

Harman Kardon Citation 16 Power Amplifier

Audio Upgrade Modification

Driver Board (x2):

C1 = 100uF/25V Nichicon Muse ES BP
C2 = 150pF/500V 2% mica CDE CD15FD151GO3F
C3 = 22pF/200V KEMET monolithic ceramic C317C220J2G
C4 = .001uF/200V KEMET monolithic ceramic C322C102K2R
C6 = 68pF/200V KEMET monolithic ceramic C322C680J2G
C7 = 150pF/200V KEMET monolithic ceramic C322C151J2G
C8 = 68pF/500V 1% mica CDE CD15ED680FO3F
C9, C10 = .1uF/100V WIMA MKP2 polypropylene film
C13, C14 = 10pF/500V KEMET monolithic ceramic C317C100JCG5
C11, C12, C17, C20, C23 = .01uF/200V KEMET monolithic ceramic C322C103K2R
C18, C19 = 10uF/50V Panasonic SU BP (+) to right side of board
C21 = 150pF/500V KEMET monolithic ceramic C322C151JCG5
C22, C24 = 47uF/100V Nichicon Muse KZ electrolytic (bypass with .1uF/100V WIMA MKP2 polypropylene film)
C25, C26 = 47uF/25V Nichicon Muse KZ electrolytic
C27 = 15pF/200V KEMET monolithic ceramic C317C150J2G
C28 = 47pF/200V KEMET monolithic ceramic C322C470J2G

R1 = 22.1k
R2 = 2.7k, 1/4W, 1% PRP PR9372
R3, R7 = 15k, 1/2W, 1% Holco H4 (overall feedback)
R4 = 10k
R5 = 82.5k (offset null)
R6, R11, R14 = 1.21k
R8 = 562Ω, 1/2W, 1% Holco H4 (driver feedback)
R9, R10 = 3.9k, 2W, 5% Yageo RSF metal oxide
R12, R13 = 4.75k (inner feedback loop)
R15, R21 = 47.5Ω
R16, R20 = 68.1Ω
R17 = 2.21k (bias)
R19 = 681Ω (bias)
R22, R23 = 100k, 1/2W, 1% Holco H4 (inner feedback loop)
R24~R26, R29 = 392Ω (standoffs for R26, R29)
R27, R28 = 15k
R31 = 39Ω, 1W Yageo RSF metal oxide
R32 = 10Ω

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

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

CR1, CR2 = 1N5240B (10V)
CR3, CR4 = 1N5232B (5.6V)
CR5~CR8 = 1N4148

Q3, Q8 = 2N5087; Q4, Q7 = 2N3417

Jumper E9 to E9

Jumper E4 to E5 on right channel driver board.

E1 = ground / E2 = audio input / E3 = twisted pair to main power supply filter capacitor grounds - white (L); gray (R).

Output Stage & Heat Sink Assembly:

C26, C29 = 47uF/160V Nichicon TVX electrolytic

R30, R31 = 180Ω, 1W, 5% Yageo RSF metal oxide

R32, R33 = 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 power input after power switch (*optional*).

Change front panel neon lamps to APEM Q8P1CXXR110E or Q8P1CXXHR110E LED indicators.

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

Relay Board:

C1 = 150uF/35V Nichicon UHE electrolytic

R1 = 13k

R2 = 15k

R3 = 8.25k

CR1, CR2 = 2A05G (RL205)

K1 = R10-E2W2-V185

Pin 5 = violet; pin 6 = white or yellow (+12VDC)

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.

Sense wires = white (L), red (R)

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) = 10mV DC (emitter of upper left hand device to relay board input terminal).