



Digby's Bitpile, Inc. DBA D Bit
139 Stafford Road
Monson, MA 01057
USA

+1 (413) 267-4600

www.dbit.com

FDDC DC-DC Converter

The FDDC is a DC-DC converter which powers a Shugart-style 8" floppy disk drive from a PC power supply. It uses switch-mode converters to translate the PSU's +12V rail to the +24V needed by 8" drives, as well as deriving -5V low-current supply used by some early models from the +5V supply, which is also passed directly through to the drive.

Wiring instructions

- Mount the supplied 6-32 stand-offs to the corners of the PC board with hex nuts. The board is 3" (76 mm) square and may be mounted to the inside of the drive cabinet with holes drilled on 2.6" (66 mm) centers, positioned for the best available ventilation.
- Plug a spare IDE power connector from the PC's power supply into J1, provided the PC has enough spare capacity to power the drive in addition to the rest of the PC (keep in mind that the DC-DC conversion is only about 80% efficient so the current drawn at +12 VDC is about 2.5 times the current supplied at +24 VDC).
- OR -
- Plug the 20- or 24-pin plug from a dedicated ATX power supply into J2. In this case the power supply's "power on" signal is driven by the FDDC, based on any one of the following inputs:
 - A normally-open momentary pushbutton attached to the headers marked "PB1".
 - A normally-open toggle or slide switch attached to the headers marked "SW".
 - The tiny pushbutton on the PC board, which is intended only for checkout before you build that magnificent cabinet, since it would be wrong to keep the drive and FDDC and PSU scattered all over a desk indefinitely ... right?

N.B. use either J1 or J2 but not both

- Plug the 6-pin AMP Mate-N-Lok connector into the floppy drive.
- Some drives have AC spindle motors, which must be externally connected to 110/220 VAC. This wiring should be done only by someone with experience working safely with line voltages. The FDDC has solder pads for driving an external user-supplied relay (or SSR) with a 5 VDC or 12 VDC coil, so that the spindle motor will power on only when the drive has DC power.

Specifications

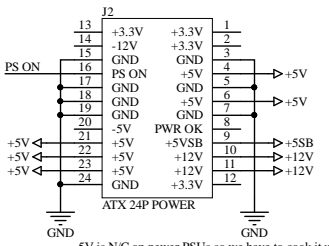
Inputs:

+12V 5A
+5V (current as needed by drive, plus 200 mA)

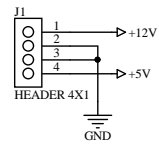
Outputs:

+24V 2A (2.5A surge)
-5V 100mA
+5V (passed through from PC power supply)

Schematic (on next page)



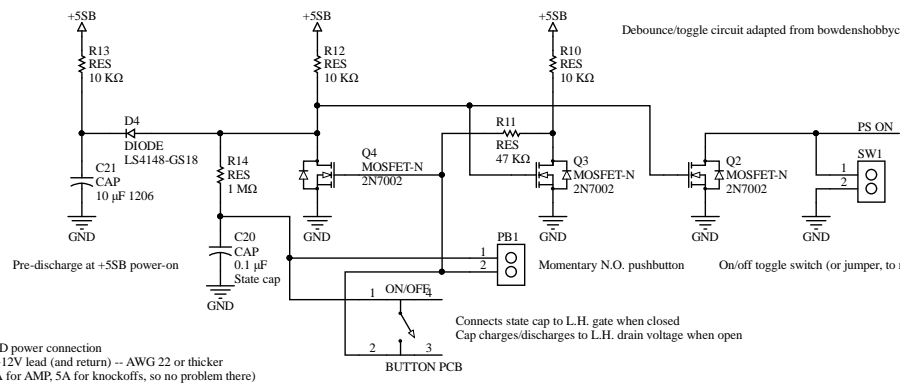
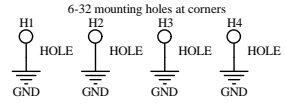
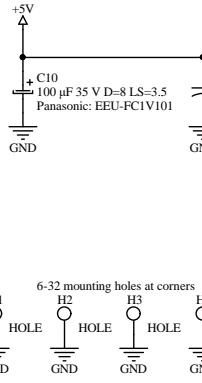
-5V is N/C on newer PSUs so we have to cook it up ourselves
I don't trust -12V to be around in future ATX revisions either



