# The Ni-Wumpf
# System 1 / 80 Power Supply Board

**Copyright 2026 Ni-Wumpf Ltd.**

Revision A

# Ni-Wumpf Power Supply Daughterboard

The Ni-Wumpf power supply was designed to replace the main power supply modules for both Gottlieb System 1 and System 80 / 80A and 80B games. However, it is not a standalone product, but rather mounts directly on the main CPU boards provided by Ni-Wumpf for these games. Noting an orientation with A2P2 at the top of the board, power is supplied directly to the main CPU board through the top left (GND), and bottom left (+5) 4-pin header connectors. The right-side connectors are simply ground. While A2P2 is provided on the board to remain compatible with the original power supplies, ***it is not used***, and no harness should attach to this header and subsequently to the CPU. While it will not harm anything, it is not necessary

## Installation

The daughterboard was designed to mount on the main CPU board via four 4-pin headers, and to be held in place using two nylon PCB-PCB stand-off mounts to hold it firmly to the board. After the CPU is mounted in the game, and all harnesses are attached to that board, the daughter board is mounted onto the main PCB and pressed in place to latch the nylon standoffs.

The daughterboard is identical in form-factor for the System 1 games as it is for the System 80 games, save for the different headers used to connect to the cabinet power and displays. The System 1 power supply uses the A2P3 and A2P5 headers, while the System 80 games use the A2P4 and A2P1 headers. Care should be used in attaching the bottom board voltage supply leads ***<u>not</u>*** to force them onto the daughterboard if they do not seem to fit. While the System 80 cable is keyed, and cannot be attached the wrong way up, the System 1 cable relies on the header shell itself to prevent the installation of the cable upside-down simply by the thickness of the harness shell interfering with the header guard.

