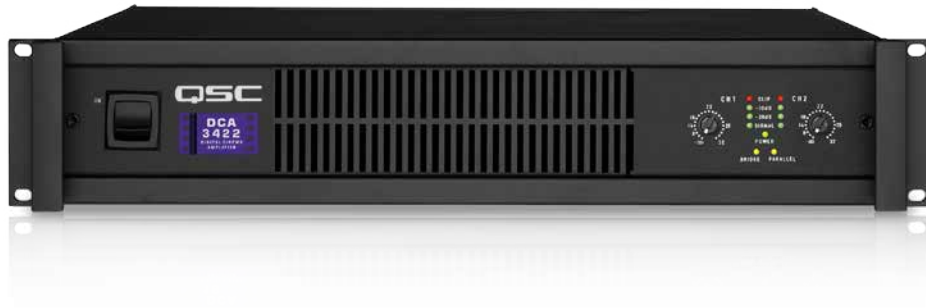




Service Manual

DCA 2 Channel Series



| | |
|------------------|---|
| Product Model: | DCA 1222, DCA 1622, DCA 2422, DCA 3022, DCA 3422 |
| Document #: | TD-000495-00 |
| Initial Release: | April 2015 |
| Revised Release: | |
| Revision: | A |



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Table of Contents

| | |
|--|-----------|
| 1. Introduction | 5 |
| 1.1 Restriction of Hazardous Substances Directive (RoHS) | 5 |
| 1.2 Revision history | 5 |
| 1.3 Service bulletins | 5 |
| 1.4 Serial Numbers | 5 |
| 1.5 The well-equipped service bench | 6 |
| 2. Product specification and images | 7 |
| 3. Operational description | 8 |
| 3.1 Series description | 8 |
| 3.2 Circuit descriptions | 8 |
| 4. Testing | 19 |
| 4.1 Requirements | 19 |
| 4.2 Setup | 19 |
| 4.3 Test procedures | 20 |
| 5. Troubleshooting guide | 23 |
| 5.1 General tips and tricks | 23 |
| 5.2 Intermittent signal from gain pots | 26 |
| 5.3 Main PSU damage (IGBTs or flyback diodes blown) | 26 |
| 5.4 Shorted output transistors in amplifier section | 27 |
| 5.5 Step circuit failure | 27 |
| 5.6 Leaky transistors in amplifier current limit circuit | 28 |
| 5.7 Weak capacitor C107 in PSU | 29 |
| 5.8 Input stage damage | 29 |
| 5.9 Protect signal transistors shorted | 30 |
| 5.10 Zobel resistors burned | 30 |
| 6. Service updates | 31 |
| 7. Schematics | 32 |
| 8. Assembly drawings | 33 |
| 8.1 DCA 2-CH chassis assembly | 33 |
| 8.2 DCA 2-CH PCB assembly | 36 |
| 9. Replacement parts | 37 |
| 9.1 Amplifier module replacement summary | 37 |
| 9.2 SG-000060-00, PLC power supply restoration kit | 37 |
| 9.3 SG-000568-TS, PLC housekeeping (bias) rebuild kit | 37 |
| 9.4 Finished Good (all DCA 2-channel models) | 38 |
| 9.5 WP-000080-00, ship kit DCA 2CH | 38 |
| 9.6 Chassis assembly, (all DCA 2-channel models) | 38 |
| 9.7 WP-001223-00, DCA 1222 PCB assembly | 40 |
| 9.8 WP-001623-00, DCA 1622 PCB assembly | 45 |
| 9.9 WP-002423-00, DCA 2422 PCB assembly | 50 |
| 9.10 WP-003023-00, DCA 3022 PCB assembly | 55 |
| 9.11 WP-003423-00, DCA 3422 PCB assembly | 60 |



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DCA 2 Channel Series Amplifiers Service Manual

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1. Introduction

1.1 Restriction of Hazardous Substances Directive (RoHS)

QSC DCA series amplifier products are manufactured to conform to the European Union's RoHS Directive, which reduces the amount of hazardous substances allowed in products for sale within its member nations. In electronic equipment such as audio processors, this applies primarily to certain toxic heavy metals, such as lead, which may be present in electronic components, solder, and other parts.

RoHS-compliant materials

When servicing RoHS-compliant electronic products, it is important for the service technician to use only RoHS-compliant components and solder (lead-free). All replacement parts provided by QSC for RoHS-compliant products are certified as RoHS compliant.

RoHS-compliant tools

Soldering irons and desoldering apparatus used on RoHS-compliant products must also not be contaminated by hazardous substances, such as lead. Therefore, you cannot use the same soldering and desoldering tools for RoHS-compliant products and solder as you do for non-compliant products and solder. You must either use separate soldering irons, desoldering tools and braid, etc., or at the very least designate separate tips and braids and use only the appropriate ones. If you contaminate a tip or braid, even inadvertently, by using it on a non-compliant product or solder, you should no longer use it with RoHS-compliant products or solder.

1.2 Revision history

No revision history yet.

1.3 Service bulletins

At the publish date of this service manual, **5** service bulletins concerning the DCA series amplifiers have been issued. Check www.qscservice.com or contact QSC Technical Services Group (TSG) for the latest information on applicable service documents. For a quick summary, refer to "6. Service updates" on page 31.

1.4 Serial Numbers

Serial numbers on QSC DCA series amplifiers are nine digits long. The first four digits are a manufacturing date code in *mmyy* format; the last five digits are the sequential identifying number for each individual product. For example, a serial number of 0711xxxx would indicate that the QSC product was manufactured in 07/2011, or July 2011.

The amplifier's serial number can be found on the rear panel near the AC inlet.



1.5 The well-equipped service bench

Service bench setup

- Desoldering equipment or desoldering braid
- Bank of non-inductive load resistors, configurable as 8 ohms min. 1500 watts capacity), as 4 ohms (min. 3000 watts), and 2 ohms
- Digital multi meter with RMS AC voltage and current
- Digital clamp-on ammeter
- Dual-trace oscilloscope, 1Mhz or greater
- Low-distortion audio sine wave generator
- Audio distortion analyzer (recommended Audio Precision)
- Variable AC voltage source, such as a Variac or Powerstat

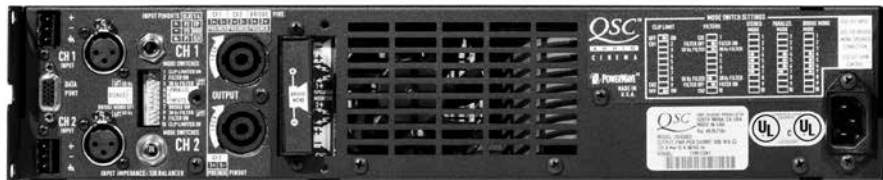
Tools required

- Phillips and flat head screwdriver (electric recommended)
- Soldering iron and solder suitable for electronics
- Desoldering equipment or desoldering braid
- Hex nut driver set, 1/2" and 7/16"
- Desoldering equipment or desoldering braid
- Basic tools for electronic repair including various pliers, wire-cutters, strippers, and crimpers.

2. Product specification and images

| | DCA1222 | DCA1622 | DCA2422 | DCA3022 | DCA3422 |
|---|---|-----------|----------------|----------------|----------------|
| Stereo Mode (both channels driven) | Continuous average output power per channel | | | | |
| 8Ω / 20 Hz – 20 kHz / 0.03% THD | 200 W | 300 W | 425 W | 550 W | 700 W |
| 8Ω / 1 kHz / 1% THD | 215 W | 350 W | 475 W | 625 W | 800 W |
| 4Ω / 20 Hz – 20 kHz / 0.05% THD | 325 W | 500 W | 700 W | 900 W | 1100 W |
| 4Ω / 1 kHz / 1% THD | 375 W | 600 W | 825 W | 1050 W | 1250 W |
| 2Ω / 1 kHz / 1% THD | 600 W | 800 W | 1200 W | 1500 W | 1700 W |
| Bridge-Mono Mode | Continuous average output power | | | | |
| 16Ω / FTC 20 Hz – 20 kHz / 0.1% THD | 400 W | 600 W | 850 W | 1100 W | 1400 W |
| 8Ω / FTC 20 Hz – 20 kHz / 0.1% THD | 700 W | 1100 W | 1500 W | 2000 W | 2300 W |
| 4Ω / EIA 1 kHz / 1% THD | 1200 W | 1600 W | 2400 W | 3000 W | 3400 W |
| Signal to Noise (20 Hz – 20 kHz) | < -106 dB | < -107 dB | < -108 dB | < -107 dB | < -107 dB |
| Input Sensitivity at 8Ω | 1.0 Vrms | 1.2 Vrms | 1.5 Vrms | 1.7 Vrms | 1.9 Vrms |
| Input Sensitivity at 4Ω | 0.9 Vrms | 1.1 Vrms | 1.3 Vrms | 1.5 Vrms | 1.7 Vrms |
| Output Circuitry | Class AB | Class AB | 2-tier Class H | 2-tier Class H | 2-tier Class H |
| Power Requirements (1/8 pink noise at 4Ω) | 6 A* | 10 A* | 8 A* | 12 A* | 12 A* |
| Distortion (SMPTE-IM) | < 0.01% | < 0.01% | < 0.02% | < 0.02% | < 0.02% |
| Distortion (typical) | | | | | |
| 20 Hz – 20 kHz: 10 dB below rated power | < 0.01% THD / 4Ω and 8Ω | | | | |
| 1.0 kHz and below: full rated power | < 0.01% THD / 4Ω and 8Ω | | | | |
| Frequency Response | 20 Hz – 20 kHz, ± 0.2 dB 8 Hz – 50 kHz, + 0, -3 dB | | | | |
| Damping factor (1 kHz and below) | > 500 | | | | |
| Input Impedance | 10k ohms unbalanced, 20k ohms balanced | | | | |
| Input Clipping | 10 Vrms (+22 dBu) | | | | |
| Cooling | Variable-speed fan, rear-to-front air flow | | | | |
| Connectors (each channel) | Input: 1/4" TRS, 3-pin XLR and 3-pin detachable terminal blocks (one per channel) Output: Neutrik Speakon® and safety shrouded barrier strip, including monitor output | | | | |
| Controls | Front: AC switch, Ch. 1 & 2 gain knobs Rear: DIP switches for Ch. 1 & 2 clip limiter on/off LF filter on/off LF filter freq select -30 or 50 Hz inputs parallel or stereo; bridge mode | | | | |
| Indicators | Power-On: Green LED Parallel inputs: Yellow LED Bridged: Yellow LED Clip/Prot: Red LED Level -10 dB: Green LED Level -20 dB: Green LED Signal -35 dB: Green LED (1 per channel) | | | | |
| Amplifier Protection | Full short circuit, open circuit, thermal, ultrasonic, and RF protection. Stable into reactive or mismatched loads | | | | |
| Load Protection | On/off muting, individual channel DC fault blocking | | | | |
| Dimensions (HWD) | 3.5" (8.9 cm) 2 RU x 19" (48.3 cm) rack mounting x 14" (35.6 cm) from front mounting rails | | | | |
| Voltage Gain | 40x (32 dB) | | | | |
| Weight - Net / Shipping | 21 lb (9.5 kg) / 27 lb (12.3 kg) | | | | |
| Optional Accessories | DCM Digital Cinema Monitors provide complete crossover and monitor functions Basis™ and QSControl.net™ for a complete networked audio solution, including DSP and control and monitoring of amplifiers and loudspeakers The XC-3 cinema crossover is for bi-amp applications with all commonly used cinema speakers The SF-3 subwoofer filter is an adjustable highpass filter for subwoofers The LF-3 low frequency filter is used with the XC-3 for tri-amp applications The DSP-3 and DSP-4 digital signal processors feature a fully programmable signal chain and includes crossover filters plus numerous additional dynamics processors | | | | |

* at 120 VAC, both channels driven; multiply current by 0.5 for 230V units



3. Operational description

3.1 Series description

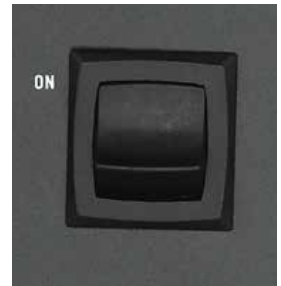
Crystal-clear, seat-shaking cinema sound is here with our DCA Series Digital Cinema Amplifiers. Five 21 lb (9.5kg), two rack space models offer power points from 200 to 1700 watts per channel. With QSC's exclusive PowerLight™ switching technology you'll hear ultra powerful bass and superior highs in every action scene. In addition to their superior performance, we've packed these amplifiers with useful features and every input/output connector you'll ever need.

3.2 Circuit descriptions

3.2.1 Startup sequence

Orderly start-up and shutdown are critical to reliable operation of the switching supply. The general start-up sequence is as follows:

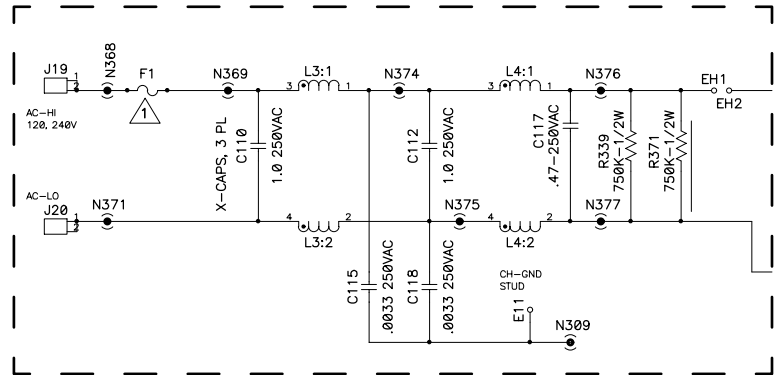
1. Apply AC power (turn on the AC switch).
2. Current flows through the inrush limiting resistor R324, charging the main filter capacitors C132, 136, 140 and C133, 137, 141.
3. After about 0.5 seconds, the Bias Supply U16 starts up, supplying regulated 16V and 18V power to the switching controllers. This supplies a modest current to the Power LED via R232 (Sheet 4), causing a "half bright" condition. Power is supplied to all controller circuitry including the switching oscillator U14:1.
4. Meanwhile, timer U14:2 holds the shutdown line HI for 3 seconds, allowing time for the main filters to fully charge before enabling the main supply.
5. When U14:2 times out, the relay is clicked on, bypassing the inrush resistor, and the main supply begins switching.
6. The secondary capacitors are charged, the fan starts, full current is supplied to the Pilot LED via R252, and the amplifier enters a 1-second muting interval before being released to run.



3.2.2 EMI filter

The EMI filter reduces both common mode and differential mode interference generated by the switching supply (and also protects against incoming spikes). All sources of interference have been reduced as much as possible, but a certain residue must be filtered. We attenuate the high frequency interference by increasing the series impedance (using inductance) and then shunt the high frequencies to ground (via capacitance). Since we can only apply a small amount of capacitance from AC line to ground, to avoid coupling AC current to ground, we need as much inductance as possible.

The entire EMI filter is contained in a shielded box, represented by dashed lines. This prevents capacitive coupling of internal interference into the AC cord. It is also necessary for the AC cord wires to go directly to their terminals without resting on the coil, to avoid partial capacitive bypassing of the filter.



3.2.3 Inrush limiting

PCB traces pass under the EMI shield and connect the AC voltage to wires. The high-side wire (EH1 to EH2) goes to the front corner of the PCB, to R324 and K1. R324 is a 10-ohm NTC with a large energy absorption capability (180 joules). When AC voltage is first applied, this resistor slows down the inrush of current charging the main filter capacitors. After three seconds, relay K1 clicks on and bypasses R324 for full power.

Relay K1 is controlled by Q92 and Q93. For the relay to operate, the 18V supply to the coil must be active, and the 5V control line connected to R329 must go low. This turns off Q93 and enables R327 to turn on Q92. Although the relay has a 24V coil, it has a "must operate" rating of less than 18V. If the relay does not operate, the non-bypassed NTC will still support a moderate amount of amplifier power, but heavy loads will overheat it. If the NTC runs hot during regular use, the relay is not working. The AC current then goes to the main power switch (ES1 to switch), and returns via another wire (switch to ES2) which feeds one side of the AC rectifier.

3.2.4 Main power supply

The high side of the main DC filter bank is labeled PRI_HI and is about 330V above the negative rail, PRI_LO. All switching control circuitry uses PRI_LO as its local "ground". All primary control voltages are specified with respect to PRI_LO. HOWEVER, always remember that this common reference is still connected to the AC line, and can NOT be used to ground ordinary non-isolated scope probes.

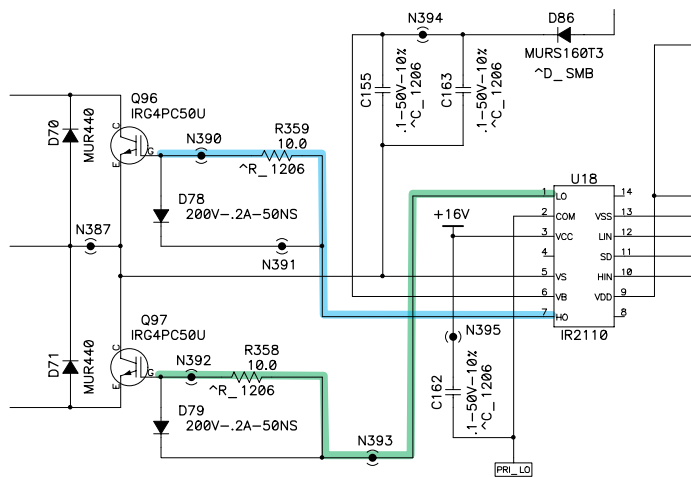
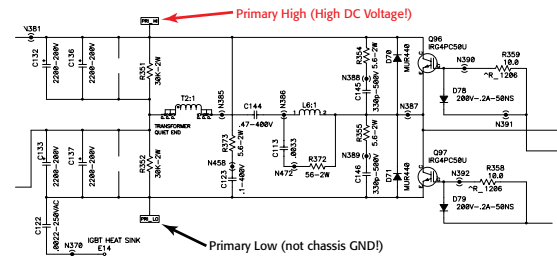
An independent "bias" supply also operates from the main rails, supplying regulated +16V and +18V with respect to PRI_LO, plus an isolated secondary control voltage.

Switching devices and high frequency power conversion

The essential principle of the PLC platform power supply is that two high frequency switching transistors, IGBT devices Q96 and Q97, switch back and forth between Pri-Hi and Pri-Lo, generating an AC square-wave voltage at about 110kHz. This couples power from the main DC reservoir to the isolated, secondary DC supply, through a high frequency transformer T2, which is much smaller than the normal 50/60-Hz AC transformer. Because of the high frequency, the core is small, all windings are short and have very low losses, therefore the power transfer is improved.

The Insulated Gate Bipolar Transistor can be thought of as a moderate sized FET driving a high current bipolar transistor in a Darlington configuration. The IGBT has the advantages of reduced gate drive capacitance (lower drive currents), and much lower conduction losses at high currents than the same-size FET. Its drawbacks are somewhat slow turn-off, and thus increased losses if turned off with a high current flowing.

IGBT's operate best with a full 15V gate drive. When fully enhanced, peak currents of over 100A can be handled. The Powerlight gate drive circuit does not supply a full 15V, especially under heavy overloads, which probably limits its peak power handling. Power supply cutback values had to be set accordingly. Because of the regulated Bias supply, the PLC platform can handle plenty of power with no apparent strain. The PLX gate drive circuit operates from a regulated 16V and 18V supply, which ensures a minimum 15V to the gates regardless of loading.



Gate drive signals

U18, the IR2110 "Hi-Lo Gate Driver" is new to the PLC platform and replaces a gate drive transformer. The classic problem with the half-bridge switching topology is driving the "high side" device, whose gate and source terminals are coupled to the switched output voltage, and therefore swing back and forth between the rails. The "low side" switching device is relatively easy to drive, since its source is coupled to Pri-Lo. Each gate requires a 0-to-15V gate drive signal, referenced to its source, with about 1A of peak current.

The IR2110 accepts gate drive signals and internally couples them to a low-side gate drive buffer, and via internal signal translation circuitry, to a floating, high-side, gate drive buffer which is powered by a bootstrapped, floating supply. Peak voltage capability is 600V, which matches the

ratings on the IGBT's. Gate drive buffers are rated "2 amps", which actually deliver about +/-1A peak to the gates.

This topology requires alternating, non-overlapping gate drive signals with a defined "dead space" between high and low drive signals. Overall period is about 9us (110kHz nominal). During normal operation, the duty cycle is fixed, at about 3.7us "Hi", 0.8us "dead", 3.7us "Lo" and 0.8us "dead". This type of supply does not respond to variations in on-time to regulate output voltage, so no variation in duty cycle should be observed while running. During start-up, the duty cycle ramps quickly up from zero to allow a little time to charge the output filter capacitors.

PWM controller

U19, a SG3525 PWM controller chip, generates the alternating gate drive waveforms using a fixed frequency sync signal from U14:1. An internal flip-flop causes an "ON" signal to alternate between OutA and OutB, separated by dead spaces. Duty cycle is ramped up from zero to maximum by a soft start function and a shutdown pin provides a means to stop the supply.

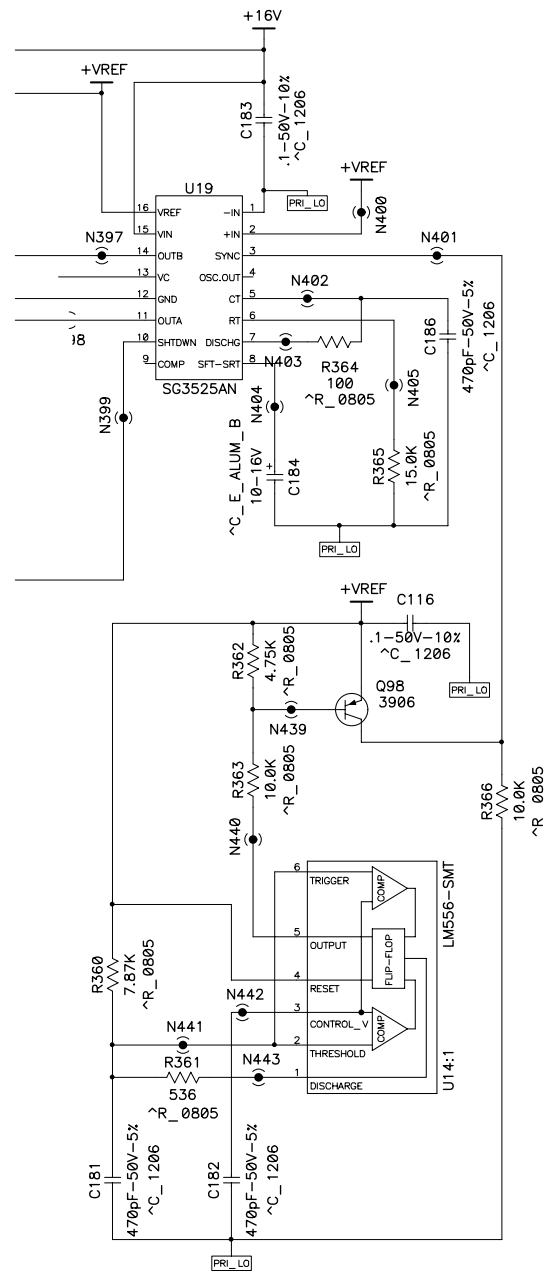
In the absence of Sync, the SG3525 is free-running by itself. The free-running period must be at least 10-20% longer than the desired sync pulse rate, otherwise it will switch by itself before the clock pulse occurs. We would prefer that the switching would just stop if Sync is lost, but without further circuitry it keeps going at the free-running rate. If we make the natural period too long, noise or other perturbations may result in erratic on/off times.

