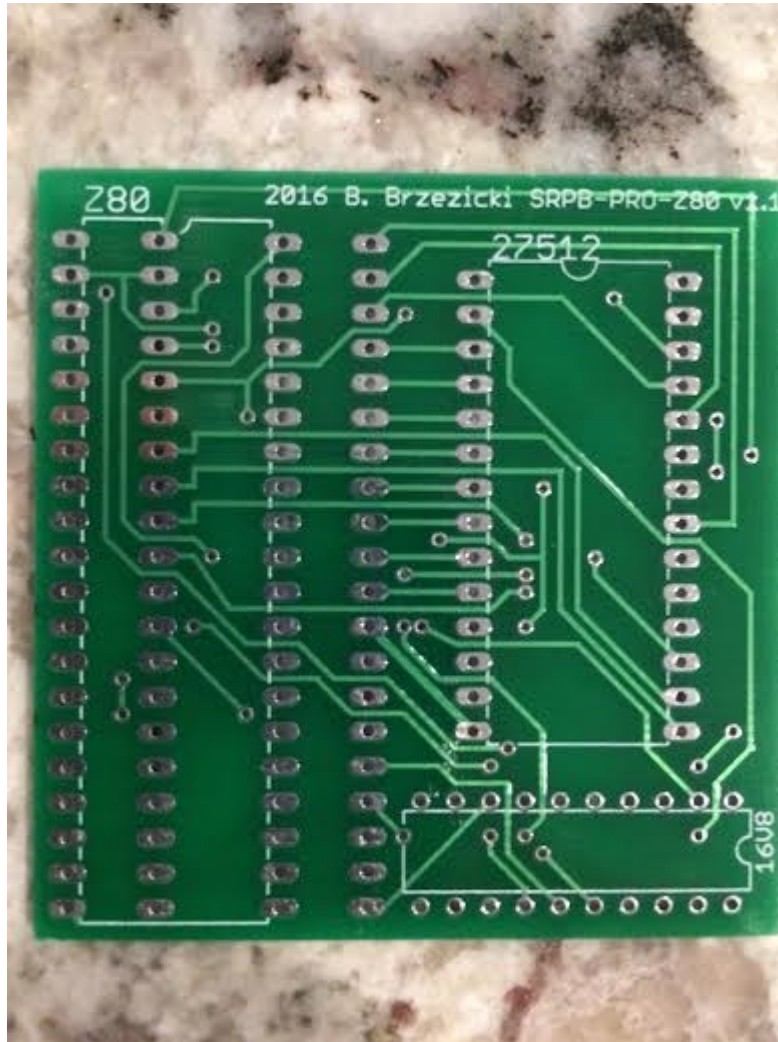


# Single ROM Prototyping Board Pro Z80 (SRPB-PRO-Z80) Instructions

## Version 1.0

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*Figure 1 – Image of SRPB-PRO-Z80 v1.1 PCB board*

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## Summary

The Single ROM Prototyping Board Pro (SRPB-PRO-Z80) was designed to allow the quick "prototyping" of single Read Only Memory (ROM) replacements or to serve as a general purpose, single ROM solution when pre-fabricated *plug and play* type solutions do not already exist for a specific function or video arcade game.

Said another way, the SRPB-PRO-Z80 is an adapter that allows you to quickly and easily convert old boards that contain lots of ROMs, such as those used with video arcade games, to use a single ROM.

There are currently two versions available:

- SRPB-PRO-6502 – Plug and play solution for 6502 based CPU systems.
- SRBP-PRO-Z80 – Plug and play solution for Z80 based CPU systems.

This documentation covers the SRPB-PRO-Z80 model

## What is Included

1. 1 x SRPB-PRO-Z80 adapter board
2. 2 x 20 pin header strips
3. 1 x 20 pin socket
4. 1 x 28 pin socket
5. 1 x 40 pin socket
6. 1 x W27C512 Windbond EEPROM
7. 1 x 8V16 Generic Array Logic chip (GAL)
  
8. 1 ROM sub assembly including
  - o 2 x 14 pin header strips
  - o 2 .1uf axial capacitors
  - o 1 28 pin ROM socket
  - o 1 72LS244 IC
  - o 1 20 pin socket

*Figure 2 – Image of assembled SRPB-PRO-Z80, actual kits are NOT assembled.*

## History

The computer hardware sometimes referred to as a Printed Circuit Board (PCB) or “board”, in many older video arcade games, such as Atari Asteroids, Missile Command, and Tempest, have numerous small, hard to find, and expensive parts known as ROMs (Read Only Memory). Maintaining or repairing these game boards can be difficult and time consuming, even for experienced repair persons. A few video arcade game enthusiasts have created kits containing customer adapter boards that allow specific game boards to use a single ROM, while others have provided instructions for physically *hacking* (altering) specific game boards to use a single ROM. Utilizing a single ROM often increases the reliability of the game board, can sometimes be used to fix non-working boards, and may assist in isolating ROM related issues with non-working boards.