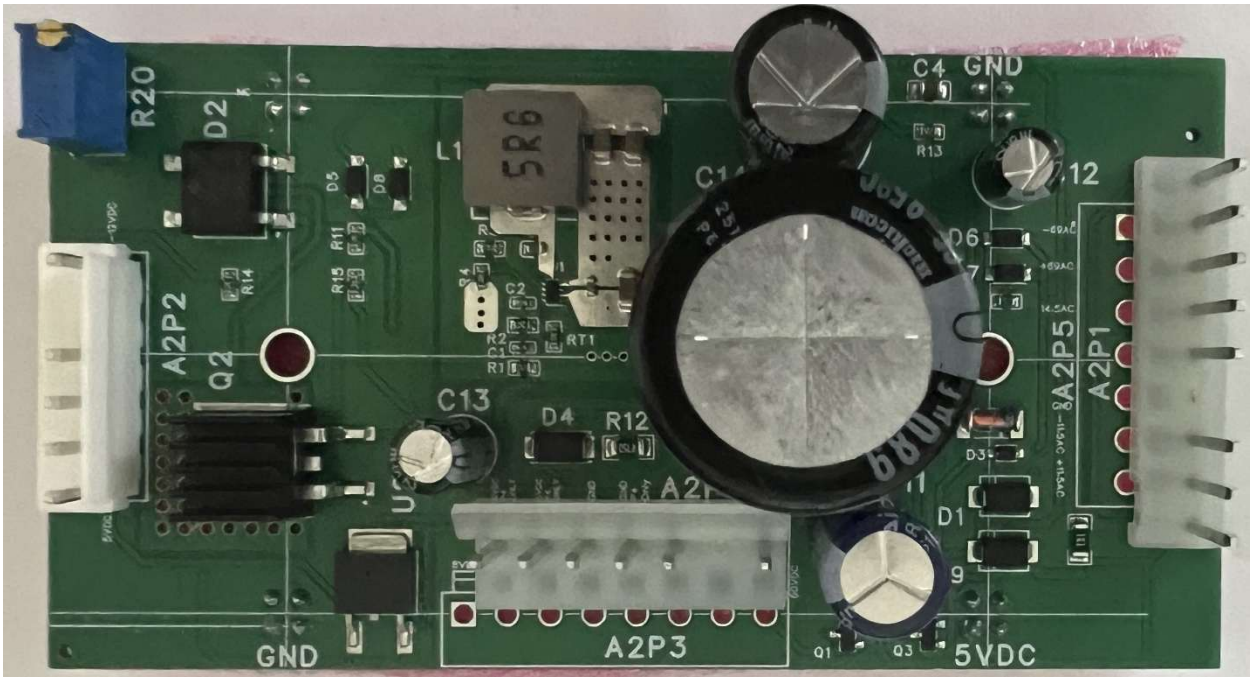



Figure 1 - Ni-Wumpf System 80 Power Supply

R20 is used to adjust the 60V levels for the displays if necessary, while the +5 voltage level is generated by the Buck converter, and is not adjustable. While -12V is provided by the power supply via A2P2, it is not used.

## Removal

Once the CPU is mounted, it may become necessary to remove it for service.  However, in order to do so, it will be necessary to squeeze the nylon PCB mount studs to release the daughterboard to subsequently release the CPU nylon mount studs..