Switching frequency oscillator

A small sub-circuit generates a frequency at twice the switching frequency (since the SG3525 divides the Sync frequency in half). U14, a dual 555 timer, is powered from the 5.1V Vref (pins 14, 7). U14:1 is set up as a sawtooth generator.

An internal resistor string in the 555 sets up comparator trip points at 33% and 66% of the supply voltage. R360 pulls up on C181, which ramps up until the voltage at pin 2 (Threshold) reaches the upper trip point. Pin 1 (Discharge) then goes low, pulling the C181 down through a much smaller R361, until the voltage reaches the lower trip point. Therefore, the voltage on C181 ramps slowly from 33% to 66%, and quickly from 66% back to 33%. The total operating period is the sum of the ramp-up and ramp-down time, so it is affected by C181 and both resistors. C182 is a bypass capacitor which prevents noise from entering Pin 3.

During the relatively short Discharge period, the Output, pin 5, is also low. This drives inverting transistor Q98 through R363, causing its collector to go high and supply the rising edge to U19 pin 3 (Sync). R362 and R366 return this voltage low as soon as the Sync pulse is ended.



3.2.5 Shutdown triggers

The following triggers will shutdown the main supply:

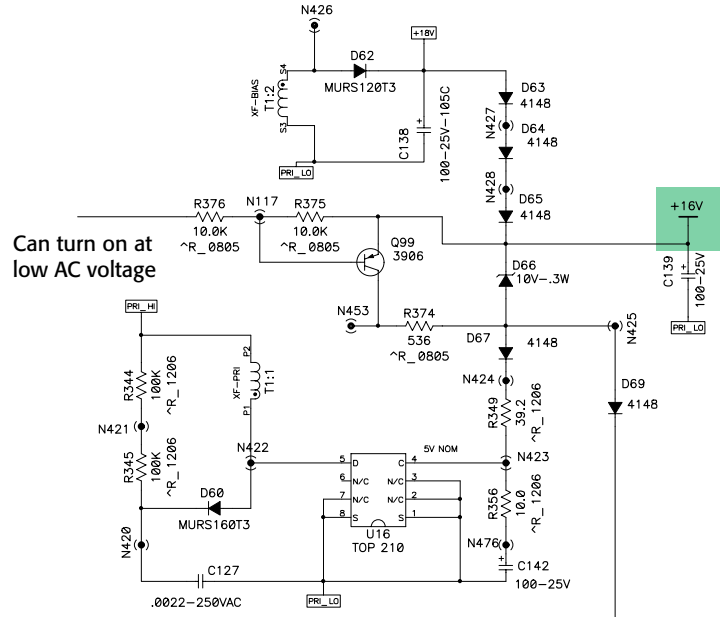
- **LOSS OF AC POWER.** When the AC switch is turned off, or power is removed, a cycle-by-cycle monitoring circuit feeding comparator U13:3 drops below a reference voltage after several missing AC cycles, and pulls down on Trigger. D58 peak-rectifies the AC voltage, C107 stores this (at about 300V) with a time constant of several AC cycles. R321-22 and R323 divide this voltage down to about 11.5V, and couples to the +input of U13:3. The -input of U13:3 has a reference voltage tapped off Pri-Hi (325V) and divided down by R326, 328, and R325 to about 8V. As long as AC voltage is present, the +input exceeds the -input. If AC is removed, +input drops below -input within several AC cycles, causing the output of U13:3 to go low.
- **UNDERVOLTAGE LOCKOUT.** The 8V signal from R326, R328, and R325 also goes to the +input of U13:1. The -input goes to VREF (5.1V). If the DC supply voltage sags more than 40% (due to extreme overloads or low AC voltage), the 8V signal drops below 5V and the output goes low.
- **OVERCURRENT SHUTDOWN.** U13:2 and U13:4, form a window comparator, whose positive and negative thresholds, about 4.9V and 11.1V, are defined by resistor string R336, 337, 338 between +16V and Pri-Lo. The output of L6:2, which is proportional to current flow in the power supply, is coupled by a matched resistive divider R342 and 341, which centers the signal within the window at about 8V. C124 integrates the output of this divider, converting the coil output, di/dt, back to a signal representing actual current i. If the switching current exceeds about 100A, the voltage on C124 reaches one of the threshold limits, trips the comparator, pulls the 5V trigger line low, and stops the switching.
- **DC FAULT SHUTDOWN.** If circuitry in the amplifier senses a DC fault on the output, optocoupler U15 is turned on and pulls down the Trigger line via R369. C192 filters short noise bursts to prevent false triggering. The supply current for U15 comes from the 6V isolated winding of the Keepalive supply.
- **STANDBY SHUTDOWN.** U15 can also be turned on by an external contact closure, via circuitry not used in the PLX series. This stops the main supply and puts the unit in a “standby” mode. D52 is not stuffed in the PLX, but shorts in this area could explain failure to start switching.

3.2.6 Bias (housekeeping) supply

U16 is a high voltage, integrated flyback circuit, which works with small transformer T1 to generate regulated +16V and +18V supplies for the primary side circuits, and an isolated 6V supply for the secondary side Stand-by function.

One end of the primary of T1 is connected to Pri-Hi. The other end of the transformer is pulled briefly down to Pri-Lo by U16, pin 5, and then released after storing some energy in the transformer primary. When released, this voltage “flies up” above Pri-Hi until diodes on the secondary windings clamp the voltage into storage capacitors. The stored magnetic energy then discharges into these filter capacitors, raising their voltage. Then pin 5 turns on again, repeating the cycle. U16 has an internal oscillator which operates this cycle at about 100kHz.

During “flyback”, T1, section 2, supplies a 19.5V to D62, charging C138 to about 18.8V, which becomes the “+18V” rail. D63, 64, 65 reduce the voltage to C139 by about 2.2V, creating the “+16V” rail. This voltage is sensed by 10V zener diode D66, plus diode drop D67, which subtract about 11V from +16V. This 5V signal is coupled back to U16, feedback pin 4, which adjusts the “on” time at pin 5 to maintain 5V at the feedback terminal. In this manner, the +16V and +18V supplies are regulated despite changes in loading or Pri-Hi voltage.



Secondary side power supply

The output of the main transformer, T2:2, is coupled to a series of secondary supply voltages. To reduce complexity and undesired coupling effects in the transformer, a single, common, ground-referenced secondary supply serves both audio channels. The primary of T2 is driven by a square wave having a peak amplitude of 165V (half the nominal 330V Pri-Hi voltage). There are ten turns on the primary, therefore, each turn has about 16.5 volts peak at no-load conditions.

First power tier

D74, 75, 80, and 81 are 15A, TO-220 diodes located under the "High Frequency Rectifier" heat sink identified as (5) in the orientation sketch. These feed the lower tier of the main power supply, C152-153 etc. In the PLC models above 2kW, the transformer is tapped at four turns and delivers about +/-67V to these rails. In PLC models below 2kW, these are the only rails, and the transformer has +/-5 turns, delivering about +/-82V. Ferrite bead inductors L9 and L10 provide some damping of EMI and "cushion" the diode turn-on and recovery.

Second power tier

The transformers on PLC models above 2kW have three more turns above the first tier, supplying an additional 50V to a second bank of capacitors, C151, 154, etc. This voltage rail therefore runs at about +/-117Vdc. Larger 30A diodes D72, 73, 84, 85, are mounted to the side of the rectifier heat sink. Ferrite bead inductors L7, 8, 11 and 12 provide some damping of EMI and "cushion" the diode turn-on and recovery.

Second auxiliary voltage

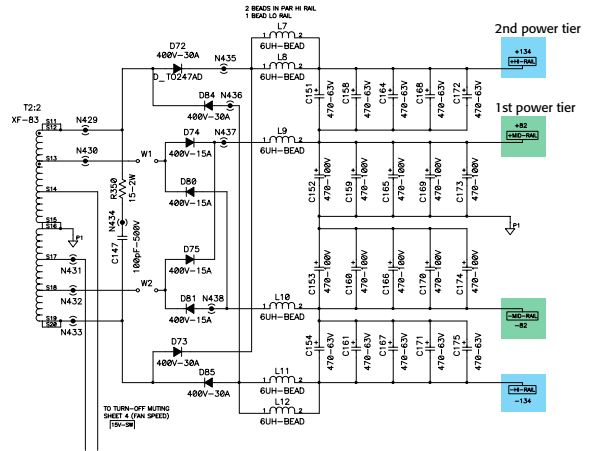
Starting at the secondary center tap, the first turn on either side of CT is brought out to full wave bridge rectifier D76, 77, 82, and 83, and filtered by C149 and 150 in parallel with C156 and 157. Because of the usual diode drop, the nominal voltage on this supply is about +/-14 to 16V, which varies as a function of loading and AC voltage. This forms the "+15V" and "-15V" rails which power the fan, and supply the op-amps via supplementary R-C filters. R357 and C148 provide some EMI damping.

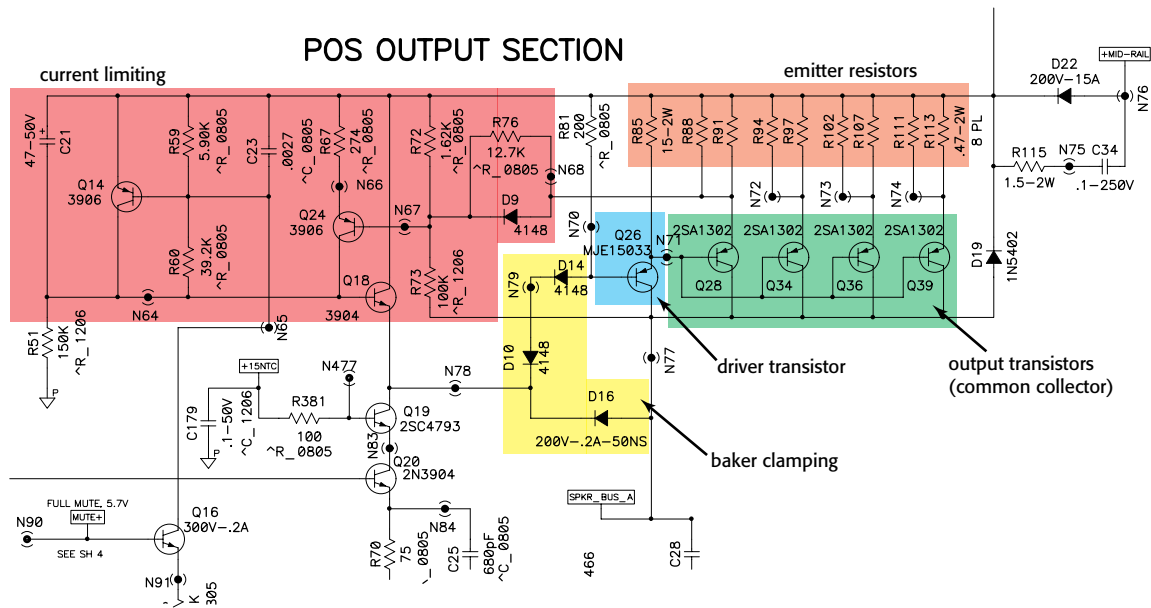
3.2.7 Amplifier power stage

PLC amplifiers use the same complementary, bipolar power transistors used on other QSC amplifiers. A "4-wide" parallel structure is used on each channel for PLC models above 2kW, with a dual-tier power supply to improve efficiency and reduce SOA stress. The familiar QSC grounded-collector design can not be used with a ground-referenced power supply, but for good thermal transfer, the collectors are still mounted directly to isolated heat sinks, which are now at speaker potential. An additional coupling stage is required to connect the low-voltage high-gain op-amp to the main output section; the gain of this stage is used to increase peak current output and loop gain. Current limits are now set with precision resistor values and clamping, and do not require trimmer adjustments in production. The familiar "time delayed current cutback" is used to protect against excess dissipation into shorts, but improved circuitry actually measures the combined voltage and current stress on the transistors and drives the cutback accordingly. New circuitry actively clamps the output swing of the voltage gain op-amp during clipping, for faster recovery, drives the clip LED, and generates clip limiting signals, without involving the current limits of the op-amp. Many other useful refinements are described below.

Power output topology

Each output polarity comprises a bank of 4 output transistors, driven in Darlington mode by a high speed driver. To ensure equal current sharing, each output device has an emitter resistor value of 0.235 ohms, comprising parallel 0.47 ohm resistors. The positive output transistors Q28, 34, 36, 39 (Q73, 79, 81, 84) are driven by Q26 (Q71). R85 (R208) shunts the output transistor bases and R81 (204) shunts the base of Q26 (71), for rapid turn-off. The negative output transistors Q29, 35, 37, 40 (Q74, 80, 82, 85) are driven by Q27 (Q72). R86 (R209) shunts the output bases and R82 (R205) shunts the driver base for rapid turn-off. Each output bank is driven by a current entering the base of its driver, which is delivered by level shifting transistors Q19 (Q64), positive, and Q22 (Q67), negative, which reach up from the low voltage circuitry.





Baker clamping

Bipolar transistors tend to “stick on” and oscillate if driven to full saturation. The normal cure for this is to limit the approach to saturation with a diode network called a “Baker Clamp”. Since these circuits are similar for all four output sections, we will describe Sheet 2. The positive baker clamp uses two diodes D10, 14 in series with the driver base, which creates a predictable voltage drop in the drive current from Q19. A single, high voltage, fast recovery diode D16 is connected from the bottom of this voltage drop to the common collector bus. When Q26 is driven towards saturation, the collector voltage rises above the voltage at the bottom of D10 and D14, which lets D16 conduct. This prevents Q26 from being further driven, and conduction stops two diode drops below full saturation. Since D16 is a fast recovery device, it reverses almost instantly without “sticking” when the drive current backs off. Although we lose almost 2 volts of potential signal swing, the amplifier would display severe sub-clip oscillation and recovery overshoot without this circuit, and serious rail-to-rail recovery currents would occur during high frequency clipping. This circuit is mirrored on the negative side by D11,12 and D13.

Output stage current limiting

It is necessary to limit the peak current of the power transistors so they do not over-dissipate and fail into abnormal loads. We normally want a high peak current, so 2-ohm loads can be pulled all the way up to the voltage rails. Under these conditions, the output devices are supplying a lot of current, but the voltage drop across them is small, and dissipation is reasonable. If the load were shorted, however, the output voltage is clamped to ground, and the power transistors will dissipate a huge current with the full supply voltage across them, causing rapid failure. To prevent this, something must limit the current into shorts before failure occurs.

Q16 and Q17 are high voltage transistors connected to a ground-referenced “mute bus”. The transistors are coupled with a common emitter resistor R65. When the Mute+ signal is lifted by more than two diode drops, Q16 and 17 turn on together. Note that the current through both of them is controlled by the same resistor R65, and therefore currents must be equal. Their collectors reach up and turn on Q14 and Q15, causing them to discharge their respective limiting capacitors C21 and C22.

The power supply overload signal from U17 pulls up on this bus until Q16 and 17 cut the amplifier current limits enough to stabilize the load on the power supply. The positive and negative cutbacks for each channel should be equal, but may vary a little due to component tolerance.

If the mute bus is pulled above 3V, the current in Q16 and 17 fully turns on Q14 and 15, resulting in virtually zero volts on C21 and 22. This clamps the drive voltages to the output sections to about 0.8V. This is insufficient to forward bias the two dropping diodes in the baker clamp, therefore the driver transistors are held completely off by their base resistors and no output current flows. Note that this cuts all power in the output transistors, even if quite hot, so it makes a good thermal shutdown mechanism.

Zobel filter

Since we couple the output voltage back to an early stage in the amplifier, to minimize overall distortion, we start our stability inspection at the output of the amplifier. The frequency roll-off, and hence phase lag, of the output transistors is affected by load impedance. We must also prevent an externally applied capacitance (such as cable capacitance) from increasing

the phase lag at the output, thus reaching the critical 180-degree mark. This is done by isolating the output from the load at very high frequencies with a small inductor, L1 (L2), and taking the negative feedback before this point. This "Zobel coil" is bypassed by a 5.6 ohm resistor R98, and shunted to ground by 5 ohms, R87, 90 and 93, in series with C28. The effect is to maintain a known load of about 5 ohms on the output of the amplifier at very high frequencies, while C28 has a high impedance at audio frequencies so power is not wasted in the resistors. These resistors do however, run hot if driven to full output above 20kHz.

Complementary current splitter

The basic current splitter starts with Q20 and Q21, which are complementary, high gain, high frequency, small-geometry devices. They are biased by D4 and D5, plus some additional thermal compensation circuitry which we will return to. As the output of op-amp U2:2 swings positive, Q20's current increases, and Q21's current decreases, eventually cutting off. The reverse occurs in the negative direction, resulting in "mirror image" currents in the two transistors. The magnitude of the current is controlled by the voltage across their emitter resistors, R70 and 71, which tracks the input voltage closely. The input voltage from the op-amp is clamped to about 3.25V peak by circuitry. This limits the voltage across R70 and 71 to a similar range, resulting in a well defined peak current. Its value is determined by the resistance of R70 or 71 in series with R80 which completes the path to ground. The resulting current limit is about 40 ma, which ultimately becomes the current which feeds the positive and negative output stages.

Thermal tracking

The NTC has a strong negative temperature co-efficient of about 4% per degree C. At 25C, it has its rated value of 10K. It is connected to the +15NTC bias rail by R41 and R101, which bring the "cold" voltage up to about 10V. This travels through R36, and creates a current in R37 which adds about 330mv to the voltage on bias diode D4. This voltage will decline about 70% from 25C to the heat sink limit of 95C. This adds the negative temperature coefficient required to produce stable idle current over the full temperature range. VR43 blends in a fixed current from R45, which sets the exact bias point. The signal for fan speed and thermal muting (see FAN SPEED CONTROL) is picked off by D3, and C15 bypasses audio frequencies coupled through R36, preventing audio activity from affecting the fan speed signal.

3.2.8 Step circuitry (models above 2kW only)

The positive and negative rails for the output sections have fixed voltages in the lower power models, but the higher power models have "step switches" which switch the rails from an intermediate supply voltage to the full voltage, only when needed for high output swings. This reduces the average voltage drop on the output devices and thus reduces waste heat. The step switches must operate exactly when needed, and need to switch at a controlled rate to avoid coupling "step glitches" to the output. Step switches Q41, 38 are 50A, 60V FET's; the on-resistance is very low and heating is minimal as long as the switch is not "teased" into the linear region. Assuring clean and positive on-off operation is therefore a major requirement. When the step switches are turned off, current is supplied from the middle rails by large, fast "step diodes" D22 and 21. These have snubber networks R115-C34 and R116-C35, which reduce a burst of interference caused by the sudden reversal of diode current during step switching.

Step threshold detection

We want to switch the step voltage about 10-12 volts before the output voltage actually reaches the intermediate rail. This allows for 4-5 volts total drop on the step diode, emitter resistors, and saturation drops, and avoids entering the "quasi saturation" region where high frequency performance suffers. To complicate matters, the step switch control circuitry has a turn-on delay of about 300-500ns, during which time the amplifier's output can travel up to 10V. Therefore, we need to switch a little sooner at very high frequencies.

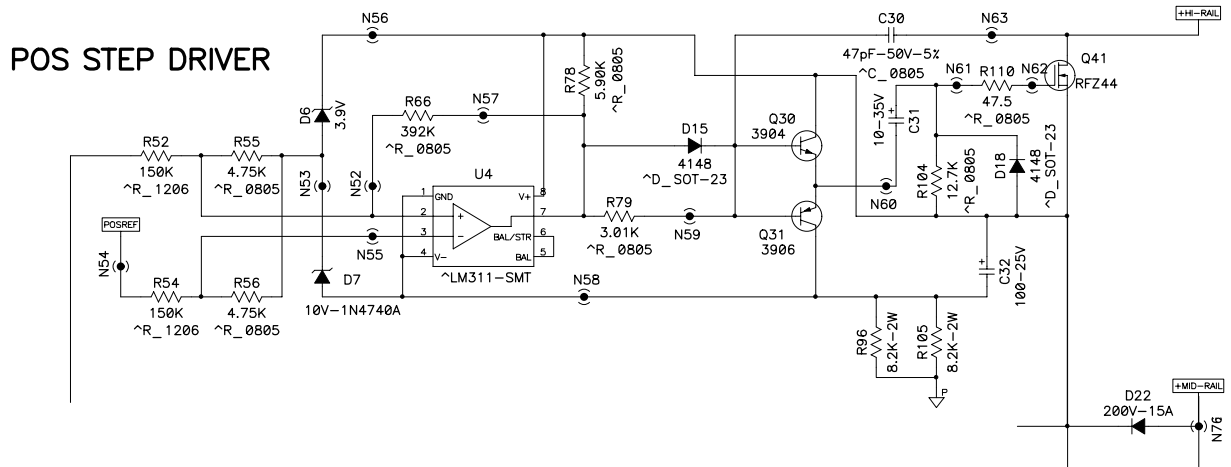
The high frequency speed-up is handled by dividing the amplifier output voltage by about 15% with R48, loaded by the parallel combination of R49 and R50. (The outputs of each of these resistors is used for other purposes as noted below). We then compare this "trigger voltage" to reference voltages PosRef and NegRef, which are established by parts, R257, 256, and D87 for PosRef, and R276, 277 and D88 for NegRef (these resistors also act as bleeders and current sources for certain small supplies). The values are set so that the reference voltages are also 15% lower than expected, so that the trigger voltage crosses the references when the amplifier voltage is 10-12 volts below the middle rails. Then we add C20 around R48, which boosts response above 10kHz, so that the triggering voltage reaches the references sooner at high frequencies. The actual step voltage then switches at the same output voltage, after its usual small delay. PosRef is bypassed by C84 and Negref is bypassed by C90, which eliminate short-term disturbances in the references which might cause step chattering.

Positive step threshold triggering

To control the step FET, matched resistive dividers R52, 55 and R54, 56 cause comparator U4 to go high when the amplifier trigger voltage exceeds PosRef. The “inboard” ends of both dividers are connected to the middle of a zener string D6 and D7, which sets the operating voltage for U4 and keeps the divider voltages within the input voltage range of U4. R66 provides a bit of positive feedback to the comparator, so that once a transition has started, it completes itself, and requires the trigger voltage to reverse by 3V before resetting. This prevents “chattering” around the trigger threshold.

