedback and constructive criticism is always welcome. Keep an eye on the Lemon forums or various news sites, or contact me at the Reset email address to be put on the mailing list for future issues.

Until then, see you on the forums.

Happy computing!

Uncle K

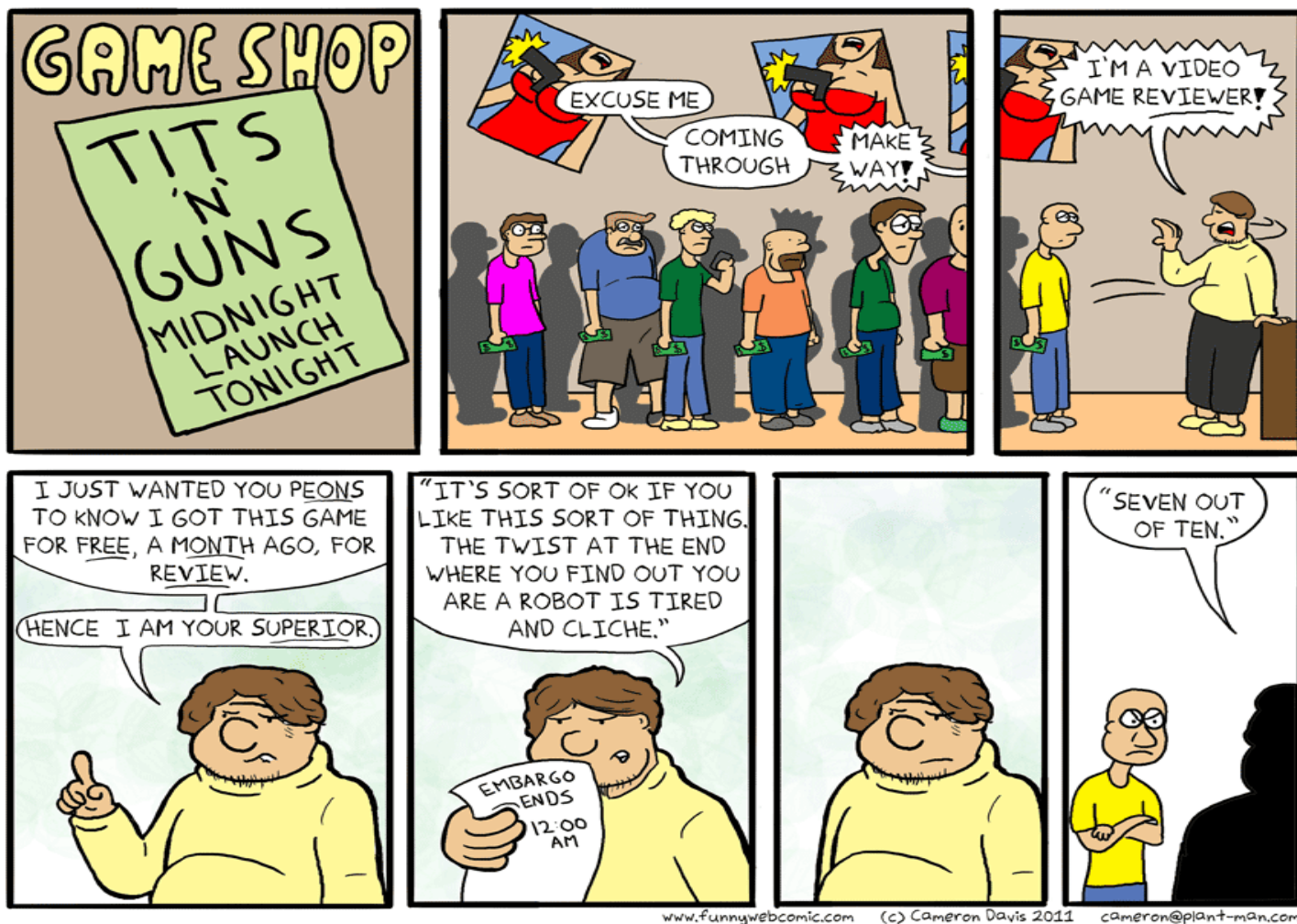
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## C64 Web Directory Issue #1

Organisation/Site	Web-Address
C64endings.co.uk	<a href="http://www.c64endings.co.uk/">http://www.c64endings.co.uk/</a>
C64HDD	<a href="http://www.64hdd.com/index_en.html">http://www.64hdd.com/index_en.html</a>
CSDB	<a href="http://csdb.dk/">http://csdb.dk/</a>
Funny Web Comics	<a href="http://funnywebcomic.com/">http://funnywebcomic.com/</a>
GB64	<a href="http://gb64.com/">http://gb64.com/</a>
Lemon 64	<a href="http://www.lemon64.com/">http://www.lemon64.com/</a>
Psytronik Software	<a href="http://www.psytronik.net/">http://www.psytronik.net/</a>
Ray Carlson Electronics	<a href="http://personalpages.tds.net/~rcarlson/">http://personalpages.tds.net/~rcarlson/</a>
RGCD	<a href="http://www.rgcd.co.uk/">http://www.rgcd.co.uk/</a>

## Brendan Brewer Video Game Reviewer

By Cameron Davis



## Blow the Cartridge

By Cameron Davis







# Brisbane C64 Night

30th November 2013

6:00pm - 11:00pm

The only thing you need to bring is \$5 (to help cover costs)



A fun night of Commodore 8bit Games, Demos & Hardware.

Bring along any cool or interesting C= hardware you have, even bring along your favorite game, Demo or utility.

There will be plenty of room to set up your own system.



**Location: Bray Hall, Cooke street, Petrie QLD 4502, Australia.**  
**Hall is about 5 minutes walk from Petrie train station.**

For further details join our IRC • Server <irc:cbm8bit.com> Channel #c64irc (or via [cbm8bit.com](http://cbm8bit.com))  
or check relevant thread on [www.lemon64.com/forum/](http://www.lemon64.com/forum/)