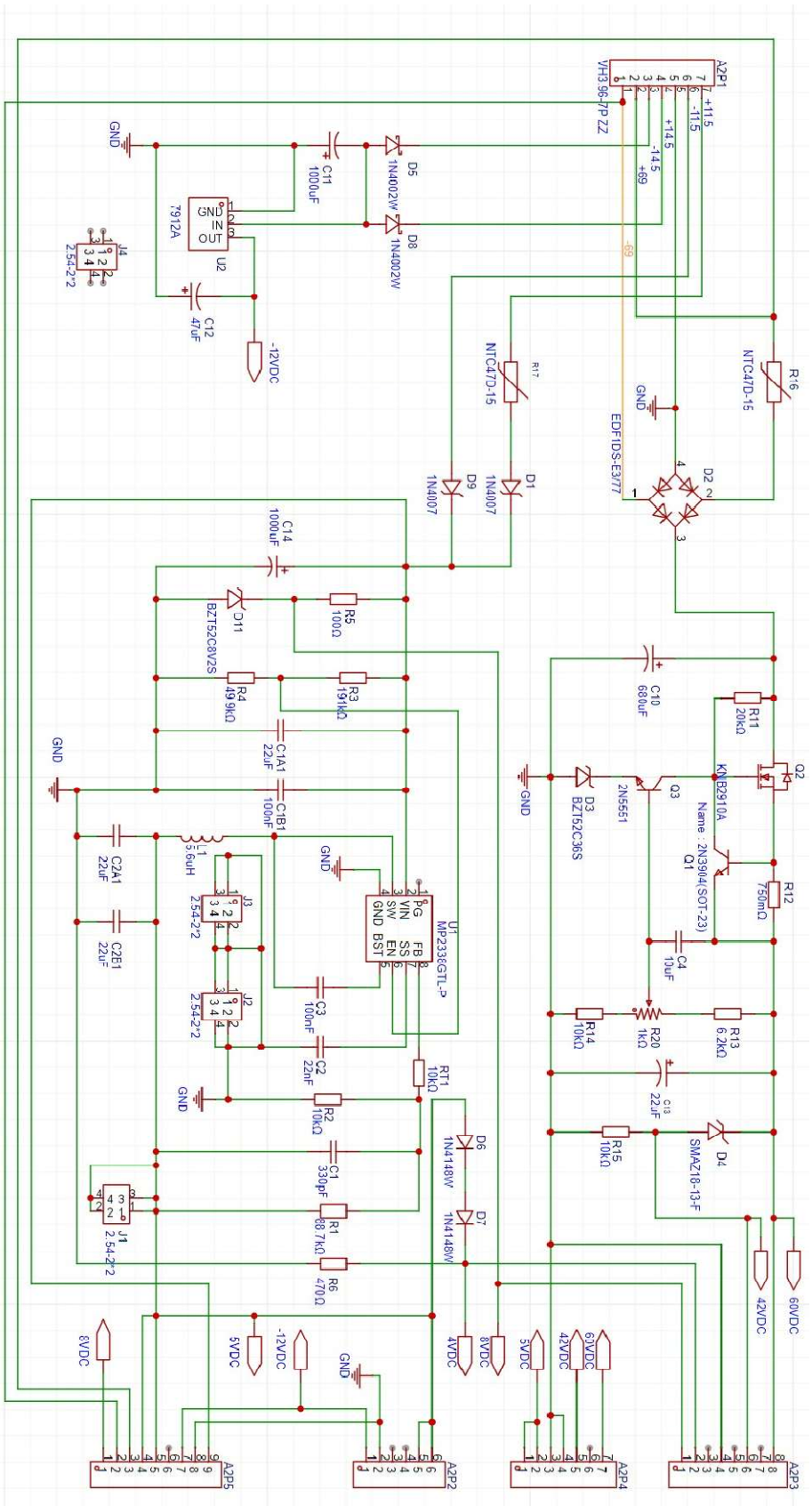



Figure 2 - Ni-Wumpf System 80 Power Supply Schematic

| Designator | Qty | Description |
|---|---|---|
| A2P1 | 1 | 7-pin header,VH3.96-7PZZ |
| A2P2 | 1 | 6-pin header,VH3.96-6PZZ |
| A2P3 | 1 | 8-pin header,BX-VH3.96-8PZZ-GW |
| A2P4 | 1 | 7-pin headerHX CH3.96-7P ZZ |
| A2P5 | 1 | 9-pin headerA3961WV-9P |
| C1 | 4 | 330pF 50V X7R,10%,0402 |
| C10 | 1 | 680uF 200V |
| C11 | 1 | 1000uF 35V |
| C12 | 1 | 47uF 50V |
| C13 | 1 | 22uF 100V |
| C14 | 1 | 1000uF 35V |
| C1A1,C2A1,C2B1 | 3 | 22uF 25V X5R,10%,1206 |
| C1B1,C3 | 2 | 0.1uF,50V, 10%,X7R,0603 |
| C2 | 1 | 22nF 50V X7R,10%,0402 |
| C4 | 1 | 10uF 50V X5R,10%,0805 |
| D1,D9 | 2 | 1N4007,1kV,30A |
| D11 | 1 | 8.2V Zener Diode,5%,1W,BZT52C8V2S |
| D2 | 1 | Bridge Rectifier,1kV,1.5A,EDF1DS-E3/77 |
| D3 | 1 | 36V ZenerDiode,200mW,SOD323,BZT52C36S |
| D4 | 1 | 18V Zener Diode,1W,SMAZ18-13-F |
| D5,D8 | 2 | 1N4002W,100V,30A,SOD-123FL |
| D6,D7 | 2 | 1N4148,100V,2A,SOD-123 |
| H1,H2,H3,H4 | 4 | 4-pin header,male,PZ2.54-2x2P |
| L1 | 1 | 5.6uH Inductor,SMD |
| Q1 | 1 | 2N390 transistor,SOT-23 |
| Q2 | 1 | MOSFET 100V,300W,N-Channel,TO-263-2,KNB2910A |
| Q3 | 1 | NPN Bipolar transistor,SOT-23,2N5551 |
| R1 | 1 | 73.2kΩ resistor,75V,1%,0603 |
| R11 | 1 | 20kΩ resistor,75V,1%,0603 |
| R12 | 1 | 750mΩ resistor,75V,1%,1206 |

| | | |
|---|---|---|
| R13 | 1 | 6.2kΩ resistor,75V,1%,0603 |
| R2,R14,R15,RT1 | 4 | 10kΩ resistor,75V,1%,0603 |
| R20 | 1 | 1kΩ potentiometer |
| R3 | 1 | 191kΩ resistor,75V,1%,0603 |
| R4 | 1 | 49.9kΩ resistor,75V,1%,0603 |
| R5 | 1 | 180Ω resistor,200V,5%,0603 |
| R6 | 1 | 470Ω resistor,75V,1%,0603 |
| U1 | 1 | 5V Buck Converter,SOT-583,MP2338GTL-P |
| U2 | 1 | -12V voltage regulator,7912A |

Table 1 – Bill of Materials for the Ni-Wumpf Power Supply