Positive step gate drive

The output of U4 is pulled up by R76, which drives buffer transistor Q30 through D15. When U4 goes low (its normal condition), it drives complementary buffer transistor Q31 through R79. A small capacitor, C30, is coupled from the drain of the positive step FET to the input of the buffer transistors. Recalling that the entire positive Step driver moves up and down with the switched rail, the switched voltage appears across C30, which acts as an integrator and produces a defined on and off slope. The values of R76 and R79 are set so that the up slope and down slope are matched within 20%.

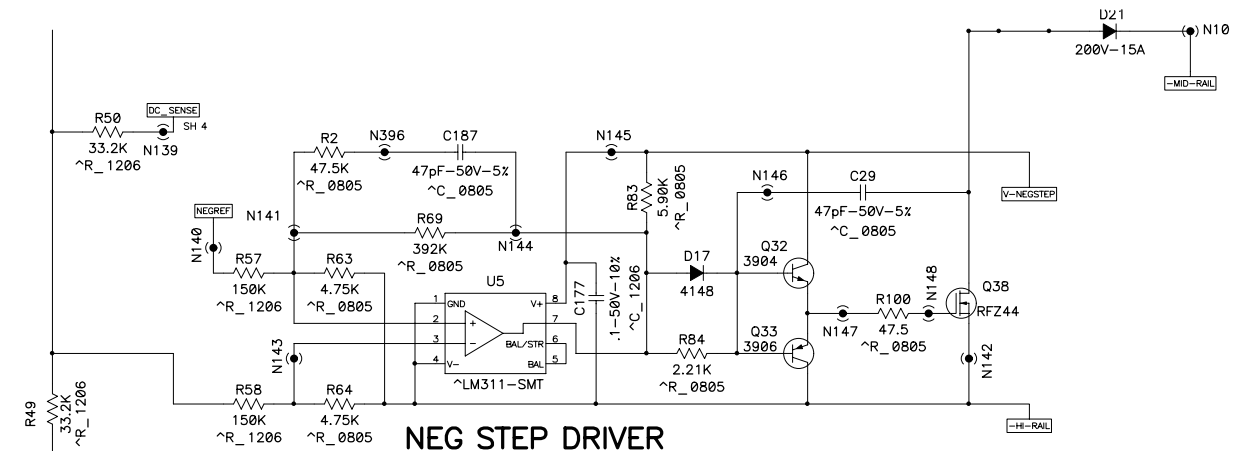


Negative step threshold triggering

Matched resistive dividers R57, 63 and R58, 64 cause comparator U5 to go high when the amplifier trigger voltage travels beyond NegRef. The “inboard” ends of both dividers are connected to the negative supply rail for this circuit, which keeps the divider voltages within the input voltage range of U5. R69 provides a bit of positive feedback to the comparator, assisted by C187, so that once a transition has started, it completes itself, and requires the trigger voltage to reverse by 3V before resetting. This prevents “chattering” around the trigger threshold.

Negative step gate drive

The output of U5 is pulled up by R83, which drives buffer transistor Q32 through D17. When U5 goes low (its normal condition), it drives complementary buffer transistor Q33 through R84. A small capacitor, C29, is coupled from the drain of the step FET to the input of the buffer transistors. When the FET turns on, the switched voltage appears across C29, which acts as an integrator and produces a defined on and off slope. The values of R83 and R84 are set so that the up slope and down slope are well matched.



3.2.9 Audio signal processing

Gain control

Returning to the main signal path, the front panel gain control is driven, through a low frequency blocking capacitor C7, from the output of the input section, U1. R15 loads C7 to set the exact sub-audio roll-off frequency. The pot itself, VR2, is a detented 11-step 10K linear pot. A loading resistor, R10, was selected so that the attenuation at the middle setting is 10dB, which yields fairly accurate 2dB steps over the top 7 clicks of the pot. The output of the pot travels via R14 to the input of U2:1. R14 provides a known impedance for the clip limiter to work against, and also allows C9 to produce a known frequency roll-off above 20kHz.

The Gain pots are located on a breakaway board which is reached by soldered ribbon cables. The pot send and ground lines surround the pot return, to shield it from interference.

Audio input filters

There are three choices of low frequency roll-off. The “wideband” option has a 5 Hz roll-off set by C7 and C11, forming a 2-pole roll-off below 5Hz. This passes all conceivable audio frequencies while filtering DC and deep sub-audio transients. The components surrounding U1:2 form a selectable, 2-pole, low-pass filter. Filter values are selected by the rear-panel DIP switches.

One low-pass filter uses matching C8 and C12, with grounded, loading resistor R26 and feedback resistor R25, resulting in a 2-pole filter with slightly boosted response at 100Hz. The other low-pass filter switches in C10, which triples the value of the first capacitive section, lowering the roll-off, and damping the response to a flat Butterworth characteristic. The filter is defeated by lifting R26. The full range signal now flows through R26 from R17, bypassing the entire capacitor section and delivering full range audio to U1:2.

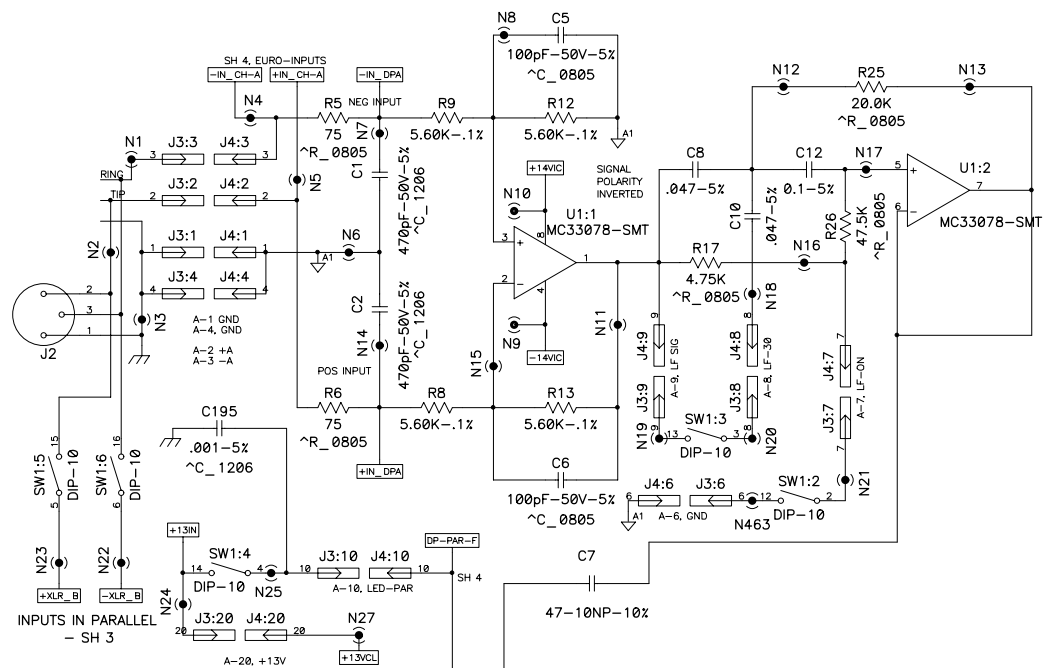
Balanced inputs

U1:1 forms a differential amplifier for the balanced input jacks (XLR, terminal block, or dataport), using matching 0.1% resistors for improved common-mode rejection. This simple design has a high common mode acceptance range (almost double the op-amp rail voltages), unity gain for good headroom, respectable noise floor, and resistive isolation of delicate input junctions. C5 and C6 provide additional attenuation for RF signals above the audio range. Being 5% parts, their matching is not nearly as good as the resistors, and may degrade common mode rejection slightly at 20kHz.

Additional RF rejection is provided by C1 and C2, which shunt R5 and R6 at MHz frequencies. Another soldered ribbon cable connects to the breakaway board carrying the input jacks and 10-pole DIP switch.

Bridge mono

When Q42 is high (Bridge Mono ACTIVE), these clamps are reversed. Q50 is turned on, which clamps the signal from Ch 2's pot, and eliminates any effect from this input. Meanwhile, Q46 and 48 are opened, and signal flows from Ch 1 via R122 and 137. This signal is the exact signal feeding the amplifier section of Channel 1. The signal is coupled through series resistors R122, R137, and R137 to U7:1's inverting input, and equal its feedback resistor R139, thus causing the output of U7:1 to be an exact inversion of U2:1. Each signal then feeds its respective amplifier section with equal-but-opposite signals. Note that Channel 1's filter settings, Gain control, and clip limiting are simply replicated by Channel 2 without further change.



3.2.10 Protection circuits

Clip limiter

The PLX uses a fairly “fast limiter” with approx 15 ms attack times and 50ms release times. The PLX limiter response has been tuned to preserve maximum volume (as close as possible to the unlimited, clipped volume) while alleviating the worst effects of clipping. It is not intended to eliminate clipping altogether; this requires a sophisticated limiter with much user interaction to optimize “peak power” without clipping.

U3, an LM13600, is a dual, variable-gain amplifier. It is placed around U2:1, the 5532 buffer following the Gain pot. The gain of U2:1 is set by ordinary feedback resistors R16 and R11. The output of U2 travels through attenuator R19, R21, to the negative input terminal of U3:1. The output of U3 is connected to the positive input of U2, whose impedance is set to 12.7K by R14. Because U3 inverts the signal, we have negative feedback around U2, even though we are connecting to the positive input. However U3 is cut off until it receives a positive control current into pin 1. When pin 1 current reaches its limit of about 1.25ma, U3 develops enough gain to cause up to 15dB of attenuation. R27 matches the input impedance of R21, and R20 biases an internal diode network that linearizes the input of the 13600 across both inputs.

When the amp clips, Q6 is driven, C13 is charged, and U3:1 is turned up, causing the signal at the input of U2:1 to be reduced. The signal gain settles at a degree of clipping which is just adequate to keep C13 moderately charged. The value of C13 and R18 set the main time constant for attack and release of limiting.

Amplifier turn-off muting

C86 rests at a voltage above 4V while running, except during thermal muting (see below). When the AC power is removed, or a shutdown command is received, the power supply stops switching. Switching activity is monitored by D51, which connects to the 15V switching waveform, which charges C80 to 15V. When switching stops, the Power LED current which flows through R252 quickly discharges C80, and via D55, discharges C86, which reverses the voltage on the comparator inputs and permits the MUTE voltage to go high again. This occurs within 1/4 second. The mute voltage remains high until the high voltage rail feeding R268 is drained, which of course removes all power to the outputs.

DC fault detection

DC faults are detected by integrating the output of each channel through R50 and R173, into a common non-polar capacitor C71 (Sheet 4). One end of C71 is grounded by Q87. The other end of C71 averages audio frequencies to zero, but responds to DC offsets (in either channel) exceeding about 0.1 second. R242 eliminates stray voltages which collect on C71 during amplifier muting.

Thermal muting

As previously noted, each channel has an NTC (R30, R155) which is embedded in the heat sink and whose voltage declines with increasing temperature. The voltage ranges from about 10V at 25C to about 3V at full 100C temperature. The voltages are combined via D3 (sh 1) and D28 (sh 2) to NTCBUS which is coupled to Q88 (sh 3). Since the diodes pull down, the hotter of the two sensors pulls down on Q88, which therefore measures the hottest channel.

As Q88 is pulled closer to ground, the voltage at R258-259 follows it. This reduces the voltage feeding R260 and C86. When this voltage falls below the 4V reference set by R261-262, the comparator reverses, the MUTE bus goes high, and R263 provides a bit of positive feedback so the thermal voltage has to reverse a bit to come out of muting.

Fan speed circuit

Q88's collector current is used to control the fan speed as a function of temperature. If you note that the voltage formed by the divider R258-259 rests at about 9V, you will see that the NTC thermal voltages must drop below about 7.5V (9V minus two junction drops) before Q88 begins to draw current from R258-259. Therefore, no collector current is supplied by Q88 until the NTC heats up to about 50C. Above this point, Q88's current increases steadily, which is used to increase the fan speed.

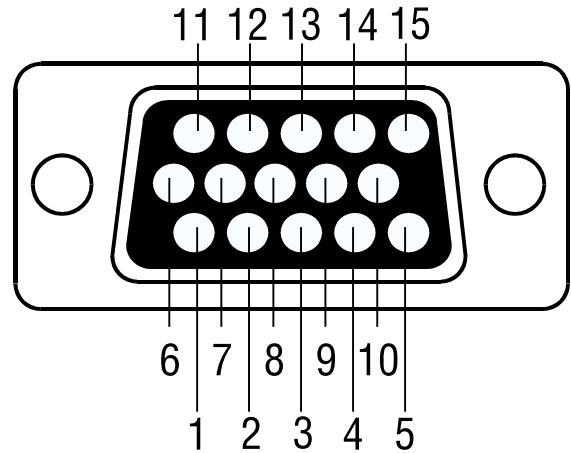
The fan voltage is controlled by Q91, driven by Q89, with feedback via Q90. The voltage present on the Power LED is used as an idle-speed reference, and goes via R253 into Q89's base, which drives Q91 and tends to increase fan voltage. As voltage increases, Q90 conducts and opposes this voltage, resulting in negative feedback. The values of R271, 272, 266 and 253 are chosen so the low-temperature fan voltage settles at about 11V. As Q88 responds to increasing heat sink temperature, it adds current at the base of Q89, which gradually drives the fan voltage higher. At full speed, Q91 is fully saturated and the fan receives the full 30V of the auxiliary supply. C85 provides capacitive stabilization to the closed loop response, and D89 acts as a reservoir to absorb current spikes from the fan, whose “brushless motor” is internally driven by switching transistors.

3.2.11 Dataport connector and monitoring signals

The DataPort is a QSC-specific connector scheme that passes low voltage (line level) signals to and from external monitoring devices such as the DCP and Q-Sys systems. The DataPort may also host a plug-in accessory that receives power from the +15 V line and sends processed signals to the amplifier. In brief:

- Vmon-A and Vmon-B represent the output voltage, scaled down 50:1 (100 V at the speaker = 2 V at the Vmon output). DC voltages riding under these signals show the state of the bridge/parallel and gain sensitivity switches.
- Imon-A and Imon-B represent the output current, scaled to approx 50 A = 2 V. DC voltages riding under these signals represent temperature information for each channel.
- Clip-A and Clip-B rise to 4.2 V during clipping and muting, and to 1.7 V during limiting.
- The “IDR” line has a resistor and diode combination that is unique to this model, allowing remote identification.
- The +15 V DC line is fused at 1 A by surface mount fuse F4.
- “Stby” carries a voltage representing the main rails, scaled to about +12 V peak. Pulling this line to ground will shut down the main power supply via the STBY-LO bus.

| Pin | Signal Description |
|-----|------------------------------|
| 1 | Ch. 1 Minus (-) Input Signal |
| 2 | AC Standby Control |
| 3 | V- MON Ch. 1 |
| 4 | I- MON Ch. 1 |
| 5 | Clip/Protect Ch. 1 |
| 6 | Hard Ground |
| 7 | Ch. 1 Plus (+) Input Signal |
| 8 | Ch. 2 Plus (+) Input Signal |
| 9 | +15V from Amplifier |
| 10 | Data Reference Ground |
| 11 | Ch. 2 Minus (-) Input Signal |
| 12 | Amplifier IDR (Model ID) |
| 13 | V- MON Ch. 2 |
| 14 | I- MON Ch. 2 |
| 15 | Clip/Protect Ch. 2 |



4. Testing

4.1 Requirements

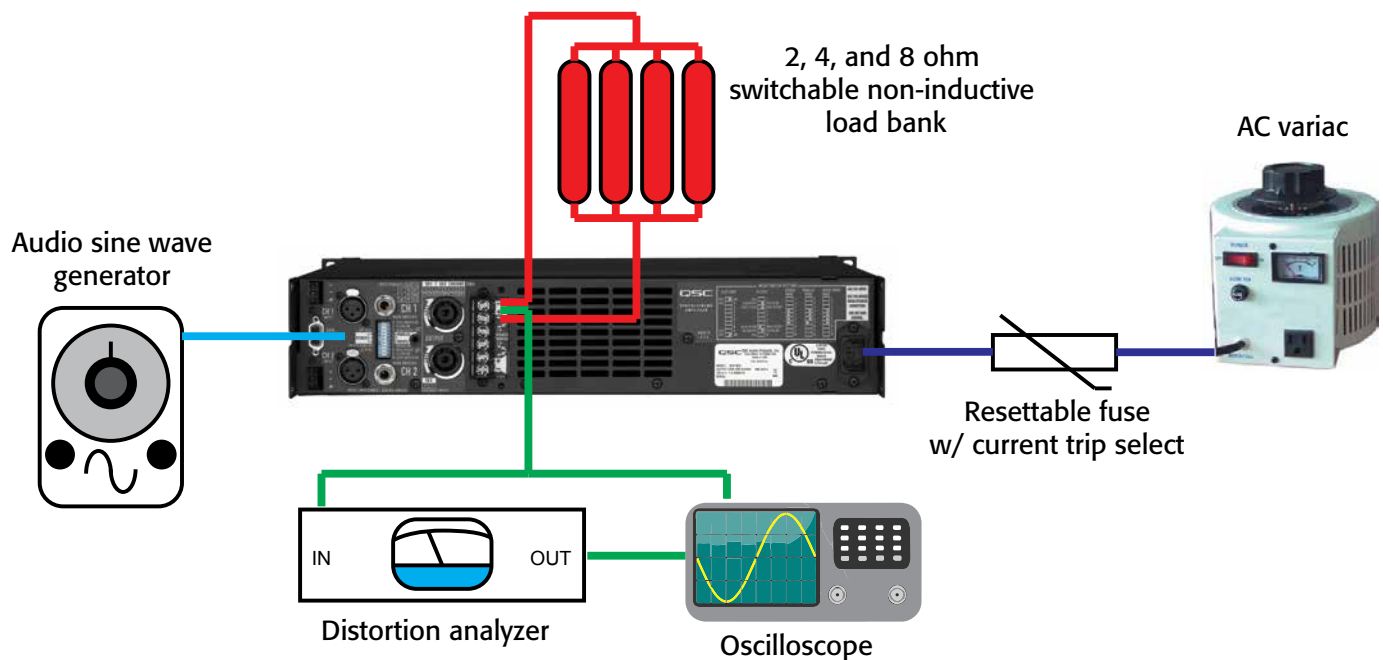
Hardware

- Distortion analyzer capable of 0.01% THD+N (Audio Precision preferred)
- High power low-impedance load bank (8 Ω , 4 Ω , & 2 Ω capable)
- Audio function generator (pink/white noise and sine wave capable)
- Digital multimeter (DMM)
- 20Mhz or greater oscilloscope
- Variac (0-140 VAC, 30-40 A)

4.2 Setup

There are many potential setup methods for amplifier testing. Please use the recommended setup below.

1. Connect an 8 Ω resistive test load to the output terminals of the amplifier.
2. Make sure Mode Switches 1 - 10 are in the default position (1 on, 10 on, all others off).
3. Connect a distortion analyzer with a resolution of 0.01%, 20-20kHz (or better) to the output terminals of the amplifier. Enable the 80kHz low pass filter on the distortion analyzer.
4. Connect a dual-channel oscilloscope to the following test points: Ch.1 - a 10X (vertical sensitivity - 2V/cm) scope probe to the channel speaker output. Ch.2 - a 1X scope probe (vertical sensitivity - 0.1V/cm) to the distortion analyzer output.
5. Set amp gain pots fully clockwise and turn on power switch.
6. Plug the amplifier into a variac and set up an AC line current monitor.



4.3 Test procedures

Step 1: Power up, mute delay

1. Slowly raise the variac voltage and watch for excessive current draw (line current greater than 0.5A for 120V units or line current greater than 0.25A for 230V units).
2. Verify that the fan is operating at low speed.
3. Turn the power switch off and on a few times to verify the 3 second power-up muting delay.

Step 2: Channel output

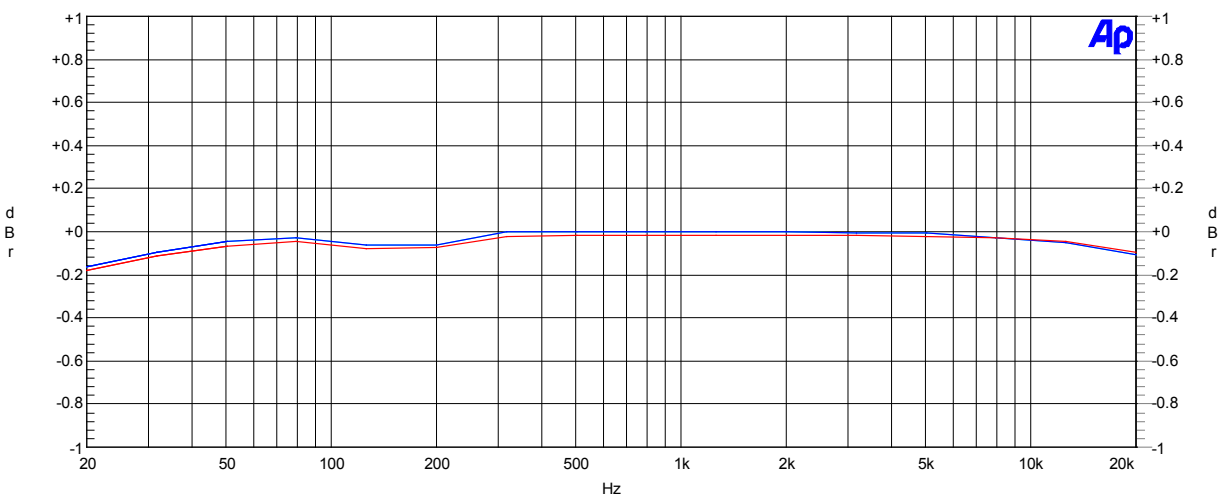
1. Connect the output of the audio sine wave generator to the input terminals of the amplifier. On the generator, select a sine wave with an output voltage of 1.95 Vrms and frequency of 1 kHz.
2. Look for amplified signal on the scope for channel 1. Switch the input signal and scope to channel 2 and repeat output test.
3. Rotate the gain pots back and forth. Check for noisy or contaminated gain pots by observing the general instability on the distortion waveform while adjusting the gain control levels.
4. Enable/connect the 8 Ω load and confirm that this amplifier is producing it's rated output power at 1 kHz just below the point of clipping. Check both channels.

Step 3: Bridge mode

1. Turn the power switch off.
2. Set Mode Switch #7 in the on position. The gain control, limiter, and filter switch positions on CH2 are disabled with Mode Switch #7 on.
3. Set load to both red output binding posts (CH1 positive and CH2 negative).
4. Apply a 3.1 Vrms / 1 kHz sine wave input to channel 1 of the amplifier. Check the power and verify that the output does not immediately collapse. Check for the rated bridge power into 8 Ω.
5. Turn power off. Place the amplifier into stereo mode (turn off mode switch #7) and set load on output bindings posts back to normal.