Can also run off of a 5.25"/3.5" style HDD power connection
Wires must be heavy enough for 5A on +12V lead (and return) -- AWG 22 or thicker
(The connector terminals are rated at 13A for AMP, 5A for knockoffs, so no problem there)

Can still use PM2110-120K-RC inductor if SMD mounting ears are removed
2102-H-RC probably OK too

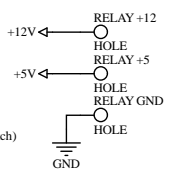
Rev A/B used Panasonic EEE-FK1V101P caps
Through-hole caps are easier to position and solder



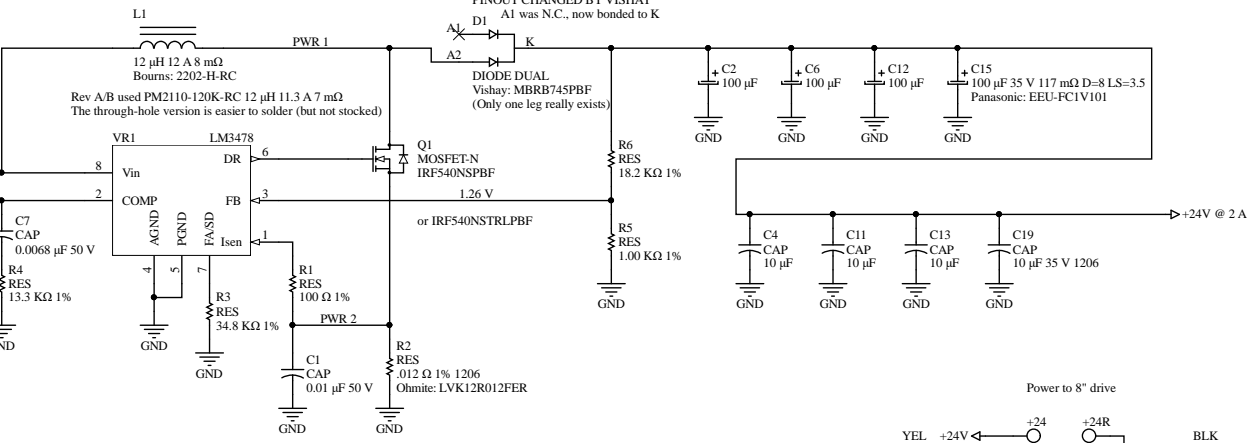
Pre-discharge at +5SB power-on

Debounce/toggle circuit adapted from bowdenshobbycircuits.info

Connection for 5V or 12V relay (or SSR) to control AC drive motor (if any) from external AC source



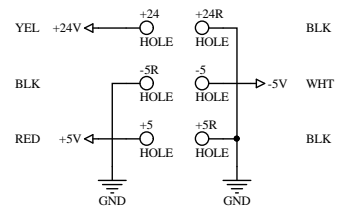
Connects state cap to L.H. gate when closed
Cap charges/discharges to L.H. drain voltage when open



PINOUT CHANGED BY VISHAY
A1 was N.C., now bonded to K

DIODE DUAL
Vishay: MBRB745PBF
(Only one leg really exists)

Power to 8" drive



Reversed left to right from 1-480270-0 pinout
(straight wires, no twisting)

| | | | |
|------------------------------------------------------|------------------|--------------|--|
| Title: 8" Floppy DC-to-DC Converter | | | |
| Size: B | Number: | Revision: C | |
| Date: 5/29/2018 | Time: 3:50:11 AM | Sheet 1 of 1 | |
| File: C:\Users\John Wilson\Documents\CAD\FDDC.SchDoc | | | |

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