As someone that repairs video arcade game boards for others, I wanted a fairly universal solution to either upgrade game boards permanently to use a single ROM or a way to simply bypass all the game ROMs to isolate ROM related issues. The SRPB-PRO-Z80 is my solution to solve both problems.

## Potential Uses for the SRPB-PRO-Z80

1. As a single, generic adapter to convert a board, including game boards, to use a single ROM on a permanent basis.

2. As a troubleshooting tool to assist in the repair of boards, including game boards, by bypassing the existing ROMs and their sockets, without the need to cut traces or make other permanent modifications to the board.
3. As a quick and easy way of testing or prototyping changes to the software on ROMs, without the need to cut traces or make other permanent modifications to the board.

## Features

- Allows users to easily prototype professional and sturdy Single ROM hacks using the existing CPU socket on a PCB main board
- Requires NO permanent board modifications
- Accept a cheap and easy to find 27512 EPROM, a Winbond W27C512 EEPROM is included.

## Types of CPU architectures Supported

- Z80 CPU

## Caveats to Understand about the SRPB-PRO-Z80

The following are a few things to be aware of before buying and using the SRPB-PRO-Z80:

There are a few things to be aware of before buying this board

1. You MUST have a soldering iron and solder to assemble the adapter
2. You MUST have a ROM programmer that can program a W27C512 (ex. GQ-4X)
3. You MUST have a programmer than can program a GAL8V16 (ex. TOP2005+)
4. You must have the needed single ROM game code, which you can create yourself or download.
5. You must have the needed .JED file for programming the GAL which you can create yourself or download
6. On games with separate game code, video code and Sound Code, the SRPB-PRO-Z80 kit will not be able to single ROM ALL the sections, only 1 section, however many games only have many ROM is the main game code section.

## Assembly Instructions

The SRPB-PRO-Z80 comes un-assembled. You must assemble before using. Assembly is straight forward, if you follow these steps.

1. Solder the 2 x 20 terminal pins in FIRST. Insert the short side of the pins UNDERNEATH the bottom of the SRPB-PRO-Z80 board and solder from the TOP of the board.
2. Using wire clips cut off any extra length of headers on pin 21 and 40 that exposed from the top of the board. This will ensure later on that the 40 pin socket fits without issue.
3. Place the 40 pin CPU socket in the appropriately marked space, ENSURE that you line up the top of the socket with top of the silkscreened CPU image. There will be a divot in the center of the top on the silkscreened image signifying which end is the top. Solder the socket in from the bottom of the PCB board.
4. Place a 20 pin socket labeled 16V8 in the appropriately marked space, ENSURE that you line up the top of the socket with top of the silkscreened CPU image. There will be a divot in the center of the top on the silkscreened image signifying which end is the top. Solder the socket in from the bottom of the PCB board.

Assemble the ROM sub board. (Note: you may not need the sub board, if you are unsure use the sub board as it will to hurt to have it)

1. Solder in the 2 x 14 terminal pins. Insert the short side of the pins UNDERNEATH the bottom of the SRPB-PRO-Z80 rom sub-board and solder from the TOP of the sub-board.
2. Trim the exposed top of the terminal headers for pins 15 and 28, this will ensure later that the 28 pin ERPOM socket will fit securely.
3. Solder in the 28 pin socket
4. Solder in the 20 pin 74LS244 socket
5. Solder in the 2 .1uf capacitors
6. Insert the 74LS244 into the 20 pin socket
7. Insert the burned 27512 ROM into the 28 pin socket, ensure the ROM is aligned correctly in respect to pin 1.
8. Insert the entire ROM sub-board into the main SRPB-PRO assembly. Make sure the sub board is inserted such that the 27512 ROM pin #1 is correctly aligned with the silkscreened "top" of the ROM on the underlying SRBP board.
9. Solder the ROM sub board into the main SRPB.

## Programming

Before installing onto the PCB you must program the SRPB-PRO-Z80 with the appropriate .jed image for the GAL8V16 and the EPROM image for the system in question. You either create these files yourself if you have understanding on the underlying system or you can download pre-created files.

You can download pre-created images at

- [http://www.arcade-cabinets.com/board\\_hacks/SRPB-PRO-Z80/recipes](http://www.arcade-cabinets.com/board_hacks/SRPB-PRO-Z80/recipes)

You may also create your own .jed and EPROM images for use in the SRPB-PRO-Z80 for technical details needed please see the “SPBP-PRO-Z80 Theory of Operations guide”

## Acknowledgements

Special thank you to many of the great KLOVers that have purchased and supported the board. Additional special thanks to KLOV user “SCOTT C” who greatly improved this instruction manual.