Step 4: Frequency response

1. Set the load (8 Ω) and scale the input generator to gain 1 watt of power from the amplifier on each channel. Gain controls on the amplifier should be fully up.
2. Check frequency response from 20 Hz to 20 kHz (+/- 0.2 dBr) by sweeping random frequencies between these extremes. This is done by verifying the same voltage amplitude at each



| Sweep | Trace | Color | Line Style | Thick | Data | Axis | Comment |
|-------|-------|-------|------------|-------|-------------|-------|---------|
| 1 | 2 | Blue | Solid | 1 | Anr.Level A | Right | |
| 1 | 3 | Red | Solid | 1 | Anr.Level B | Right | |

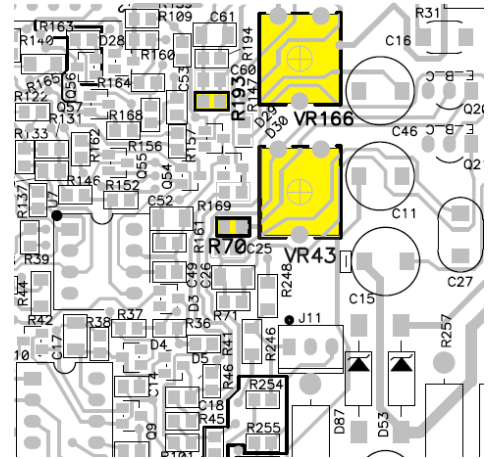
Step 5: Bias

Adjusting the bias is an important step for amplifier stability. The bias can be calibrated in two different ways. QSC recommends the more accurate way, which is using a distortion analyzer to adjust the crossover spike.

1. Let the amplifier cool down to room temperature.

Calibrating bias using a distortion analyzer (more accurate, recommended)

2. With an input amplitude of 195 mVrms increase the input frequency to 20 kHz. Reduce the input signal 20 dB (80%) from full output. Adjust the crossover trimpot VR43 (CH1) and VR166 (CH2) for about a 400 mVpk-pk crossover spike protruding from the noise trace on the oscilloscope. It will be necessary to have the oscilloscope measure unfiltered distortion from the amplifier in order to see the crossover spike. It is necessary to disable the 80kHz low-pass filter on the distortion analyzer for this test. Further trim so that the total distortion for that channel is less than 0.1% THD+N.



Calibrating bias using a DMM (less accurate, not recommended)

3. At idle, adjust VR43 and VR166 while measuring the voltage across resistors R70 and R193 respectively until the DC voltage in the table below has been achieved.

| Model | CH1 - Adjust VR43 (Measure across R70) | CH2 - Adjust VR166 (Measure across R193) | R Value |
|----------|--|--|--------------|
| DCA 1222 | 439 mVdc | 437 mVdc | 100 Ω |
| DCA 1622 | 427 mVdc | 425 mVdc | 100 Ω |
| DCA 2422 | 445 mVdc | 430 mVdc | 75 Ω |
| DCA 3022 | 443 mVdc | 440 mVdc | 75 Ω |
| DCA 3422 | 435 mVdc | 432 mVdc | 75 Ω |

4. With the trim settings achieved, and with no signal plugged into the amplifier and with an 8 Ω load across the output terminals, verify that the AC idle current from the AC service is no more than 0.8 A.
5. Let the amplifier cool down and check channel 2.

Step 6: Short circuit current

1. Apply a 2 Vrms sine wave (1 kHz) input signal to both channels of the amplifier. Ensure that power is on and that the gain controls are fully up.
2. While the amplifier is producing power into the loads, apply a short to the output binding posts of each channel (apply a jumper between the red and black binding posts of each channel). Once this is done, combined AC line current draw for both channels should be no greater than 13 A (120V models) or 6.5 A (230V models). Current may be lower if AC line voltage is lower.
3. Remove the short from each channel and verify that the channels recover into the load. The output should not experience any hang up and a full sine wave should be present just as it was before a short was applied for this test.
4. If the amplifier does not pass any of the above steps, troubleshoot the current limit section of the amplifier.

Step 7: Power versus distortion test

1. Check to ensure that both channels will produce rated power at 20Hz, 2KHz, and 20kHz into the load.
2. While verifying rated power, check that at all frequencies the distortion measurement is less than or equal to 0.03% THD.

Step 8: Thermal test

1. Set input frequency to 1 KHz and short both channels while they are producing power into a load.
2. Apply a short to the output of each channel.
3. AC line current draw should be about 11–13.5 amperes for both channels. As the amplifier gets hot, there will be some current drift upwards and the fan speed will increase. This is not a problem as long as the case temperature on the output transistors does not exceed 105 degrees C.
4. Verify that the NTC circuit causes thermal shutdown after an extended period.
5. When thermal shutdown occurs, verify AC idle current of less than 0.8 amperes.

Step 10: Output noise

1. Turn the amplifier gain controls fully clockwise. Set a 1 kHz 1.94 Vrms sine wave input signal. Note the output level at full power just below clipping. Adjust gain if needed.
2. Remove the input signal connector from the amplifier and measure the residual noise level produced into the load by the amplifier. The noise signal should be 107 dB down from the full output power point measured. A signal to noise ratio should be better than or equal to 107 dB. Check both channels.

Step 11: Final check

This completes the amplifier test procedure for this model. Inspect the amplifier for mechanical defects. Inspect the solder connections. Reassemble the amplifier and verify the amplifier's operation before returning the product to its owner.

5. Troubleshooting guide

5.1 General tips and tricks

Powering an amplifier module outside of chassis

DCA amplifier PCBs can be powered outside of their chassis without any additional grounding. This is especially useful for performing quick functional amplifier tests before placing the PCB back into the chassis. Loaded power tests can be performed, but is not recommended for sustained periods of time. To power up the PCB, connect a spare AC switch across the red/black AC wires. Connect an AC variac across to J19 (AC LINE) and J20 (AC NEUTRAL). See Figure 5.1.

Warning: Extremely high energy potential (up to 400 Vdc and up to 230 Vac) exist on the PCB. The bare heatsink in the amplifier section carries the speaker output voltage. Always use safety glasses and be very careful about what you touch when probing for voltages. It's highly recommended to use a fast-acting adjustable current trip device inline with the AC source.

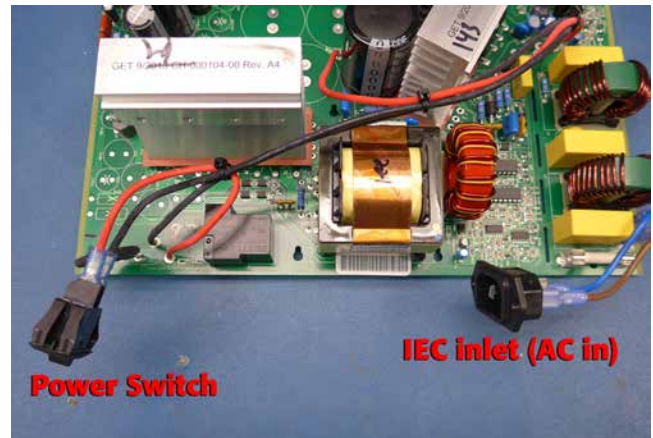


Figure 5.1 - Testing the amplifier module outside of chassis

Quickly check all output transistors and driver transistor for shorts

Because high power output transistors are placed in banks with the bases and collectors of each transistor tied together, measuring the emitter-collector and base-collector junction of one transistor gives us the impedance of the entire bank. This means that a single transistor cannot be measured in-circuit - it must be removed. This also means that when an output transistor is shorted (in the event of a failure) across any two pins, the entire bank of transistor will measure like a short.

We can quickly measure the collector-emitter junction of each bank of output transistors from the top of the PCB by simply removing the fan assembly and gaining access to the emitter leads on one of the output transistors in the bank. This allows us to see if an output transistor bank has failed. Using a DMM, perform the four measurements as seen in Figure 5.2 and Figure 5.3 to look for shorts on output transistors.

If a shorted transistor bank is found

Often only one transistor in the failed bank is shorted. We don't have to remove every single output transistor in the failed bank to find the shorted one. Measure the resistance of all of emitter-collector and base-collector junctions of the transistors in the failed bank. An outlying transistor that has the lowest resistance compared with the others in the same junction is most likely the shorted one. Remove the transistor from the PCB and see if the short in the transistor bank has cleared.

Note: If more than one transistor is shorted, the short will not clear after removing just one output transistor. Driver transistors often fail at the same time as the output transistors so they should be checked as well.



Figure 5.2 - Quick output transistor check (Ch2-)

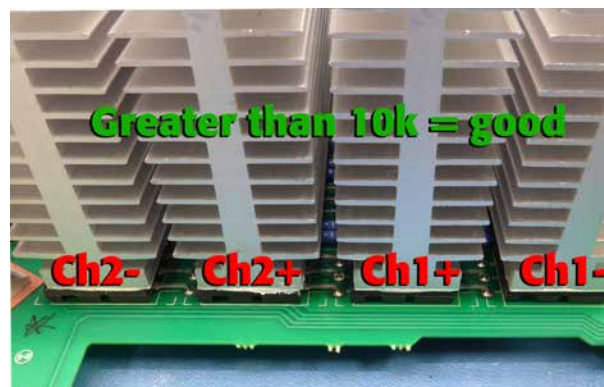


Figure 5.3 - Amplifier output and heatsink diagram

PRI_LO - an important reference

The PLC's power supply is referenced to PRI_LO, which is NOT CHASSIS GROUND. When taking measurements in the PSU circuit, the recommended location to reference PRI_LO is on pin4 of bridge rectifier BR1. The bridge rectifier has a large lead that we can easily connect an alligator clip or hook to



Caution: Never use an oscilloscope probe that is connected to earth ground to view a signal that uses PRI_LO as a reference! The probe's ground must be floating to view the waveform.



Figure 5.4 - PRI_LO best location

Housekeeping (bias) supply test with low AC

The main voltages generated by the housekeeping (bias) supply can be measured safely at low AC voltage before the main PSU starts switching. If the main housekeeping supply voltages are not present, then we should never attempt to power up the unit at the amplifiers rated AC voltage (120 or 230 Vac).

For 120V amplifiers, adjust the variac to 35 Vac. For 230V amplifiers, adjust the variac to 70 Vac. Make the measurements below.

| Measurement (with reference to PRI_LO only!) | Signal name | Approximate Voltage (DC) |
|--|-------------|--|
| U16, pin4 | CONTROL | 5.7 V |
| BR1, pin1 | PRI_HI | 93 V |
| BR1, pin2 or pin3 | PRI_MID | 46.5 V |
| U19, pin3 | SYNC | 1.09 V Note: 220 kHz should also be measured on this pin. |
| U19, pin10 | SHTDWN | 3.85 V |
| U19, pin15 | +16V | 16.8 V |
| U19, pin16 | +VREF | 5.1 V |

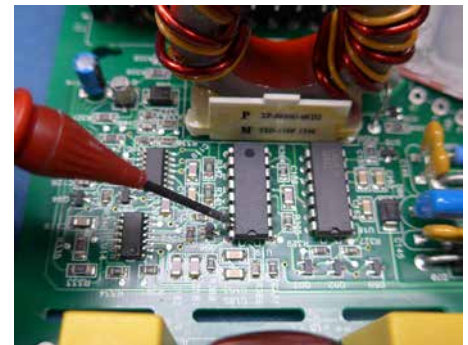


Figure 5.5 - Making measurements at low AC voltage. Always reference PRI_LO

Note: At low AC voltage, the green power LED should be dimly lit.

Main PSU test without IGBTs installed

Because of the nature of switch-mode power supplies, control and gate drive timing must be accurate and without error. After a power supply failure occurs, many components are often replaced. If a component was not installed correctly or further damage has happened beyond the power supply, it's important to fix all of these issues before attempting to start the PSU.

IGBTs are high current, high power devices. Attempting to power up with these devices installed can cause further damage. Various measurements can be made with the IGBTs removed from the PCB. Many important power supply control voltages, and particularly the gate drive and PWM frequencies, can be measured with the IGBTs removed. If the measurements are okay, the IGBTs can be installed and the amplifier should be safe to start. Follow the steps below.

1. Allow at least 5 minutes for the large filter capacitors to discharge.
2. Desolder and remove IGBTs Q96 and Q97 from the PCB.
3. Using a variac, slowly increase the AC voltage to 35 Vac (120V models) or 70 Vac (230V models).
4. Verify all measurements in the table on "Housekeeping (bias) supply test with low AC" on page 24.
5. Slowly increase the AC voltage to 120 Vac (120V models) or 230 Vac (230V models).
6. Verify that relay K1 turns on. You should hear it click on.
7. Verify all measurements in the table below. If the measurements are okay, turn the amplifier off, allow at least 5 minutes for the large capacitors to discharge, and reinstall the IGBTs.

| Measurement (with reference to PRI_LO only!) | Signal name | Approximate Voltage (DC) | Frequency (with DMM or oscilloscope) |
|--|-------------|--------------------------|--------------------------------------|
| U19, pin3 | SYNC | 1.09 | 210–220 kHz |
| U19, pin10 | SHTDWN | 0 | n/a |
| U19, pin11 | OUTA | 7.25 | 105–110 kHz |
| U19, pin14 | OUTB | 7.25 | 105–110 kHz |
| U19, pin15 | +16V | 16.8 | n/a |
| U19, pin16 | +VREF | 5.1 | n/a |
| Q97, gate | | 7.0 | 105–110 kHz |
| Q96, gate | | 18.8 | Not measureable due to bootstrapping |

Note: Always check secondary side supply diodes and amplifier output transistors/drivers. If these components are shorted, a large strain can be placed on the power supply when it's powered on.

Disconnecting the secondary side from the main PSU

It can be beneficial to isolate the main PSU by disconnecting the secondary side. For example, in the event of a DC fault in the amplifier section, we may want to verify that the main PSU is working fine on its own since during a DC fault the amplifier continually resets itself to protect. Disconnecting the secondary side from the main PSU is achievable by lifting one lead on capacitor C144, which effectively creates an open circuit so that current can't flow through the primary side of transformer T2.

1. Allow at least 5 minutes for the large filter capacitors to discharge.
2. Remove one lead from capacitor C144.
3. Verify that the main power supply functions fine.

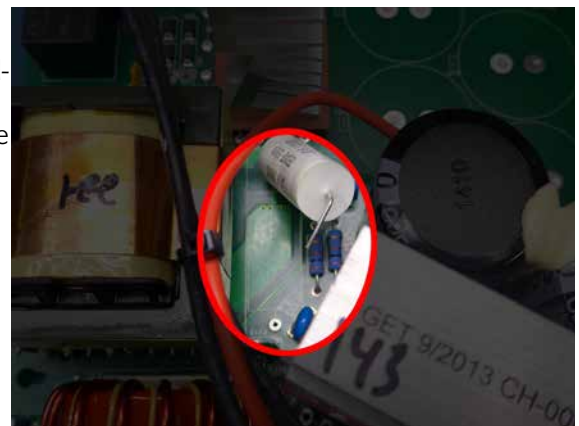


Figure 5.6 - Lifting one leg on C144 to disconnect the secondary side from the main PSU

5.2 Intermittent signal from gain pots

DCA series amplifiers were manufactured for 12 years before the gain pot was changed to an IP-rated sealed potentiometer. Only the new gain pot is available and is recommended to replace with every DCA in for service, regardless of failure.

Symptoms

- audio cuts in and out, mostly being relieved by turning or cleaning the gain pot

Failure verification

- gain potentiometer in Figure 5.7 is dirty, scratchy, or intermittent

Repair notes

- Always replace both gain pots if this failure is seen.
- The updated potentiometer (QSC p/n PT-310007-00) will fit in the same PCB footprint as the old potentiometer.
- The old hardware (nuts and washers) can be reused on the new gain pot.
- For each gain pot, one of the three solder pads on the PCB will take some time to re-flow. A higher temperature may be needed to desolder the old gain pot.
- More information available in service bulletin document PLC0017.



Figure 5.7 - New sealed gain pot (on the right)

5.3 Main PSU damage (IGBTs or flyback diodes blown)

Power supply damage is often visible when first opening the cover of the amplifier. Often the IGBTs or large diodes will crack from heavy current flow at the time of the failure.

Symptoms

- no power

Failure verification

- Q96 and Q97 shorted or destroyed
- D70 and D71 shorted, cracked, or destroyed

Repair notes

- Power supplies cannot always be repaired if there is too much damage. The power supply on the PLC platform can smoke, catch fire, and cause much damage to the PCB (see Figure 5.8). Do not repair the power supply if more than 2 traces are damaged, the PCB has a hole, or an extreme amount of black soot is on the board. It is recommended to perform a module swap in any of these scenarios.
- Check inrush filter R324 and AC mains fuse F1, which can fail due to high current flow after main PSU damage.
- Always use the PLC power supply restoration kit if possible (QSC p/n SG-000060-00). Replace all components listed in the kit, even if they do not appear to have failed.
- Warning:** When replacing components in the power supply, never blindly power-up at full AC voltage. Always perform the main PSU tests described in “Main PSU test without IGBTs installed” on page 25.
- Main PSU failure is often linked to over-current, which is caused by another failed circuit. Always check the secondary side supply diodes and amplifier output devices and driver transistors. See “Quickly check all output transistors and driver transistor for shorts” on page 23.
- After all preliminary tests have been verified, install the IGBTs last.
- When applying power with IGBTs installed, set current trip to approximately 6 amps (120V models) or 3 amps (230V models) to be safe.
- In DCA models manufactured after 2012 (0112xxxx and later), multiple failures have been seen where diodes D70 and D71 crack or split open, causing power supply failure. Read more about this in service bulletin PLC0019.

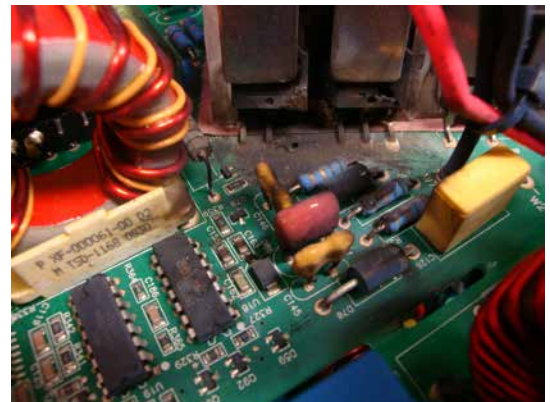


Figure 5.8 - Blown power supply - not repairable

5.4 Shorted output transistors in amplifier section

When output devices fail on the PLC platform of amplifiers it can cause the amplifier power to cycle off and on. It can also cause the power supply to fail (cascading effect). Shorted output transistors do not always fail in banks. Typically, only one output device will short and need to be replaced.

Symptoms

- no power, no audio
- turning off and on repeatedly (power cycling)

Failure verification

- Any output transistor (or driver transistor) shorted between any two pins of base, collector, or emitter
- Short found using output transistor quick check

Repair notes

- Output transistors are tied together in banks. Read about how to find a single shorted output transistor in “Quickly check all output transistors and driver transistor for shorts” on page 23.
- The associated driver transistor can fail along with the output transistor. Also, the driver transistor can fail alone.
- The resistor tied to the emitter of an output device, often called an emitter resistor, should always be checked for open circuit if an output device has failed.
- Other circuits that should be checked in discovery of a failed output transistor: main PSU, housekeeping supply, step circuit, amplifier current limit circuit



Figure 5.9 - Shorted output transistor under the heatsink (Ch2+ in this case)

5.5 Step circuit failure

Step circuitry failure only applies to DCA models stuffed with step MOSFETs: DCA 2422, DCA 3022, DCA 3422

Symptoms

- low power on a channel
- early clipping on the positive or negative side of the waveform

Failure verification

- Step circuit MOSFET shorted across any two pins of gate, drain, or source.

Repair notes

- The MOSFETs can easily be checked from the top-side of the PCB. Access to the leads of the MOSFET is available.
- If the MOSFETs are shorted, check MUR1520 diodes (D21, D22, D46, D47) for shorts.
- When investigating the problem, turn off the clip limiters from both channels (switches 1 and 10 on the back). If the clip limiters are on we will not be able to see early clipping on the positive or negative waveform because the amplifier attempts to keep the waveform symmetrical by limiting both sides equally.
- It's perfectly normal for only the step MOSFET to fail. The positive and negative step driving circuit are usually okay and don't fail.
- Because of the way the step MOSFETs and MUR1520 diodes are mounted to the heatsink, the leads can often break due to PCB flex.
- Other circuits that should be checked in discovery of a shorted MOSFET: amplifier output transistors

5.6 Leaky transistors in amplifier current limit circuit

Often referred to as the “3-pack” of transistors by QSC service technicians, these transistors can allow small amounts of current through, effectively causing early clipping and loss of power on a channel. The failure is usually associated with the positive, negative, or both sides of a channel. You can easily locate a failure by measuring the DC voltage across the bias capacitors.

Symptoms

- low power on a channel
- early clipping on the positive or negative side of the waveform (with no load)

Failure verification

- With the amplifier on and no signal applied, less than 5.5 Vdc across bias capacitor C21, C22, C56, or C57.

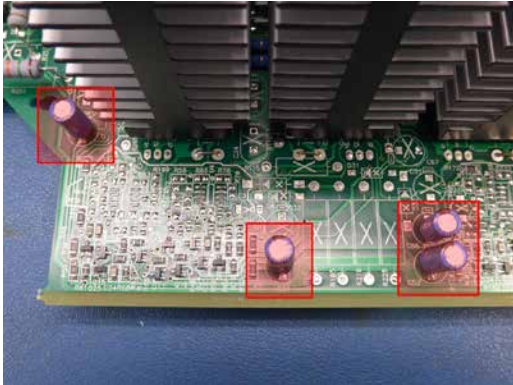


Figure 5.10 - Bias capacitors to check.

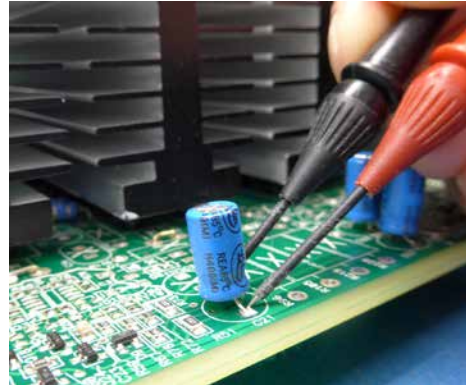


Figure 5.11 - Measuring the DC voltage

Repair notes

- The DC voltage measurement can be taken from the top of the PCB. Never take the measurement with signal applied. See Figure 5.11 for a measurement of one bias capacitor.
- Always replace all three transistors (PNP and NPN) if this failure is found. Use the table below as a reference. For example - if the DC voltage across capacitor C22 is less than 5.5 Vdc (a failure normally measures from 0 – 4.9 volts), then replace current limiting transistors Q23, Q15, and Q25.

| Section | Bias capacitor | Current limiting transistors (PNP, 3906) | Current limiting transistors (NPN, 3904) |
|---------------------|----------------|--|--|
| Channel 1, Positive | C21 | Q14, Q24 | Q18 |
| Channel 1, Negative | C22 | Q23 | Q15, Q25 |
| Channel 2, Positive | C56 | Q59, Q69 | Q63 |
| Channel 2, Negative | C57 | Q68 | Q60, Q70 |

- With a good amplifier, the voltages across the bias capacitors should all be similar, within approximately 200mV of each other.

