

Mezmerize DCB1 “Ten Years After” BOM & Notes

This is a 2018 reissue of the DCB1 line level controller first introduced in 2008 by Salas. A converted Pass B1 for DC signal coupling with shunt type dual regulators. Using MOSFETS and LED voltage references. It offers six inputs with relays, output delay relay, direct mounting space for an ALPS Blue pot. Its sound quality is well received by many users, transparent and dimensional, has no treble glare

Changes:

1. The mounting distances are now compatible with perforated bottom plates of the Italian chassis line that the diyA online store carries
2. The five LEDS +/- voltage reference chains in the PSUs now work with equal current bias like in the vintage Hypnotize hot-rod version

BOM (including manufacturers part numbers):

Transformer (1pc) 230V or 115V primary 15+15V secondaries 50VA power
Examples: AnTek AS-0515, TALEMA 55121-P1S2, TOROIDY TTSA0050
Fuse (1pc+spare) time delay primary fuse 1.25A for USA or 0.6A for Europe
Three position screw terminal block 5mm lead spacing (1pc) Molex 39543-0603

Rectification diodes (4pcs) MUR120G
Flyback diodes instead of 1N4001 (7pcs) 1N4007-E3/54

Main filter 4700uF capacitors (2pcs) Nichicon UFW1V472MHD “Standard for Audio”
Local filter 100uF capacitors (4pcs) Nichicon UFG1V101MPM “High Grade Standard for Audio”
Delay section timing 100uF capacitor (1pc) Panasonic EEU-FC1H101B
Delay section reg decoupling capacitor: 100nF MKT (1pc) KEMET R82DC3100AA50J
Those capacitors are exact fits. Check their datasheets for dimensions reference if to use other types

PCB 12V relays instead of 6GH-2 (7pcs) KEMET EA2-12NJ / NU or FUJITSU A-12W-K
Input Selector 2 Pole Six Position (1pc) Lorlin CK1025
Volume Pot (1pc) ALPS RK27 (Blue) 20 kΩ Log. Part codes RK27112A00A6 or STRK27102

Red LEDS (17pcs+spares) Kingbright WP113IDT

NPN transistors (2pcs) BC550CTA
NPN transistor (1pc) BC517-D74Z (Darlington)
PNP transistor (1pc) BC560CTA

JFETS: (4pcs in signal path) 2SK170BL or LSK170B matched for IDSS
(6pcs in PSUs area) 2SK170BL or LSK170B or 2SK117BL not matched for IDSS

MOSFETS: (2pcs) IRFP240PBF, (2pcs) IRFP9240PBF
Sil-Pad TO-247 insulators (4pcs) SP900S-0.009-00-104
Side sinks (2pcs) 3C/W FISCHER SK 81/ 50 SA 100x15x50mm
Alternatively use the chassis floor for sinking by mounting the IRFPs under the board edges
12V regulator chip (1pc) LM7812CT/NOPB
Clip-on mini sink (1pc) HSS-B20-CP-01

Signal area 50ppm Dale resistors:
221R (4pcs) CMF60221R00FHEK
221k (2pcs) CMF60221K00FHEK
1M (2pcs) CMF601M0000FHEK

PSU area 100ppm Dale resistors:
1R (2pcs) CPF11R0000FKEE6
18R (4pcs) CPF218R000FKB14 *
47R (2pcs) CCF0747R0GKE36
100R (2pcs) CCF07100RGKE36
470R (4pcs) CCF07470RGKE36
*(Rset 2W parts for ~200mA PSU MOSFETS bias)

Output relay circuit area generic resistors:
0.25W or 0.5W: 10k (1pc) 47k (1pc) 2.2k (1pc)
1W: 270R (2pcs) only for using 5V relays, else put a jumper wire across one's pads

Pad holes spacing for all resistors on the PCB is 12mm
Input/output pads spacing is 2.54mm for 3Way headers. Direct to pads signal wires soldering is better
Choice of chassis, RCAs, IEC socket, power switch, knobs etc. is up to you. Prefer coax signal wiring

Tips:

1. The parts values are printed on the board. No need for building it with a schematic
2. The rectangular LED pads are for orientating their cathodes (solder short leg there)
3. Don't overheat the LEDs during soldering. If one breaks a whole chain goes dark
4. You don't need to match the LEDs VF as the BOM listed type is consistent enough
5. Let space between the MUR120s and the board. Also for the Rset resistors and the 270Rs
6. You can utilize less than six inputs by using fewer relays. The selector has a stop ring also
7. Single side of the selector is used. Up to 6 positions and their corresponding pole to GND pad
8. The PWR LED pads provide 5mA. Use higher than 2.2k neighbor resistor to dim a panel LED
9. Insulate the MOSFETS backs with the Sil-Pads. First mount them for sinking then solder them
10. Measure less than 5mV DC offset at the audio outputs before connecting to the Hi-Fi system

Specs:

Distortion 1kHz 1VRMS: THD=0.00071% THD+N=0.0013%
SMPTE 1VRMS 250Hz + 8kHz 4:1 ratio IMD=0.006%
Frequency response: DC-4MHz -3dB at no attenuation. DC-1.5MHz at ½ attn
Square wave ringing: No visible ringing
Input impedance: 18.34-20 kΩ
Output impedance: ~250 Ω (individual JFET RDS affects that figure)
Voltage Gain: Unity gain
Max signal output without clipping: 20Vpp
Board Dimensions: ~198x69x1.6mm