

Harman Kardon Citation 16A Power Amplifier

Audio Upgrade Modification

Driver Board (x2):

C1 = 100uF/25V Nichicon Muse ES BP
C2 = 150pF/500V 2% mica CDE CD15FD151GO3F
C3 = 47pF/500V KEMET monolithic ceramic C322C470JCG5
C4, C13, C14, C16, C17, C20, C23 = .01uF/200V KEMET monolithic ceramic C322C103K2R
C5 = 10uF/50V Nichicon Muse KZ electrolytic
C6 = 330pF/630V KEMET polypropylene PFR5331J630J
C7 = 68pF/500V 1% mica CDE CD15ED680FO3F
C8, C10 = 47uF/25V Nichicon Muse KZ electrolytic
C9, C11 = .1uF/100V WIMA MKP2 polypropylene film
C12, C15 = 10pF/500V KEMET monolithic ceramic C317C100JCG5
C18, C19 = 10uF/50V Panasonic SU BP (+) to right side of board
C21 = 75pF/500V KEMET monolithic ceramic C315C750JCG5
C22, C24 = 47uF/100V Nichicon Muse KZ electrolytic (bypass with .1uF/100V WIMA MKP2 polypropylene film)

R1, R4 = 22.1k (R4 may be 8.25k with 1N759A in series with anode to CR1 anode & Q8 base; zener is on left side of component designation R4 on driver board with cathode in series to resistor R4).

R2 = 2.7k, 1/4W, 1% PRP PR9372
R3, R17 = 15k, 1/2W, 1% Holco H4 (feedback)
R5 = 562Ω
R6~R9, R24, R25 = 1k
R10, R26 = 3.9k, 2W, 5% Yageo RSF metal oxide
R11, R27 = 1.21k
R12, R29 = 47.5Ω
R13, R28 = 68.1Ω
R14 = 100Ω, 1/4W, 1% PRP PR9372
R15 = 10k
R16 = 24k, 1/2W, 1% Holco H4 (feedback)
R18 = 562Ω, 1/2W, 1% Holco H4 (driver feedback)
R19 = 1M (offset null)
R20, R22 = 4.75k (inner feedback loop)
R21, R23 = 100k, 1/2W, 1% Holco H4 (inner feedback loop)
R30 = 511Ω (bias)
R31 = 909Ω (bias)
R32 = 681Ω (bias)
R33, R35, R36, R39 = 392Ω (standoffs for R35, R39)
R34, R37 = 15k
R38 = 10Ω
R40 = 180Ω, 1W Yageo RSF metal oxide

All resistors are Yageo 1/4W, 1% MFR metal film (except as marked)

VR1 = 1M Bourns 3386P
VR2 = 500Ω Bourns 3386H

CR1, CR2, CR7~CR12 = 1N914
CR3, CR4 = 1N4740A (10V)
CR5, CR6 = 1N5231B (5.1V)
CR13 (if present) = Jumper

Q1 = 2N2916; Q2~Q7, Q20 = 2N5087; Q8~Q11, Q19 = 2N3417

Jumper E9 (L) to E6 (R); Jumper E3 to E5 on right channel driver board.

E2 = audio input / E3 = ground / E4 = twisted pair to main power supply filter capacitor grounds (white = L; gray = R).

Output Stage & Heat Sink Assembly:

C3, C4 = 47uF/160V Nichicon TVX electrolytic

R1, R2 = 180Ω, 1W, 5% Yageo RSF metal oxide; R3, R4 = 5.6Ω, 2W, 5% Yageo RSF metal oxide

CR1, CR2 = 2A05G (RL205)

Wakefield 175-6-310P TO-3 Kapton Insulators (20)

Power Supply: (4) 120Ω, ¼W, 1% Yageo MFR metal film

C2, C3, C6, C7 = 1000uF/25V Nichicon TVX electrolytic

C4, C5, C8, C9 = 22,000uF/100V United Chemi-Con 36DA223F100CD2A

Install .1uF/200V Sprague 715P across C4, C5, C8, C9 for bypass.

Replace CR5~CR8, CR13~CR16 with Diotec FDB3506P/T-S soft recovery bridge rectifier. Use 10-24 x ¾" machine screws (H90236) with #10 external lock washers (1388-M) and 10-24 kept nuts (2406-D).

Install .01uF/250V Vishay WYO103MCMCF0KR Class X2 EMI suppression capacitor across AC side of bridge rectifiers using multi-stack or piggyback crimp connector (*optional*).

Install .1uF/275V Evox Rifa PHE840 Class X2 EMI suppression capacitor across AC input after power switch (*optional*).

Change front panel neon lamps to APEM Q8P1BXXR110E or Q8P1BXXHR110E LED indicators.

Front panel power switch = Carling 2GK50-D-4B-B

Relay Board: Pin 5 = pink; pin 6 = tan; pin 7 = gray

C1 = 150uF/35V Nichicon UHE electrolytic

C3 = 4.7uF/50V Panasonic FC electrolytic

R1 = 13k

R2 = 15k

R3 = 8.25k

R4 = 47.5Ω

R5, R6, R10, R11 = 47.5k

R7, R9 = 4.75k

R8 = 274k

CR1, CR2 = 2A05G (RL205)

CR3~CR10 = 1N914

K1 = R10-E2W2-V185

LED Display Board:

C1 = 2.2uF/50V Panasonic FC electrolytic

C2 = 10uF/50V Panasonic FC electrolytic

LED 1~8 = Lumex SSL-LX5093 (gd) green, (id) red, (yd) yellow. Change R21~28 to 620Ω, 1W, 5% RSF100JB-73-620R.

IEC Socket: Qualtek 703W-00/06. Use 4-40 x 3/8" black hex (1/16") screws (43581-B) and 4-40 kept nuts (2403-A).

Alignment:

VR1 (offset null) = 0mV DC across speaker output terminals (no load).

VR2 (bias) = 50mV DC (emitter of upper right hand device to relay board input terminal).