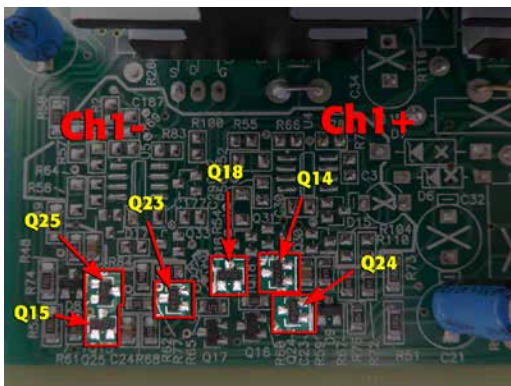


Figure 5.12 - Components to replace in Ch1

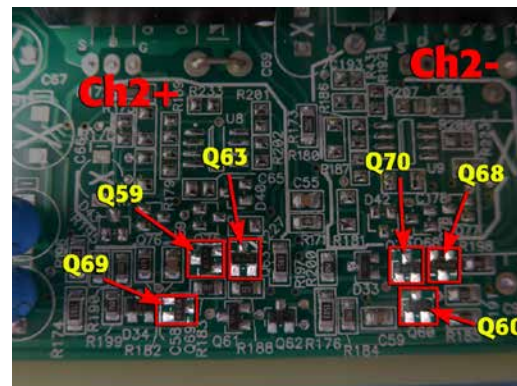


Figure 5.13 - Components to replace in Ch2

5.7 Weak capacitor C107 in PSU

In earlier models of the PLC platform, a weak capacitor C107 in the power supply circuit would cause the power supply to not start. The capacitor should measure at least 300V across it during normal operation. If the capacitor measures less than 300V, then it's leaking and affecting the AC detection circuit.

Symptoms

- green power LED is dimly lit and the amplifier does not turn on (relay K1 does not engage)

Failure verification

- less than 300 Vdc measured across capacitor C107

Repair notes

- Replace capacitor C107 with a brand new one. If C107 was the issue, the amplifier will start normally.
- A new capacitor should measure over 300 Vdc across its leads at full AC input voltage (120V or 230V)

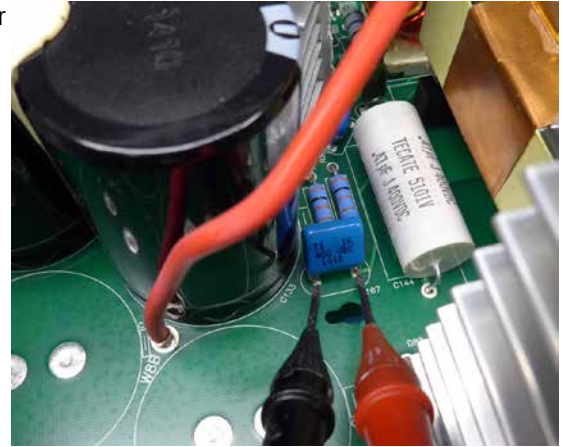


Figure 5.14 - Measuring C107 for 300 Vdc

5.8 Input stage damage

This type of failure normally results in a distorted waveform near the input stage of the amplifier and before the gain potentiometer stage. Sometimes no waveform is seen at all. The amplifier can also cycle off and on when an active signal is present. Tracing where the waveform starts to distort can easily be done with an oscilloscope, test probe, and low-distortion audio sine wave generator. Voltage spikes or lightning damage on the input line normally cause this failure to occur.

Symptoms

- no audio, low-level audio, or distorted audio
- amplifier cycling off and on

Failure verification

- resistors in input stage damaged (see table below)

Repair notes

- The most common input stage components to fail are in the table below.

| Reference | Description | QSC Part # |
|--------------------|-----------------------|--------------|
| R5, R6, R123, R124 | 75Ω 1% 1/10W 0805 | RE-007502-30 |
| R9, R8, R129, R130 | 5.62KΩ .1% 1/10W 0805 | RE-156202-30 |
| U1, U6 | OPAMP, DUAL, MC33078 | IC-000048-30 |

- Remove the XLR/switch assembly and euroblock/dataport assembly from the rear chassis to gain access to the resistors and opamps in the input stage.
- Turn the gain potentiometers all the way down (rotate counter-clockwise). Set the dip switches to normal stereo mode (1 and 10 on, everything else off). Turn the amplifier on. Input a 1 Vrms sine wave @ 1 kHz to channel 1 or channel 2.
- Using a DMM in Volts-AC mode, measure 0.98 Vrms on pin7 of op-amp U1 (CH1) and U6 (CH2). This is the last node that the signal hits before being adjusted by the potentiometers and is usually where an input stage failure is obvious.

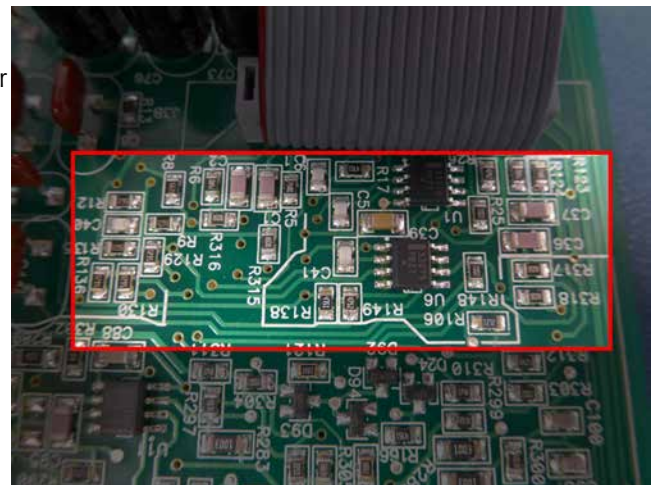


Figure 5.15 - The resistors and op-amps in the input section can often fail with voltage spikes or lightning damage.

5.9 Protect signal transistors shorted

Two transistors tied to the PROTECT bus can short out when a non-QSC dataport cable (often a VGA cable) is plugged into the dataport on the back of the amplifier.

Symptoms

- red CLIP led illuminated permanently on Ch1 or Ch2
- stuck in protect mode - amplifier won't complete boot sequence

Failure verification

- Transistor Q13 (Ch1) or Q58 (Ch2) shorted between any two pins of base, collector, or emitter.

Repair notes

- If a short is found on one transistor, replace both Q13 and Q58, just in case.
- A shorted transistor can cascade down to other components and short them too. Check Q12, D89, and Q57.
- This failure is only linked to misuse (connecting a non-QSC dataport cable to the HD-15 jack). The failure doesn't naturally occur in normal operation.

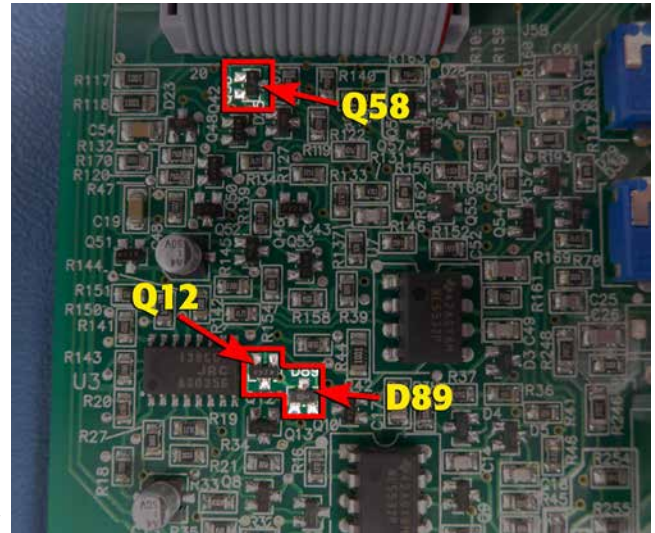


Figure 5.16 - Check these components tied to the protect bus.

5.10 Zobel resistors burned

High frequency oscillations can cause the zobel resistors to burn. This most often occurs when the speaker wiring (either at the speaker's input or at the amplifier's output terminals) is loose.

Symptoms

- low output or no output from a channel

Failure verification

- zobel resistors burned (see location in Figure 5.17)

Repair notes

- The PCB is not always repairable. Closely inspect the traces and holes/vias underneath the burned resistors.
- If the PCB is repairable, replace all zobel resistors on the burned channel.



Figure 5.17 - Zobel resistors (pictured are okay) could fail due to oscillations or loose speaker wiring.

6. Service updates

Please review the table below for all updates to the DCA series amplifiers. For more information regarding these updates, please read the service bulletin associated with the issue.

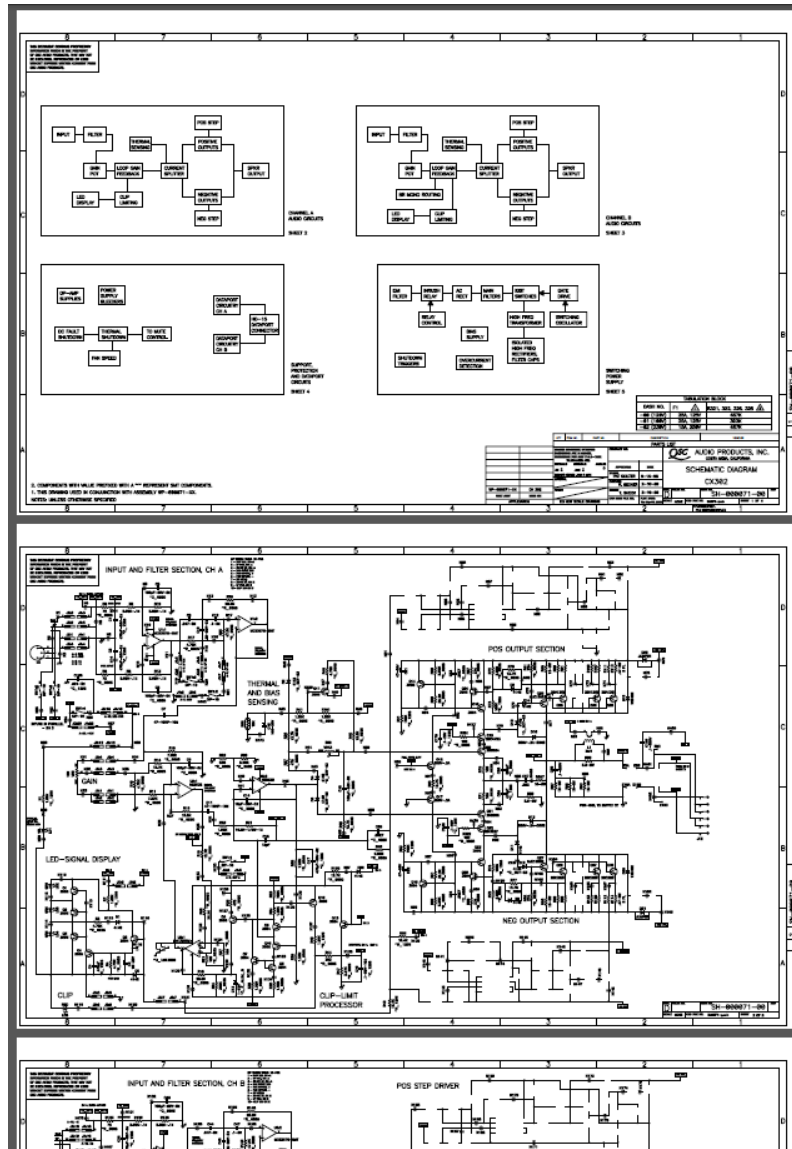
| Issue date | Production Range (serial #) | Short Description | Service Bulletin # (for more information) |
|------------|-----------------------------|--|---|
| Sept. 1999 | 0498xxxx–0699xxxx | PLX, CX, and DCA amplifiers produced between April 1998 and June 1999 have internal ribbon cables that do not have gastight connections at each pin-to-conductor junction within the headers. As a result, the conductors may shift or move out of position over time, affecting the transfer of audio signals between circuit board assemblies. | PLC0001 |
| Sept. 1999 | 0498xxxx–1099xxxx | PLX, CX, and DCA amplifiers produced from 04/98 through 10/99 have several resistors located on the main printed circuit board (PCB) that may radiate or conduct too much heat. Left uncorrected, the resistors may eventually dissipate enough heat to damage themselves or the PCB underneath them. | PLC0002 |
| Nov. 1999 | 1098xxxx-1099xxxx | CX and DCA amplifiers produced between October 1998 and October 1999 have a temperature-controlled variable-speed fan with a speed range that extends to zero when the amplifier is cool. The fan circuitry should be modified as described in this bulletin so that a minimum flow of cooling air is maintained even at idle. | PLC0003 |
| Oct. 2012 | 1012xxxx and older | <p>The original potentiometers used as gain controls in PowerLight 3, two- and four-channel CX, and 2- and 4-channel DCA amplifiers have been discontinued, and QSC has superseded them with improved pots. Instead of PT-310004-00 and PT-310005-00, please use PT-310007-00 and PT-310008-00, respectively.</p> <p>Although they are smaller, the new pots are exact replacements for the old ones, with the same mounting and soldering footprints, detents (21), and taper. The new ones also are sealed, so they should be less vulnerable to contamination by dust and dirt.</p> | PLC0017 |
| Feb. 2014 | 0711xxxx–1213xxxx | <p>A different diode supplier was used in some PLC amplifier models for flyback diodes D70 and D71 in the switch mode power supply. These diodes had a low reverse voltage and failed after some time.</p> <p>These failures will usually cause catastrophic damage to the insulated gate bipolar transistors (IGBTs) that do the actual high-frequency switching that produces the >100 kHz AC for the power transformers. The damage will almost always extend also to the components that control, generate, and deliver the drive pulses to the IGBT gates.</p> | PLC0019 |

7. Schematics

To reduce the number of pages in this service manual, schematics are not included. All schematics are available for download from our website, www.QSCservice.com.

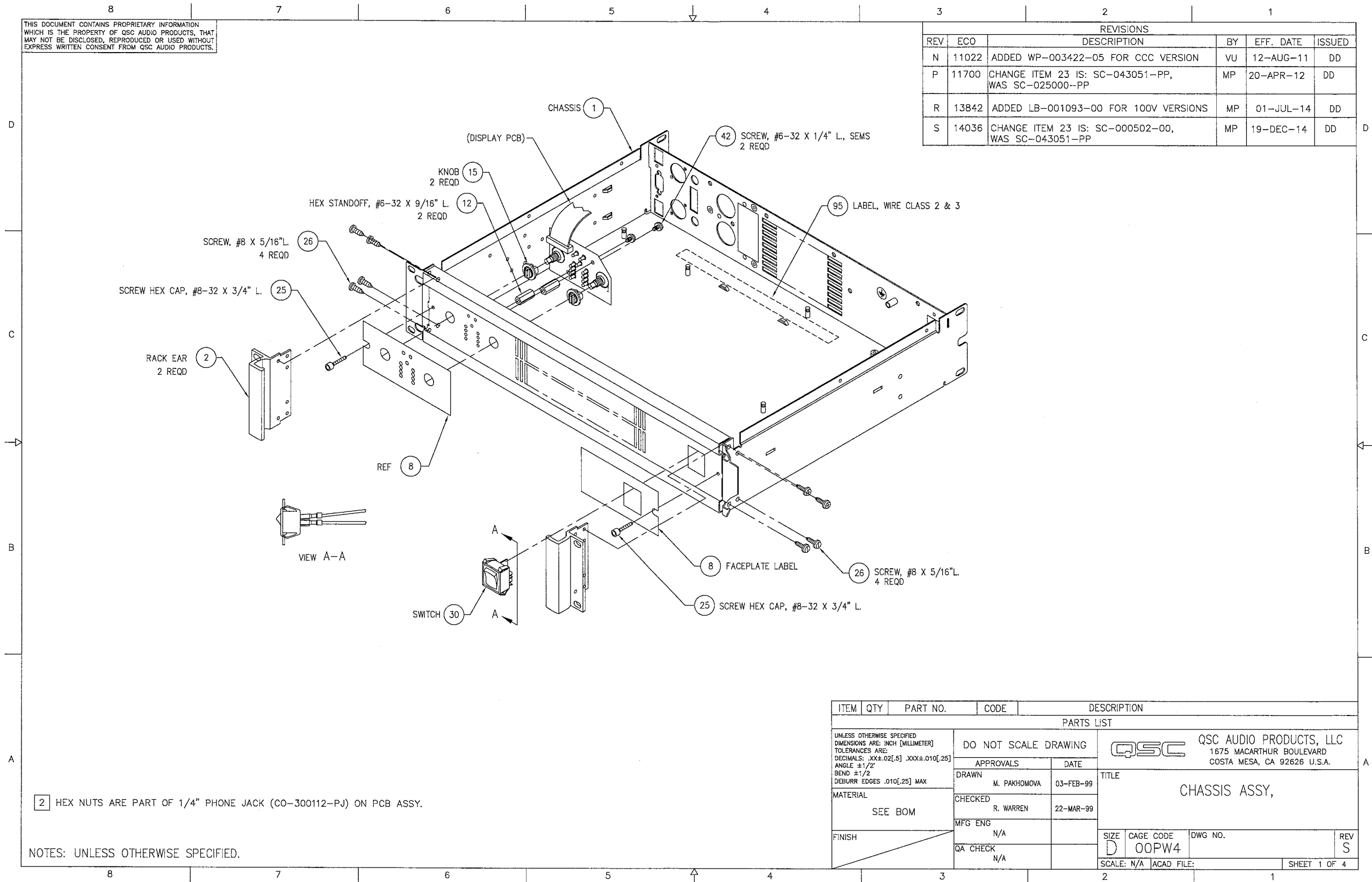
Note: You must be logged into the QSCservice website to access service material. If you do not have a login and are an authorized service center, please contact QSC for more information regarding website registration.

To locate part numbers of a component in the schematic, note the reference designator (e.g., R144, Q96, U14) in the schematic and lookup the reference designator in this service manual under "9. Replacement parts" on page 37 to retrieve the QSC part number.

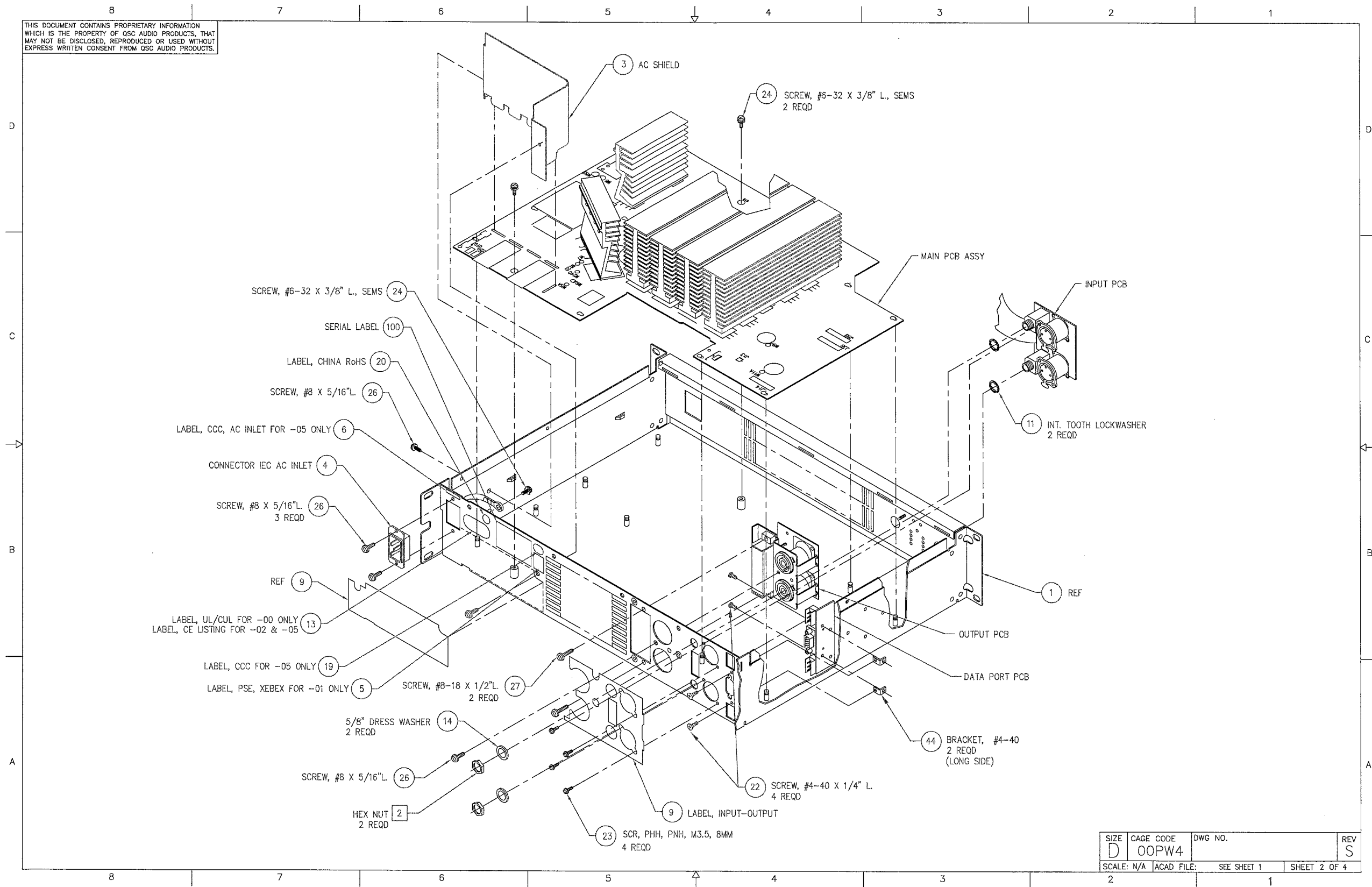


8. Assembly drawings

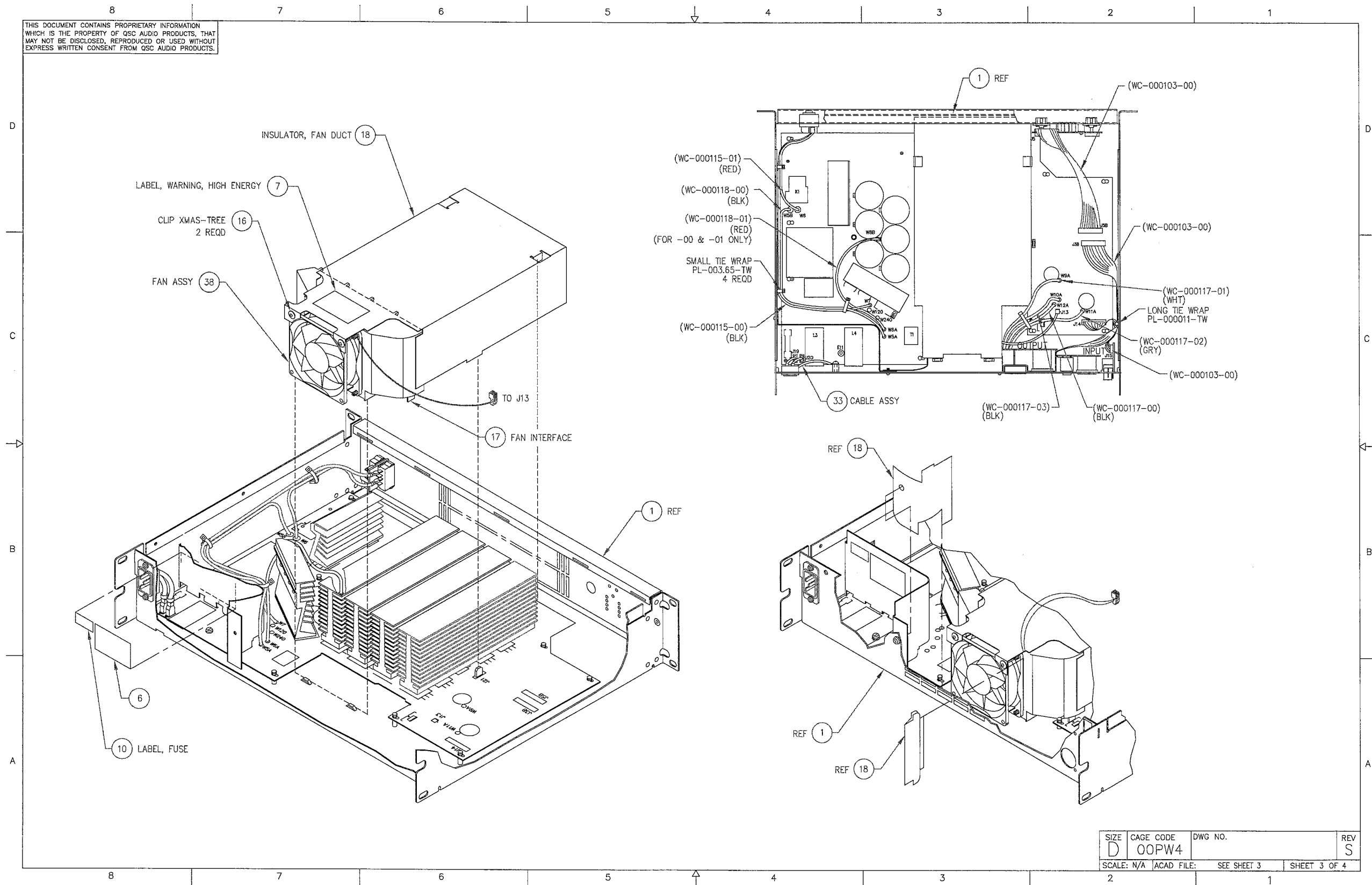
8.1 DCA 2-CH chassis assembly



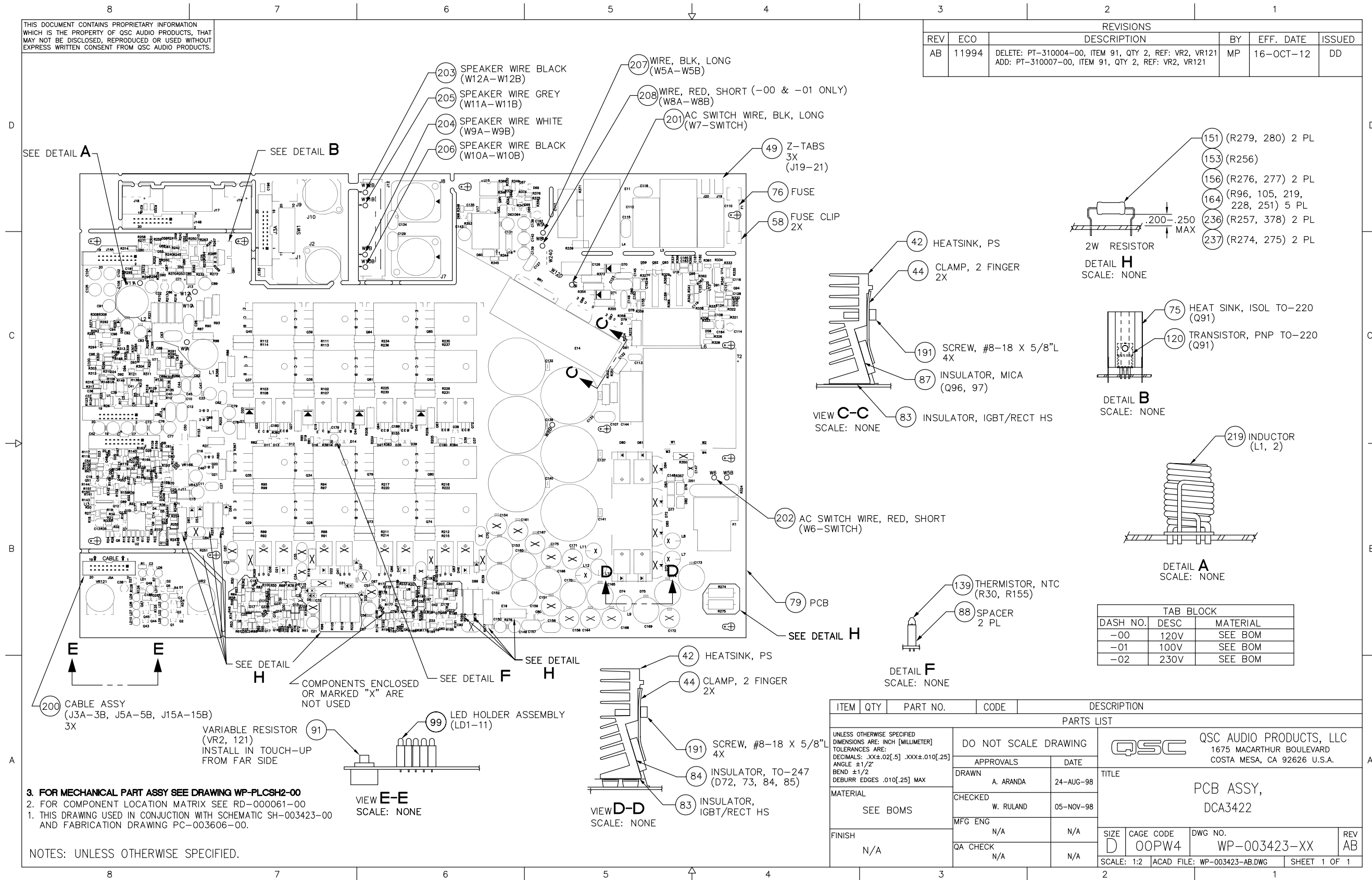
DCA 2-CH chassis assembly, continued



DCA 2-CH chassis assembly, continued



8.2 DCA 2-CH PCB assembly



9. Replacement parts

9.1 Amplifier module replacement summary

Amplifier modules are manufactured on a single PCB with input, output, front gain/LED, and dataport as break-off boards. Includes all wiring and ribbon cables soldered into the break-off boards. The amplifier module is a full drop-in replacement.

| DCA Model | Amplifier Module - 120V | Amplifier Module -230V | Amplifier Module - 100V |
|-----------|-------------------------|------------------------|-------------------------|
| DCA 1222 | WP-001223-00 | WP-001223-02 | WP-001223-01 |
| DCA 1622 | WP-001623-00 | WP-001623-02 | WP-001623-01 |
| DCA 2422 | WP-002423-00 | WP-002423-02 | WP-002423-01 |
| DCA 3022 | WP-003023-00 | WP-003023-02 | WP-003023-01 |
| DCA 3422 | WP-003423-00 | WP-003423-02 | WP-003423-01 |

9.2 SG-000060-00, PLC power supply restoration kit

QSC recommends replacing all components in this kit when restoring a failed power supply.

| Part Number | Description | Qty. | Reference | Comment |
|--------------|--------------------------------|------|------------|---------|
| IC-000024-00 | IC REG PWM 40V 0.1A SG3525A | 1 | U19 | |
| IC-000053-30 | IC LIN SMT DUAL TIMER LM556 | 1 | U14 | |
| IC-000054-30 | IC LIN SMT QUAD COMP LM339AM | 1 | U13 | |
| IC-000134-00 | IC CMOS HV DRVR IR2110 | 1 | U18 | |
| QD-000042-00 | DIODE RECT ULTRAFast 400V 3A | 2 | D70, D71 | |
| QD-000108-30 | DIODE SMT SWITCH 200V .2A 50NS | 2 | D78, D79 | |
| QD-000113-30 | DIODE ZNR 10V 5% | 1 | D66 | |
| QD-000169-00 | XISTOR IGBT T0-247AC 600V 55A | 2 | Q96, Q97 | |
| RE-000210-NR | THERMISTOR NTC 15A | 1 | R324 | |
| RE-001003-30 | RESISTOR SMT 10 OHM 1% 1206 | 2 | R358, R359 | |
| RE-003921-30 | RESISTOR SMT 39.2 OHM 1% | 1 | R349 | |

9.3 SG-000568-TS, PLC housekeeping (bias) rebuild kit

| Part Number | Description | Qty. | Reference | Comment |
|--------------|---|------|------------------|---------|
| CA-710002-10 | 100UF, 20%, 25V, ELECTROLYTIC, , | 1 | C142 | |
| IC-000135-00 | TOP SWITCH, , TOP210, , | 1 | U16 | |
| QD-000102-30 | DIODE, 75V, 0.075A, , IMBD4148, SOT-23 | 5 | D63-65, D67, D69 | |
| QD-000104-30 | TRANSISTOR PNP, 40V, 0.2A, 0.2W, MMST3906 | 1 | Q99 | |
| QD-000113-30 | DIODE ZENER, 10V, , 0.3W, BZX84C10, SOT-23, | 1 | D66 | |
| QD-000115-30 | DIODE, ULTRAFast, 600V, 1A, , MURS160T3, | 1 | D60 | |
| QD-000116-30 | DIODE, ULTRAFast, 200V, 1A, , MURS120 | 1 | D62 | |
| RE-001003-30 | 10 OHM, 1%, 1/8W, THICK FILM, 1206, 200V | 1 | R356 | |
| RE-003921-30 | 39.2 OHM, 1%, 1/8W, THICK FILM, 1206, 200V | 1 | R349 | |
| RE-053602-30 | 536 OHM, 1%, 1/10W, THICK FILM, 0805, 100V | 1 | R374 | |
| XF-000064-00 | TRANSFORMER, HOUSEKEEPING, PLC, | 1 | T1 | |

9.4 Finished Good (all DCA 2-channel models)

| Part Number | Description | Qty. | Reference | Comment |
|--------------|---|------|-----------|---------|
| CH-000122-00 | COVER, BOTTOM, , PLC/DCM/DCP, | 1 | | |
| LB-000209-00 | AGENCY, CERTIFICATION, CLASS B, , FCC | 1 | | |
| LB-000437-00 | LABEL, WARNING, RAIN & MOISTURE, , STD VERSION | 1 | | |
| PM-000029-00 | INSERT, SHIPPING, , PLC 2RU, 17.5" X 23.5", | 2 | | |
| PM-001101-00 | CARTON, SHIPPING, , PLC/BASIS, 17.5" X 23.5" X 4.65", | 1 | | |
| PM-001401-00 | BAG, SHIPPING, POLYPROPYLENE, SERIES 1, 20.5" X 12.5" X 24", | 1 | | |
| SC-082051-PL | SCR, PHH, PNH, SERATED BASE, , , #8, 0.313" L, , , BLACK, CR3 | 10 | | |
| TD-000075-00 | OWNERS MANUAL, DCA, | 1 | | |
| TD-000254-00 | MANUAL INSERT, CHINA ROHS, AMPLIFIERS, | 1 | | |
| TD-000453-01 | WARRANTY STATEMENT, , ENGLISH VERSION | 1 | | |
| WC-000139-00 | AC CORD SET, IEC C13, NEMA 5-15P, 14 AWG, 3 COND, , 2M, 125 VAC | 1 | | |
| WP-000080-00 | SHIP KIT, , DCA, , 2 CH | 1 | | |

9.5 WP-000080-00, ship kit DCA 2CH

| Part Number | Description | Qty. | Reference | Comment |
|--------------|--|------|-----------|---------|
| CO-000198-00 | PLUG, EURO3 POS, MALE, GREEN, WITH STRAIN RELIEF | 2 | | |
| PL-000000-AF | BUMPER, ADHESIVE BACKED, 0.812" X 0.812", POLYURETHANE, BLACK, | 4 | | |
| PM-100998-PB | BAG, , PLASTIC, , 3" X 6", | 1 | | |
| PM-300996-PB | BAG, , PLASTIC, , 6" X 8", 2 MIL THICK | 1 | | |
| WP-000097-00 | LKOUT PL ASSY, , CX/DCA, , 2CH | 1 | | |

9.6 Chassis assembly, (all DCA 2-channel models)

| Part Number | Description | Qty. | Reference | Comment |
|-------------------------|---|------|-----------|--|
| CH-000112-00 | SHIELD, LINE FILTER, , PLX3002, | 1 | | |
| CH-000119-00 | CHASSIS, MAIN, , DCA3022, | 1 | | |
| CH-000121-00 | RACK EAR, FRONT, , DCA3022, | 2 | | |
| CO-000169-00 | AC INLET, IEC C14, 15A/230V, 6.3MM QC TERM, , , SCREW-ON PANEL | 1 | | |
| HW-040001-00 | BRACKET, ANGLE, #4-40, 0.375" L, ZINC PLATED STEEL, | 2 | | |
| HW-060090-S0 | STANDOFF, 0.250" HEX, #6-32, 0.563" L, ALUMINUM, FEMALE | 2 | | |
| LB-000053-00 | LABEL, FUSE, REPLACEMENT, FRENCH, , | 1 | | |
| LB-000077-00 | LABEL, WARNING, HIGH ENERGY, PL 3RU, STD VERSION | 1 | | |
| LB-000096-00 | LABEL, PRODUCT, FACEPLATE, , DCA, | 1 | | Faceplate product label is the only chassis assembly difference between models. Use: DCA 1222: LB-000246-00 DCA 1622: LB-000247-00 DCA 2422: LB-000248-00 DCA 3022: LB-000249-00 DCA 3422: LB-000279-00 |
| LB-000245-00 | PRODUCT, INPUT, REAR, DCA, | 1 | | |
| LB-000409-00 | AGENCY, 68FA LISTING, HORIZONTAL, , UL/CUL | 1 | | |
| LB-000440-00 | LABEL, WIRE CLASS 2, , , STD VERSION | 1 | | |
| LB-000673-50 | LABEL, CHINA ROHS, 50 YEARS, , SMALL | 1 | | |
| LB-160226-05 | FUSE, 25A, 125V, , UL, STD VERSION | 1 | | |
| NW-380801-IL | LOCK WASHER, 3/8", INTERNAL TOOTH, , CR3 | 2 | | |
| NW-381023-FW | STEEL WASHER, O.D. 5/8" I.D. 3/8", .020 THK, NICKEL PLATED, CR3 | 2 | | |
| PL-000066-00 | CLIP, CHRISTMAS TREE, , NYLON, BLACK, | 2 | | |

| Part Number | Description | Qty. | Reference | Comment |
|--------------|---|------|-----------|---------|
| PL-000095-00 | FAN INTERFACE, , PLX 2RU, POLYPROPYLENE, BLACK, | 1 | | |
| PL-000136-00 | KNOB, , PLC, PLASTIC, BLACK, | 2 | | |
| PL-000144-00 | INSULATOR, FAN DUCT, PLC, FISH PAPER, , | 1 | | |
| SC-000502-00 | SCR, PHH, PNH, , THD FORMING, , , M2.5, 8MM, STL, BLK, ZINC CR3, | 4 | | |
| SC-040041-PP | , PHILLIPS, PANHEAD, , , , #4-40, 0.25" L, , , BLACK, CR3 | 4 | | |
| SC-060042-PP | SCR, PHH, PNH SEMS INTL TOOTH, , , , #6-32, 0.25" L, , BLK, ZINC CR3, | 2 | | |
| SC-060060-PS | , PHILLIPS, SEMS EXTERNAL TOOTH, , , , #6-32, 0.375" L, , , ZINC, CR3 | 3 | | |
| SC-080122-HC | , HEX, CAP, , , , #8-32, 0.75" L, , , BLACK, CR3 | 2 | | |
| SC-082051-PL | SCR, PHH, PNH, SERATED BASE, , , , #8, 0.313" L, , , BLACK, CR3 | 13 | | |
| SC-083081-PL | , PHILLIPS, PANHEAD SERATED BASE, , , , #8-18, 0.5" L, , , BLACK, TYPE B, CR3 | 2 | | |
| SW-000037-00 | AC SWITCH, DPST, 20A, 125VAC, | 1 | | |
| WC-000138-00 | CABLE ASSY, AC, 16 AWG, 3 CONDUCTOR, DCA/CX, 5" L, | 1 | | |
| WP-000057-00 | FAN ASSY, , PLC/GX7, , | 1 | | |

9.7 WP-001223-00, DCA 1222 PCB assembly

| Part Number | Description | Qty. | Reference | Comment |
|--------------|--|------|---|---------|
| CA-010002-30 | 10PF, 5 PCNT, 50V, CERAMIC NPO, 0805, | 2 | C14, C49 | |
| CA-015002-10 | 15PF, 10 PCNT, 500V, CERAMIC SL, DISC, | 2 | C16, C50 | |
| CA-047002-30 | 47PF, 5 PCNT, 50V, CERAMIC NPO, 0805, | 2 | C100, C99 | |
| CA-110001-10 | 100PF, 5 PCNT, 500V, MICA, DIPPED, | 1 | C147 | |
| CA-110002-30 | 100PF, 5 PCNT, 50V, CERAMIC NPO, 0805, | 8 | C18, C40, C41, C43, C5, C53, C6, C9 | |
| CA-122003-30 | 220PF, 5 PCNT, 50V, CERAMIC NPO, 1206, | 4 | C1, C2, C36, C37 | |
| CA-133001-10 | 330PF, 5 PCNT, 500V, MICA, DIPPED, | 2 | C145, C146 | |
| CA-147003-30 | 470PF, 5 PCNT, 50V, CERAMIC NPO, 1206, | 11 | C119, C148, C17, C181, C182, C186, C188, C26, C4, C52, C61 | |
| CA-168003-30 | 680PF, 5 PCNT, 50V, CERAMIC NPO, 0805, | 2 | C25, C60 | |
| CA-210005-30 | 0.001UF, 5 PCNT, 50V, CERAMIC NPO, 1206, | 11 | C120, C124, C195, C196, C75, C81, C85, C93, C94, C95, C96 | |
| CA-222001-00 | 0.0022UF, 20 PCNT, 250VAC, CERAMIC Y5U, DISC, YCAP | 2 | C122, C127 | |
| CA-227001-30 | 0.0027UF, 10 PCNT, 100V, CERAMIC X7R, 0805, | 11 | C108, C109, C128, C20, C23, C24, C55, C58, C59, C68, C98 | |
| CA-233001-10 | 0.0033UF, 10 PCNT, 100V, FILM, DIPPED, | 1 | C113 | |
| CA-233002-00 | 0.0033UF, 20 PCNT, 250VAC, CERAMIC, DISC, Y2CAP | 2 | C115, C118 | |
| CA-322001-10 | 0.022UF, 10 PCNT, 100V, FILM, DIPPED, | 2 | C27, C62 | |
| CA-410001-00 | 0.1UF, 20 PCNT, 250VAC, FILM, BOX STYLE, X2CAP | 1 | C126 | |
| CA-410002-10 | 0.1UF, 5 PCNT, 100V, FILM, DIPPED, | 4 | C12, C44, C47, C8 | |
| CA-410003-10 | 0.1UF, 10 PCNT, 250V, FILM, DIPPED, | 6 | C129, C134, C156, C157, C28, C63 | |
| CA-410006-30 | 0.1UF, 10 PCNT, 50V, CERAMIC X7R, 1206, | 17 | C116, C125, C135, C155, C162, C163, C179, C180, C183, C185, C189, C19, C190, C191, C194, C54, C88 | |
| CA-410011-00 | 0.1UF, 10 PCNT, 400V, MPET FILM, DIPPED, | 2 | C107, C123 | |
| CA-422001-10 | 0.22UF, 5 PCNT, 50V, FILM, DIPPED, LOW PROFILE | 2 | C10, C45 | |
| CA-422004-30 | 0.22UF, 10 PCNT, 50V, CERAMIC X7R, 1206, | 2 | C121, C39 | |
| CA-447001-00 | 0.47UF, 20 PCNT, 250V, POLYPRO FILM, BOX, X2CAP | 1 | C117 | |
| CA-447003-00 | 0.47UF, 10 PCNT, 400V, FILM, WRAPPED, PULSE | 1 | C144 | |
| CA-510003-10 | 1.0UF, 20 PCNT, 50V, ELECTROLYTIC, , | 1 | C80 | |
| CA-510005-30 | 1.0UF, 20 PCNT, 50V, ELECTROLYTIC, SMT, | 2 | C13, C48 | |
| CA-510006-00 | 1.0UF, 20 PCNT, 250V, POLYPRO, BOX, X2CAP | 2 | C110, C112 | |
| CA-610002-10 | 10UF, 20 PCNT, 35V, ELECTROLYTIC, , | 5 | C114, C192, C3, C38, C86 | |
| CA-610006-30 | 10UF, 20 PCNT, 16V, ELECTROLYTIC, SMT, | 1 | C184 | |
| CA-647001-10 | 47UF, 10 PCNT, 10V, ELECTROLYTIC, , NON-POLAR | 11 | C102, C104, C105, C106, C11, C42, C46, C7, C71, C91, C92 | |
| CA-647002-10 | 47UF, 20 PCNT, 50V, ELECTROLYTIC, , LOW PROFILE | 5 | C21, C22, C56, C57, C89 | |
| CA-710002-10 | 100UF, 20 PCNT, 25V, ELECTROLYTIC, , | 8 | C139, C142, C143, C15, C33, C72, C78, C79 | |
| CA-710004-10 | 100UF, 20 PCNT, 25V, ELECTROLYTIC, , LOW ESR | 3 | C138, C149, C150 | |
| CA-747001-10 | 470UF, 20 PCNT, 16V, ELECTROLYTIC, , | 7 | C131, C73, C74, C76, C77, C82, C83 | |
| CA-747004-00 | 470UF, 20 PCNT, 100V, ELECTROLYTIC, , LOW ESR | 10 | C152, C153, C159, C160, C165, C166, C169, C170, C173, C174 | |
| CA-822200-AE | 2200UF, 20 PCNT, 200V, ELECTROLYTIC, , | 2 | C132, C133 | |
| CH-000102-00 | HEAT SINK, AUDIO, , PLX3002, | 4 | | |
| CH-000103-00 | CLAMP, TO-3PL, 22 GA, PLX3002, | 9 | | |
| CH-000104-00 | HEAT SINK, PS, , PLX3002, | 2 | | |

| Part Number | Description | Qty. | Reference | Comment |
|--------------|--|------|---|---------|
| CH-000114-00 | CLAMP, DIODE, 2 FINGER, PLX3002, | 2 | | |
| CH-000120-00 | BRACKET, OUTPUT, , DCA3022, | 1 | | |
| CO-000009-ZT | ZTAB, 0.25" TAB, 1 POS, MALE, AUTO INSERTABLE | 3 | J19, J20, J21 | |
| CO-000036-CO | CONNECTOR, SPEAKON, 4 POS, FEMALE, CHAS MNT, CSUNK HOLES, VERT PCB | 2 | J7, J8 | |
| CO-000106-00 | JACK, HD15, 15 POS, FEMALE, RIGHT ANGLE SWAGED JACK SCREW | 1 | J17 | |
| CO-000148-00 | XLR, NEUTRIK, 3 POS, FEMALE, VERTICAL | 2 | J10, J2 | |
| CO-000155-00 | HEADER, 0.1" CENTERS, 2 POS (1X2), MALE, RAMP LOCK | 1 | J13 | |
| CO-000161-00 | JACK, EURO, 3 POS, FEMALE, BLACK | 2 | J16, J18 | |
| CO-000170-00 | BARRIER STRIP, 0.375" CENTERS, 6 POS, , COVERED | 1 | J12 | |
| CO-300112-PJ | JACK, PHONE, 3 POS, FEMALE, | 2 | J1, J9 | |
| HW-000001-FC | FUSE CLIP, PC MOUNT, , , TIN PLATED BRASS, 3AG | 2 | | |
| IC-000024-00 | CONTROLLER, PWM, SG3525AN, , | 1 | U19 | |
| IC-000046-30 | OPAMP, DUAL, TL072, SMT, | 2 | U11, U12 | |
| IC-000047-30 | COMPARATOR, DUAL, LM393, SMT, | 1 | U10 | |
| IC-000048-30 | OPAMP, DUAL, MC33078, , | 2 | U1, U6 | |
| IC-000051-00 | OPTO ISOLATOR, , TCDT1101, , | 1 | U17 | |
| IC-000053-30 | TIMER, DUAL, LM556, , | 1 | U14 | |
| IC-000054-30 | COMPARATOR, QUAD, LM339AM, SMT, | 1 | U13 | |
| IC-000073-30 | TRANSCONDUCTANCE OPAMP, DUAL, LM13600M, , | 1 | U3 | |
| IC-000134-00 | DRIVER, MOSFET, IR2110, , | 1 | U18 | |
| IC-000135-00 | TOP SWITCH, , TOP210, , | 1 | U16 | |
| IC-000592-00 | OPTO ISOL, TCDT 1103, DIP, , , | 1 | U15 | |
| IC-005532-OP | OPAMP, DUAL, NE5532, , | 2 | U2, U7 | |
| LB-000250-00 | PRODUCT, OUTPUT, REAR, DCA 2CH 2RU, | 1 | | |
| MS-000048-HS | HEAT SINK, TO-220, 1.375" X 0.86" X 0.395", LONG TAB, PLUG-IN | 1 | | |
| MS-000112-00 | FUSE, 25A, 250V, 0.25" X 1.25", NORMAL-BLO | 1 | F1 | |
| MS-000115-30 | FUSE, 1.0A, 24V, 1206, SLO | 1 | R314 | |
| PA-000111-00 | LED HOLDER ASSY, , , , | 1 | | |
| PC-003606-00 | PCB, CX/CXV/DCA/PL3, , , | 1 | | |
| PL-000114-00 | INSULATOR, IGBT/RECTIFIER, 1.25" X 3.20", THERMALLY CONDUCTIVE, , | 2 | | |
| PL-000126-00 | SPRING SEAT, TRANSISTOR, PLX, NYLON, , | 9 | | |
| PL-000128-00 | SPACER, T-1 3/4 LED, 0.276", PLASTIC, BLACK, | 2 | | |
| PL-000135-00 | INSULATOR, TRANSISTOR, 1.25" X 1.75", MICA, , | 1 | | |
| PT-150000-AT | TRIM, 500, 20 PCNT, 0.15W, , | 2 | VR166, VR43 | |
| PT-310007-00 | GAIN, 10K, 20 PCNT, 0.05W, 21 DETENT, 11MM LENGTH | 2 | VR121, VR2 | |
| QD-000014-QD | DIODE RECTIFIER ULTRAFAST, 200V, 15A, , MUR1520, TO-220, 35NS | 4 | D74, D75, D80, D81 | |
| QD-000042-00 | DIODE RECTIFIER ULTRAFAST, 400V, 3A, , MUR440, DO-201AD, 50NS | 2 | D70, D71 | |
| QD-000062-10 | TRANSISTOR NPN, 40V, 0.2A, 1.5W, 2N3904, TO-92, | 2 | Q20, Q65 | |
| QD-000063-10 | TRANSISTOR PNP, 40V, 0.2A, 1.5W, 2N3906, TO-92, | 2 | Q21, Q66 | |
| QD-000076-00 | TRANSISTOR NPN, 250V, 8A, 50W, MJE15032, TO-220, | 2 | Q27, Q72 | |
| QD-000077-00 | TRANSISTOR PNP, 250V, 8A, 50W, MJE15033, TO-220, | 2 | Q26, Q71 | |
| QD-000102-30 | DIODE, 75V, 0.075A, , IMBD4148, SOT-23, 4NS | 42 | D1, D10, D11, D12, D14, D2, D23, D24, D25, D26, D27, D28, D29, D3, D30, D33, D34, D35, D36, D37, D39, D4, D48, D49, D5, D50, D51, D52, D55, D59, D63, D64, D65, D67, D69, D8, D89, D9, D90, D91, D93, D94 | |

| Part Number | Description | Qty. | Reference | Comment |
|--------------|---|------|--|---------|
| QD-000103-30 | TRANSISTOR NPN, 40V, 0.2A, 0.2W, MMST3904, SOT-23, | 20 | Q13, Q15, Q18, Q25, Q49, Q5, Q50, Q53, Q54, Q58, Q60, Q63, Q70, Q8, Q89, Q9, Q90, Q92, Q93, Q95 | |
| QD-000104-30 | TRANSISTOR PNP, 40V, 0.2A, 0.2W, MMST3906, SOT-23, | 30 | Q1, Q10, Q11, Q12, Q14, Q2, Q23, Q24, Q3, Q4, Q42, Q43, Q44, Q45, Q46, Q47, Q48, Q51, Q55, Q56, Q57, Q59, Q6, Q68, Q69, Q87, Q88, Q94, Q98, Q99 | |
| QD-000105-30 | TRANSISTOR NPN, 300V, 0.2A, 0.2W, MMBA42, SOT-23, | 4 | Q16, Q52, Q61, Q7 | |
| QD-000106-30 | TRANSISTOR PNP, 300V, 0.2A, 0.2W, MMBA92, SOT-23, | 2 | Q17, Q62 | |
| QD-000108-30 | DIODE, 200V, 0.2A, , BAS21, SOT-23, 50NS | 8 | D13, D16, D38, D41, D61, D68, D78, D79 | |
| QD-000110-30 | DIODE ZENER, 6.2V, , 0.3W, BZX84C6V2, SOT-23, | 2 | D56, D92 | |
| QD-000113-30 | DIODE ZENER, 10V, , 0.3W, BZX84C10, SOT-23, | 1 | D66 | |
| QD-000115-30 | DIODE RECTIFIER ULTRAFAST, 600V, 1A, , MURS160T3, SMB, 75NS | 3 | D58, D60, D86 | |
| QD-000116-30 | DIODE RECTIFIER ULTRAFAST, 200V, 1A, , MURS120, SMB, 35NS | 5 | D62, D76, D77, D82, D83 | |
| QD-000154-00 | TRANSISTOR NPN, 230V, 1A, 20W, 2SC4793, TO-220, | 2 | Q19, Q64 | |
| QD-000155-00 | TRANSISTOR PNP, 230V, 1A, 20W, 2SA1837, TO-220, | 2 | Q22, Q67 | |
| QD-000156-00 | TRANSISTOR PNP, 100V, 3A, 40W, TIP32C, TO-220, | 1 | Q91 | |
| QD-000162-00 | IGBT, 600V, 40A, 160W, IRG4PC40U, TO-247, | 2 | Q96, Q97 | |
| QD-000170-00 | BRIDGE RECTIFIER, , , RBV5006, , 600V 50A | 1 | BR1 | |
| QD-001943-PN | TRANSISTOR PNP, 230V, 15A, 150W, 2SA1943-R, TO-264, | 8 | Q28, Q34, Q36, Q39, Q73, Q79, Q81, Q84 | |
| QD-004744-ZA | DIODE ZENER, 15V, 5 PCNT, 3W, 1N5929B, , | 2 | D53, D54 | |
| QD-005200-NP | TRANSISTOR NPN, 230V, 15A, 150W, 2SC5200, TO-264, | 8 | Q29, Q35, Q37, Q40, Q74, Q80, Q82, Q85 | |
| QD-005402-DX | DIODE, 200V, 3A, , 1N5402, DO-27, | 4 | D19, D20, D44, D45 | |
| RE-.04703-10 | 0.47, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 32 | R102, R103, R107, R108, R111, R112, R113, R114, R211, R212, R214, R215, R217, R218, R220, R222, R225, R226, R230, R231, R234, R235, R236, R237, R88, R89, R91, R92, R94, R95, R97, R99 | |
| RE-.56002-10 | 5.6, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 7 | R203, R221, R354, R355, R373, R80, R98 | |
| RE-000210-NR | NTC, 10 OHMS, 15 AMPS, , , INRUSH LIMIT | 1 | R324 | |
| RE-000230-NR | NTC, 10K OHMS, , 15 PCNT, , -4.4 PCNT PER C | 2 | R155, R30 | |
| RE-001003-30 | 10, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 4 | R353, R356, R358, R359 | |
| RE-001502-10 | 15, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 13 | R208, R209, R210, R213, R216, R350, R367, R368, R85, R86, R87, R90, R93 | |
| RE-003921-30 | 39.2, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 6 | R246, R247, R248, R249, R349, R357 | |
| RE-004752-30 | 47.5, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 5 | R308, R309, R312, R313, R319 | |
| RE-005605-EM | 56, 5 PCNT, 2W, METAL OXIDE, , | 1 | R372 | |
| RE-007502-30 | 75, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R123, R124, R5, R6 | |
| RE-010002-30 | 100, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 14 | R144, R150, R193, R194, R21, R27, R334, R364, R381, R382, R383, R384, R70, R71 | |
| RE-020002-30 | 200, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 2 | R302, R377 | |
| RE-027401-30 | 274, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 8 | R190, R191, R204, R205, R67, R68, R81, R82 | |
| RE-038301-30 | 383, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R167, R254, R255, R44 | |
| RE-047001-10 | 470, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 1 | R256 | |
| RE-047502-30 | 475, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R151, R160, R28, R37 | |
| RE-053602-30 | 536, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R146, R22, R361, R374 | |
| RE-063402-30 | 634, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 1 | R370 | |

| Part Number | Description | Qty. | Reference | Comment |
|--------------|---|------|--|---------|
| RE-068001-10 | 680, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 3 | R276, R277, R278 | |
| RE-093101-30 | 931, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 1 | R379 | |
| RE-110006-30 | 1.00K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 11 | R1, R117, R118, R128, R165, R232, R250, R252, R369, R42, R7 | |
| RE-115002-30 | 1.50K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 16 | R101, R109, R147, R154, R157, R158, R162, R164, R23, R270, R273, R32, R34, R35, R39, R41 | |
| RE-117401-30 | 1.74K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 3 | R272, R310, R311 | |
| RE-120002-30 | 2.00K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 8 | R127, R171, R195, R198, R266, R48, R72, R75 | |
| RE-122103-30 | 2.21K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 10 | R170, R240, R264, R265, R267, R306, R307, R347, R348, R47 | |
| RE-124005-EM | 2.4K, 5 PCNT, 2W, METAL FILM, , | 2 | R257, R378 | |
| RE-124301-30 | 2.43K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 1 | R320 | |
| RE-124902-30 | 2.49K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R297, R298, R299, R300 | |
| RE-147502-30 | 4.75K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 20 | R10, R11, R125, R126, R131, R137, R138, R163, R166, R17, R282, R287, R290, R293, R3, R327, R330, R362, R4, R40 | |
| RE-151002-00 | 5.1K, 5 PCNT, 2W, METAL OXIDE FP, , | 1 | R251 | |
| RE-159002-30 | 5.90K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 7 | R122, R152, R182, R185, R29, R59, R62 | |
| RE-175002-30 | 7.50K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 6 | R120, R132, R140, R15, R161, R38 | |
| RE-178701-30 | 7.87K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 3 | R291, R294, R360 | |
| RE-190902-30 | 9.09K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 1 | R258 | |
| RE-210003-30 | 10.0K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 9 | R121, R295, R305, R336, R338, R363, R366, R375, R376 | |
| RE-210009-30 | 10.0K, 0.1 PCNT, 1/10W, THIN FILM, 0805, 100V | 8 | R12, R129, R13, R130, R135, R136, R8, R9 | |
| RE-212702-30 | 12.7K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 23 | R106, R133, R134, R139, R14, R142, R159, R16, R169, R188, R19, R199, R200, R241, R245, R259, R329, R337, R36, R46, R65, R76, R77 | |
| RE-215002-30 | 15.0K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 6 | R148, R168, R25, R262, R365, R45 | |
| RE-215401-30 | 15.4K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 4 | R172, R173, R49, R50 | |
| RE-216501-CM | 16.5K, 1 PCNT, 1/2W, METAL FILM, , | 2 | R153, R31 | |
| RE-220002-30 | 20.0K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 12 | R141, R18, R229, R242, R244, R253, R271, R281, R303, R304, R331, R346 | |
| RE-221502-30 | 21.5K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R315, R316, R317, R318 | |
| RE-224901-30 | 24.9K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 1 | R325 | |
| RE-230002-10 | 30K, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 2 | R351, R352 | |
| RE-233201-30 | 33.2K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 4 | R283, R284, R285, R286 | |
| RE-239202-30 | 39.2K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 9 | R143, R183, R184, R20, R243, R261, R323, R60, R61 | |
| RE-247503-30 | 47.5K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R149, R224, R26, R343 | |
| RE-269801-30 | 69.8K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 1 | R296 | |
| RE-310002-30 | 100K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R119, R156, R33, R332 | |
| RE-310003-30 | 100K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 13 | R174, R176, R196, R197, R268, R341, R342, R344, R345, R51, R53, R73, R74 | |
| RE-315002-30 | 150K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 2 | R333, R335 | |
| RE-339201-30 | 392K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 5 | R145, R24, R260, R263, R340 | |
| RE-348702-30 | 487K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 4 | R321, R322, R326, R328 | |
| RE-375005-BM | 750K, 5 PCNT, 1/2W, METAL FILM, , | 2 | R339, R371 | |

| Part Number | Description | Qty. | Reference | Comment |
|--------------|--|------|--------------------------------|---------|
| RE-410001-30 | 1.0M, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 2 | R289, R292 | |
| SC-063100-PP | , PHILLIPS, PANHEAD, , , , #6-20, 0.625" L, , , ZINC, TYPE AB, CR3 | 20 | | |
| SC-081101-SP | SCR, PPH, PNH SERR BSE, , , , #8-18, 0.625" L, , BLK, TYPE AB, CR3 | 4 | | |
| SW-000053-00 | SWITCH, SPST X 10, 20 PIN DIP, PCB MOUNT LONG LEADS | 1 | SW1 | |
| SW-000104-00 | RELAY, SPDT, 24VDC COIL, 20A, 125VAC, T90 STYLE (FOR PLC MODELS) | 1 | K1 | |
| WC-0.2020-JW | JUMPER, BARE, 20 AWG SOLID, 1 CONDUCTOR, , 0.2" L, | 4 | D21, D22, D46, D47 | |
| WC-0.5018-JW | JUMPER, TEFLON INSULATION, 18 AWG SOLID, 1 CONDUCTOR, , 0.5" L, | 2 | D88, W120 | |
| WC-000002-10 | JUMPER, BARE, 22 AWG SOLID, 1 CONDUCTOR, , VARIABLE LENGTH, AUTO INSERT-ABLE | 3 | D87, W1, W2 | |
| WC-000103-00 | RIBBON CABLE ASSY, , 28 AWG, 20 CONDUCTOR, PLC, 9" L, | 3 | J14A, J14B, J3A, J3B, J5A, J5B | |
| WC-000115-00 | WIRE ASSY, AC SWITCH, 16 AWG, 1 CONDUCTOR, PLC, 14" L, BLACK | 1 | W7 | |
| WC-000115-01 | WIRE ASSY, AC SWITCH, 16 AWG, 1 CONDUCTOR, PLC, 7" L, RED | 1 | W6 | |
| WC-000117-00 | WIRE ASSY, SPEAKER, 16 AWG, 1 CONDUCTOR, PLC, 8.5 IN, BLACK | 1 | W12 | |
| WC-000117-01 | WIRE ASSY, SPEAKER, 16 AWG, 1 CONDUCTOR, PLC, 7.5 IN, WHITE | 1 | W9 | |
| WC-000117-02 | WIRE ASSY, SPEAKER, 16 AWG, 1 CONDUCTOR, PLC, 9 IN, GRAY | 1 | W11 | |
| WC-000117-03 | WIRE ASSY, SPEAKER, 16 AWG, 1 CONDUCTOR, PLC, 7.5 IN, BLACK | 1 | W10 | |
| WC-000118-00 | WIRE ASSY, , 16 AWG, 1 CONDUCTOR, PLC, 12.5" L, BLACK | 1 | W5 | |
| WC-000118-01 | WIRE ASSY, , 16 AWG, 1 CONDUCTOR, PLC, 10.5" L, RED | 1 | W8 | |
| XF-000005-00 | BEAD, 100MHZ, 271 OHM, | 2 | L10, L9 | |
| XF-000023-00 | INDUCTOR, COMMON MODE, , 2MH, , , | 2 | L3, L4 | |
| XF-000061-00 | INDUCTOR, 2 COUPLED WINDINGS, TOROID, 1.9UH, PL/DCA/CX, 230V, | 1 | L6 | |
| XF-000064-00 | TRANSFORMER, HOUSEKEEPING, , , , PLC, , | 1 | T1 | |
| XF-000066-00 | INDUCTOR, ZOBEL CURRENT SENSE, , 2UH, PLC, , | 2 | L1, L2 | |
| XF-000179-00 | TRANSFORMER, SWITCHING, 115KHZ, E55, 1500W, DCA1222, 120V/230V, | 1 | T2 | |

9.8 WP-001623-00, DCA 1622 PCB assembly

| Part Number | Description | Qty. | Reference | Comment |
|--------------|--|------|---|---------|
| CA-010002-30 | 10PF, 5 PCNT, 50V, CERAMIC NPO, 0805, | 2 | C14, C49 | |
| CA-015002-10 | 15PF, 10 PCNT, 500V, CERAMIC SL, DISC, | 2 | C16, C50 | |
| CA-047002-30 | 47PF, 5 PCNT, 50V, CERAMIC NPO, 0805, | 2 | C100, C99 | |
| CA-110001-10 | 100PF, 5 PCNT, 500V, MICA, DIPPED, | 1 | C147 | |
| CA-110002-30 | 100PF, 5 PCNT, 50V, CERAMIC NPO, 0805, | 8 | C18, C40, C41, C43, C5, C53, C6, C9 | |
| CA-122003-30 | 220PF, 5 PCNT, 50V, CERAMIC NPO, 1206, | 4 | C1, C2, C36, C37 | |
| CA-133001-10 | 330PF, 5 PCNT, 500V, MICA, DIPPED, | 2 | C145, C146 | |
| CA-147003-30 | 470PF, 5 PCNT, 50V, CERAMIC NPO, 1206, | 11 | C119, C148, C17, C181, C182, C186, C188, C26, C4, C52, C61 | |
| CA-168003-30 | 680PF, 5 PCNT, 50V, CERAMIC NPO, 0805, | 2 | C25, C60 | |
| CA-210005-30 | 0.001UF, 5 PCNT, 50V, CERAMIC NPO, 1206, | 11 | C120, C124, C195, C196, C75, C81, C85, C93, C94, C95, C96 | |
| CA-222001-00 | 0.0022UF, 20 PCNT, 250VAC, CERAMIC Y5U, DISC, YCAP | 2 | C122, C127 | |
| CA-227001-30 | 0.0027UF, 10 PCNT, 100V, CERAMIC X7R, 0805, | 11 | C108, C109, C128, C20, C23, C24, C55, C58, C59, C68, C98 | |
| CA-233001-10 | 0.0033UF, 10 PCNT, 100V, FILM, DIPPED, | 1 | C113 | |
| CA-233002-00 | 0.0033UF, 20 PCNT, 250VAC, CERAMIC, DISC, Y2CAP | 2 | C115, C118 | |
| CA-322001-10 | 0.022UF, 10 PCNT, 100V, FILM, DIPPED, | 2 | C27, C62 | |
| CA-410001-00 | 0.1UF, 20 PCNT, 250VAC, FILM, BOX STYLE, X2CAP | 1 | C126 | |
| CA-410002-10 | 0.1UF, 5 PCNT, 100V, FILM, DIPPED, | 4 | C12, C44, C47, C8 | |
| CA-410003-10 | 0.1UF, 10 PCNT, 250V, FILM, DIPPED, | 6 | C129, C134, C156, C157, C28, C63 | |
| CA-410006-30 | 0.1UF, 10 PCNT, 50V, CERAMIC X7R, 1206, | 17 | C116, C125, C135, C155, C162, C163, C179, C180, C183, C185, C189, C19, C190, C191, C194, C54, C88 | |
| CA-410011-00 | 0.1UF, 10 PCNT, 400V, MPET FILM, DIPPED, | 2 | C107, C123 | |
| CA-422001-10 | 0.22UF, 5 PCNT, 50V, FILM, DIPPED, LOW PROFILE | 2 | C10, C45 | |
| CA-422004-30 | 0.22UF, 10 PCNT, 50V, CERAMIC X7R, 1206, | 2 | C121, C39 | |
| CA-447001-00 | 0.47UF, 20 PCNT, 250V, POLYPRO FILM, BOX, X2CAP | 1 | C117 | |
| CA-447003-00 | 0.47UF, 10 PCNT, 400V, FILM, WRAPPED, PULSE | 1 | C144 | |
| CA-510003-10 | 1.0UF, 20 PCNT, 50V, ELECTROLYTIC, , | 1 | C80 | |
| CA-510005-30 | 1.0UF, 20 PCNT, 50V, ELECTROLYTIC, SMT, | 2 | C13, C48 | |
| CA-510006-00 | 1.0UF, 20 PCNT, 250V, POLYPRO, BOX, X2CAP | 2 | C110, C112 | |
| CA-610002-10 | 10UF, 20 PCNT, 35V, ELECTROLYTIC, , | 5 | C114, C192, C3, C38, C86 | |
| CA-610006-30 | 10UF, 20 PCNT, 16V, ELECTROLYTIC, SMT, | 1 | C184 | |
| CA-647001-10 | 47UF, 10 PCNT, 10V, ELECTROLYTIC, , NON-POLAR | 11 | C102, C104, C105, C106, C11, C42, C46, C7, C71, C91, C92 | |
| CA-647002-10 | 47UF, 20 PCNT, 50V, ELECTROLYTIC, , LOW PROFILE | 5 | C21, C22, C56, C57, C89 | |
| CA-710002-10 | 100UF, 20 PCNT, 25V, ELECTROLYTIC, , | 8 | C139, C142, C143, C15, C33, C72, C78, C79 | |
| CA-710004-10 | 100UF, 20 PCNT, 25V, ELECTROLYTIC, , LOW ESR | 3 | C138, C149, C150 | |
| CA-747001-10 | 470UF, 20 PCNT, 16V, ELECTROLYTIC, , | 7 | C131, C73, C74, C76, C77, C82, C83 | |
| CA-747004-00 | 470UF, 20 PCNT, 100V, ELECTROLYTIC, , LOW ESR | 10 | C152, C153, C159, C160, C165, C166, C169, C170, C173, C174 | |
| CA-822200-AE | 2200UF, 20 PCNT, 200V, ELECTROLYTIC, , | 4 | C132, C133, C136, C137 | |
| CH-000102-00 | HEAT SINK, AUDIO, , PLX3002, | 4 | | |
| CH-000103-00 | CLAMP, TO-3PL, 22 GA, PLX3002, | 9 | | |
| CH-000104-00 | HEAT SINK, PS, , PLX3002, | 2 | | |
| CH-000114-00 | CLAMP, DIODE, 2 FINGER, PLX3002, | 2 | | |
| CH-000120-00 | BRACKET, OUTPUT, , DCA3022, | 1 | | |
| CO-000009-ZT | ZTAB, 0.25" TAB, 1 POS, MALE, AUTO INSERTABLE | 3 | J19, J20, J21 | |
| CO-000036-CO | CONNECTOR, SPEAKON, 4 POS, FEMALE, CHAS MNT, CSUNK HOLES, VERT PCB | 2 | J7, J8 | |

| Part Number | Description | Qty. | Reference | Comment |
|--------------|---|------|---|---------|
| CO-000106-00 | JACK, HD15, 15 POS, FEMALE, RIGHT ANGLE SWAGED JACK SCREW | 1 | J17 | |
| CO-000148-00 | XLR, NEUTRIK, 3 POS, FEMALE, VERTICAL | 2 | J10, J2 | |
| CO-000155-00 | HEADER, 0.1" CENTERS, 2 POS (1X2), MALE, RAMP LOCK | 1 | J13 | |
| CO-000161-00 | JACK, EURO, 3 POS, FEMALE, BLACK | 2 | J16, J18 | |
| CO-000170-00 | BARRIER STRIP, 0.375" CENTERS, 6 POS, , COVERED | 1 | J12 | |
| CO-300112-PJ | JACK, PHONE, 3 POS, FEMALE, | 2 | J1, J9 | |
| HW-000001-FC | FUSE CLIP, PC MOUNT, , , TIN PLATED BRASS, 3AG | 2 | | |
| IC-000024-00 | CONTROLLER, PWM, SG3525AN, , | 1 | U19 | |
| IC-000046-30 | OPAMP, DUAL, TL072, SMT, | 2 | U11, U12 | |
| IC-000047-30 | COMPARATOR, DUAL, LM393, SMT, | 1 | U10 | |
| IC-000048-30 | OPAMP, DUAL, MC33078, , | 2 | U1, U6 | |
| IC-000051-00 | OPTO ISOLATOR, , TCDT1101, , | 1 | U17 | |
| IC-000053-30 | TIMER, DUAL, LM556, , | 1 | U14 | |
| IC-000054-30 | COMPARATOR, QUAD, LM339AM, SMT, | 1 | U13 | |
| IC-000073-30 | TRANSCONDUCTANCE OPAMP, DUAL, LM13600M, , | 1 | U3 | |
| IC-000134-00 | DRIVER, MOSFET, IR2110, , | 1 | U18 | |
| IC-000135-00 | TOP SWITCH, , TOP210, , | 1 | U16 | |
| IC-000592-00 | OPTO ISOL, TCDT 1103, DIP, , , | 1 | U15 | |
| IC-005532-0P | OPAMP, DUAL, NE5532, , | 2 | U2, U7 | |
| LB-000250-00 | PRODUCT, OUTPUT, REAR, DCA 2CH 2RU, | 1 | | |
| MS-000048-HS | HEAT SINK, TO-220, 1.375" X 0.86" X 0.395", LONG TAB, PLUG-IN | 1 | | |
| MS-000112-00 | FUSE, 25A, 250V, 0.25" X 1.25", NORMAL-BLO | 1 | F1 | |
| MS-000115-30 | FUSE, 1.0A, 24V, 1206, SLO | 1 | R314 | |
| PA-000111-00 | LED HOLDER ASSY, , , , | 1 | | |
| PC-003606-00 | PCB, CX/CXV/DCA/PL3, , , | 1 | | |
| PL-000114-00 | INSULATOR, IGBT/RECTIFIER, 1.25" X 3.20", THERMALLY CONDUCTIVE, , | 2 | | |
| PL-000126-00 | SPRING SEAT, TRANSISTOR, PLX, NYLON, , | 9 | | |
| PL-000128-00 | SPACER, T-1 3/4 LED, 0.276", PLASTIC, BLACK, | 2 | | |
| PL-000135-00 | INSULATOR, TRANSISTOR, 1.25" X 1.75", MICA, , | 1 | | |
| PT-150000-AT | TRIM, 500, 20 PCNT, 0.15W, , | 2 | VR166, VR43 | |
| PT-310007-00 | GAIN, 10K, 20 PCNT, 0.05W, 21 DETENT, 11MM LENGTH | 2 | VR121, VR2 | |
| QD-000042-00 | DIODE RECTIFIER ULTRAFAST, 400V, 3A, , MUR440, DO-201AD, 50NS | 2 | D70, D71 | |
| QD-000062-10 | TRANSISTOR NPN, 40V, 0.2A, 1.5W, 2N3904, TO-92, | 2 | Q20, Q65 | |
| QD-000063-10 | TRANSISTOR PNP, 40V, 0.2A, 1.5W, 2N3906, TO-92, | 2 | Q21, Q66 | |
| QD-000074-00 | DIODE RECTIFIER ULTRAFAST, 400V, 15A, , MUR1540, TO-220, 50NS | 4 | D74, D75, D80, D81 | |
| QD-000076-00 | TRANSISTOR NPN, 250V, 8A, 50W, MJE15032, TO-220, | 2 | Q27, Q72 | |
| QD-000077-00 | TRANSISTOR PNP, 250V, 8A, 50W, MJE15033, TO-220, | 2 | Q26, Q71 | |
| QD-000102-30 | DIODE, 75V, 0.075A, , IMBD4148, SOT-23, 4NS | 42 | D1, D10, D11, D12, D14, D2, D23, D24, D25, D26, D27, D28, D29, D3, D30, D33, D34, D35, D36, D37, D39, D4, D48, D49, D5, D50, D51, D52, D55, D59, D63, D64, D65, D67, D69, D8, D89, D9, D90, D91, D93, D94 | |
| QD-000103-30 | TRANSISTOR NPN, 40V, 0.2A, 0.2W, MMST3904, SOT-23, | 20 | Q13, Q15, Q18, Q25, Q49, Q5, Q50, Q53, Q54, Q58, Q60, Q63, Q70, Q8, Q89, Q9, Q90, Q92, Q93, Q95 | |
| QD-000104-30 | TRANSISTOR PNP, 40V, 0.2A, 0.2W, MMST3906, SOT-23, | 30 | Q1, Q10, Q11, Q12, Q14, Q2, Q23, Q24, Q3, Q4, Q42, Q43, Q44, Q45, Q46, Q47, Q48, Q51, Q55, Q56, Q57, Q59, Q6, Q68, Q69, Q87, Q88, Q94, Q98, Q99 | |
| QD-000105-30 | TRANSISTOR NPN, 300V, 0.2A, 0.2W, MMFTA42, SOT-23, | 4 | Q16, Q52, Q61, Q7 | |
| QD-000106-30 | TRANSISTOR PNP, 300V, 0.2A, 0.2W, MMFTA92, SOT-23, | 2 | Q17, Q62 | |

| Part Number | Description | Qty. | Reference | Comment |
|--------------|---|------|--|---------|
| QD-000108-30 | DIODE, 200V, 0.2A, , BAS21, SOT-23, 50NS | 8 | D13, D16, D38, D41, D61, D68, D78, D79 | |
| QD-000110-30 | DIODE ZENER, 6.2V, , 0.3W, BZX84C6V2, SOT-23, | 2 | D56, D92 | |
| QD-000113-30 | DIODE ZENER, 10V, , 0.3W, BZX84C10, SOT-23, | 1 | D66 | |
| QD-000115-30 | DIODE RECTIFIER ULTRAFast, 600V, 1A, , MURS160T3, SMB, 75NS | 3 | D58, D60, D86 | |
| QD-000116-30 | DIODE RECTIFIER ULTRAFast, 200V, 1A, , MURS120, SMB, 35NS | 5 | D62, D76, D77, D82, D83 | |
| QD-000154-00 | TRANSISTOR NPN, 230V, 1A, 20W, 2SC4793, TO-220, | 2 | Q19, Q64 | |
| QD-000155-00 | TRANSISTOR PNP, 230V, 1A, 20W, 2SA1837, TO-220, | 2 | Q22, Q67 | |
| QD-000156-00 | TRANSISTOR PNP, 100V, 3A, 40W, TIP32C, TO-220, | 1 | Q91 | |
| QD-000162-00 | IGBT, 600V, 40A, 160W, IRG4PC40U, TO-247, | 2 | Q96, Q97 | |
| QD-000170-00 | BRIDGE RECTIFIER, , , , RBV5006, , 600V 50A | 1 | BR1 | |
| QD-001943-PN | TRANSISTOR PNP, 230V, 15A, 150W, 2SA1943-R, TO-264, | 8 | Q28, Q34, Q36, Q39, Q73, Q79, Q81, Q84 | |
| QD-004744-ZA | DIODE ZENER, 15V, 5 PCNT, 3W, 1N5929B, , | 2 | D53, D54 | |
| QD-005200-NP | TRANSISTOR NPN, 230V, 15A, 150W, 2SC5200, TO-264, | 8 | Q29, Q35, Q37, Q40, Q74, Q80, Q82, Q85 | |
| QD-005402-DX | DIODE, 200V, 3A, , 1N5402, DO-27, | 4 | D19, D20, D44, D45 | |
| RE-.04703-10 | 0.47, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 32 | R102, R103, R107, R108, R111, R112, R113, R114, R211, R212, R214, R215, R217, R218, R220, R222, R225, R226, R230, R231, R234, R235, R236, R237, R88, R89, R91, R92, R94, R95, R97, R99 | |
| RE-.56002-10 | 5.6, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 7 | R203, R221, R354, R355, R373, R80, R98 | |
| RE-000210-NR | NTC, 10 OHMS, 15 AMPS, , , INRUSH LIMIT | 1 | R324 | |
| RE-000230-NR | NTC, 10K OHMS, , 15 PCNT, , -4.4 PCNT PER C | 2 | R155, R30 | |
| RE-001003-30 | 10, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 4 | R353, R356, R358, R359 | |
| RE-001502-10 | 15, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 13 | R208, R209, R210, R213, R216, R350, R367, R368, R85, R86, R87, R90, R93 | |
| RE-003921-30 | 39.2, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 6 | R246, R247, R248, R249, R349, R357 | |
| RE-004752-30 | 47.5, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 5 | R308, R309, R312, R313, R319 | |
| RE-005605-EM | 56, 5 PCNT, 2W, METAL OXIDE, , | 1 | R372 | |
| RE-007502-30 | 75, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R123, R124, R5, R6 | |
| RE-010002-30 | 100, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 14 | R144, R150, R193, R194, R21, R27, R334, R364, R381, R382, R383, R384, R70, R71 | |
| RE-020002-30 | 200, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 2 | R302, R377 | |
| RE-024301-30 | 243, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 1 | R320 | |
| RE-027401-30 | 274, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 8 | R190, R191, R204, R205, R67, R68, R81, R82 | |
| RE-038301-30 | 383, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R167, R254, R255, R44 | |
| RE-047502-30 | 475, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R151, R160, R28, R37 | |
| RE-053602-30 | 536, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R146, R22, R361, R374 | |
| RE-063402-30 | 634, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 1 | R370 | |
| RE-082002-00 | 820, 5 PCNT, 2W, METAL OXIDE FP, , | 1 | R256 | |
| RE-093101-30 | 931, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 1 | R379 | |
| RE-110006-30 | 1.00K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 11 | R1, R117, R118, R128, R165, R232, R250, R252, R369, R42, R7 | |
| RE-110009-00 | 1K, 5 PCNT, 2W, METAL OXIDE FP, , | 3 | R276, R277, R278 | |
| RE-115002-30 | 1.50K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 16 | R101, R109, R147, R154, R157, R158, R162, R164, R23, R270, R273, R32, R34, R35, R39, R41 | |
| RE-116202-30 | 1.62K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R195, R198, R72, R75 | |
| RE-117401-30 | 1.74K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 3 | R272, R310, R311 | |

| Part Number | Description | Qty. | Reference | Comment |
|--------------|--|------|--|---------|
| RE-120002-30 | 2.00K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R127, R171, R266, R48 | |
| RE-122103-30 | 2.21K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 10 | R170, R240, R264, R265, R267, R306, R307, R347, R348, R47 | |
| RE-127003-00 | 2.7K, 5 PCNT, 2W, METAL OXIDE FP, , | 2 | R257, R378 | |
| RE-134802-30 | 3.48K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 2 | R290, R293 | |
| RE-146401-30 | 4.64K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R297, R298, R299, R300 | |
| RE-147502-30 | 4.75K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 18 | R10, R11, R125, R126, R131, R137, R138, R163, R166, R17, R282, R287, R3, R327, R330, R362, R4, R40 | |
| RE-159002-30 | 5.90K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 7 | R122, R152, R182, R185, R29, R59, R62 | |
| RE-175002-30 | 7.50K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 6 | R120, R132, R140, R15, R161, R38 | |
| RE-178701-30 | 7.87K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 3 | R291, R294, R360 | |
| RE-182005-EM | 8.2K, 5 PCNT, 2W, METAL OXIDE FP, , | 1 | R251 | |
| RE-190902-30 | 9.09K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 2 | R258, R295 | |
| RE-210003-30 | 10.0K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 8 | R121, R305, R336, R338, R363, R366, R375, R376 | |
| RE-210009-30 | 10.0K, 0.1 PCNT, 1/10W, THIN FILM, 0805, 100V | 8 | R12, R129, R13, R130, R135, R136, R8, R9 | |
| RE-212702-30 | 12.7K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 23 | R106, R133, R134, R139, R14, R142, R159, R16, R169, R188, R19, R199, R200, R241, R245, R259, R329, R337, R36, R46, R65, R76, R77 | |
| RE-214300-30 | 14.3K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R315, R316, R317, R318 | |
| RE-215002-30 | 15.0K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 6 | R148, R168, R25, R262, R365, R45 | |
| RE-216501-EM | 16.5K, 1 PCNT, 1/2W, METAL FILM, , | 2 | R153, R31 | |
| RE-220002-30 | 20.0K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 12 | R141, R18, R229, R242, R244, R253, R271, R281, R303, R304, R331, R346 | |
| RE-220003-30 | 20.0K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 4 | R172, R173, R49, R50 | |
| RE-224901-30 | 24.9K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 1 | R325 | |
| RE-230002-10 | 30K, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 2 | R351, R352 | |
| RE-239202-30 | 39.2K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 9 | R143, R183, R184, R20, R243, R261, R323, R60, R61 | |
| RE-247503-30 | 47.5K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R149, R224, R26, R343 | |
| RE-269801-30 | 69.8K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 5 | R283, R284, R285, R286, R296 | |
| RE-310002-30 | 100K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R119, R156, R33, R332 | |
| RE-310003-30 | 100K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 9 | R196, R197, R268, R341, R342, R344, R345, R73, R74 | |
| RE-315002-30 | 150K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 6 | R174, R176, R333, R335, R51, R53 | |
| RE-339201-30 | 392K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 5 | R145, R24, R260, R263, R340 | |
| RE-348702-30 | 487K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 4 | R321, R322, R326, R328 | |
| RE-375005-EM | 750K, 5 PCNT, 1/2W, METAL FILM, , | 2 | R339, R371 | |
| RE-410001-30 | 1.0M, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 2 | R289, R292 | |
| SC-063100-PP | , PHILLIPS, PANHEAD, , , , #6-20, 0.625" L, , , ZINC, TYPE AB, CR3 | 20 | | |
| SC-081101-SP | SCR, PPH, PNH SERR BSE, , , , #8-18, 0.625" L, , BLK, TYPE AB, CR3 | 4 | | |
| SW-000053-00 | SWITCH, SPST X 10, 20 PIN DIP, PCB MOUNT LONG LEADS | 1 | SW1 | |
| SW-000104-00 | RELAY, SPDT, 24VDC COIL, 20A, 125VAC, T90 STYLE (FOR PLC MODELS) | 1 | K1 | |
| WC-0.2020-JW | JUMPER, BARE, 20 AWG SOLID, 1 CONDUCTOR, , 0.2" L, | 4 | D21, D22, D46, D47 | |
| WC-0.5018-JW | JUMPER, TEFLON INSULATION, 18 AWG SOLID, 1 CONDUCTOR, , 0.5" L, | 2 | D88, W120 | |
| WC-000002-10 | JUMPER, BARE, 22 AWG SOLID, 1 CONDUCTOR, , VARIABLE LENGTH, AUTO INSERT-ABLE | 3 | D87, W1, W2 | |
| WC-000103-00 | RIBBON CABLE ASSY, , 28 AWG, 20 CONDUCTOR, PLC, 9" L, | 3 | J14A, J14B, J3A, J3B, J5A, J5B | |
| WC-000115-00 | WIRE ASSY, AC SWITCH, 16 AWG, 1 CONDUCTOR, PLC, 14" L, BLACK | 1 | W7 | |
| WC-000115-01 | WIRE ASSY, AC SWITCH, 16 AWG, 1 CONDUCTOR, PLC, 7" L, RED | 1 | W6 | |

| Part Number | Description | Qty. | Reference | Comment |
|--------------|---|------|-----------|---------|
| WC-000117-00 | WIRE ASSY, SPEAKER, 16 AWG, 1 CONDUCTOR, PLC, 8.5 IN, BLACK | 1 | W12 | |
| WC-000117-01 | WIRE ASSY, SPEAKER, 16 AWG, 1 CONDUCTOR, PLC, 7.5 IN, WHITE | 1 | W9 | |
| WC-000117-02 | WIRE ASSY, SPEAKER, 16 AWG, 1 CONDUCTOR, PLC, 9 IN, GRAY | 1 | W11 | |
| WC-000117-03 | WIRE ASSY, SPEAKER, 16 AWG, 1 CONDUCTOR, PLC, 7.5 IN, BLACK | 1 | W10 | |
| WC-000118-00 | WIRE ASSY, , 16 AWG, 1 CONDUCTOR, PLC, 12.5" L, BLACK | 1 | W5 | |
| WC-000118-01 | WIRE ASSY, , 16 AWG, 1 CONDUCTOR, PLC, 10.5" L, RED | 1 | W8 | |
| XF-000005-00 | BEAD, 100MHZ, 271 OHM, | 2 | L10, L9 | |
| XF-000023-00 | INDUCTOR, COMMON MODE, , 2MH, , , | 2 | L3, L4 | |
| XF-000061-00 | INDUCTOR, 2 COUPLED WINDINGS, TOROID, 1.9UH, PL/DCA/CX, 230V, | 1 | L6 | |
| XF-000064-00 | TRANSFORMER, HOUSEKEEPING, , , , PLC, , | 1 | T1 | |
| XF-000066-00 | INDUCTOR, ZOBEL CURRENT SENSE, , 2UH, PLC, , | 2 | L1, L2 | |
| XF-000183-00 | TRANSFORMER, SWITCHING, 115KHZ, E55, 1500W, DCA3422, 120V/230V, | 1 | T2 | |

9.9 WP-002423-00, DCA 2422 PCB assembly

| Part Number | Description | Qty. | Reference | Comment |
|--------------|--|------|---|---------|
| CA-010002-30 | 10PF, 5 PCNT, 50V, CERAMIC NPO, 0805, | 2 | C14, C49 | |
| CA-015002-10 | 15PF, 10 PCNT, 500V, CERAMIC SL, DISC, | 2 | C16, C50 | |
| CA-047002-30 | 47PF, 5 PCNT, 50V, CERAMIC NPO, 0805, | 8 | C100, C187, C193, C29, C30, C64, C65, C99 | |
| CA-110001-10 | 100PF, 5 PCNT, 500V, MICA, DIPPED, | 1 | C147 | |
| CA-110002-30 | 100PF, 5 PCNT, 50V, CERAMIC NPO, 0805, | 8 | C18, C40, C41, C43, C5, C53, C6, C9 | |
| CA-122003-30 | 220PF, 5 PCNT, 50V, CERAMIC NPO, 1206, | 4 | C1, C2, C36, C37 | |
| CA-133001-10 | 330PF, 5 PCNT, 500V, MICA, DIPPED, | 2 | C145, C146 | |
| CA-147003-30 | 470PF, 5 PCNT, 50V, CERAMIC NPO, 1206, | 11 | C119, C148, C17, C181, C182, C186, C188, C26, C4, C52, C61 | |
| CA-168003-30 | 680PF, 5 PCNT, 50V, CERAMIC NPO, 0805, | 2 | C25, C60 | |
| CA-210005-30 | 0.001UF, 5 PCNT, 50V, CERAMIC NPO, 1206, | 11 | C120, C124, C195, C196, C75, C81, C85, C93, C94, C95, C96 | |
| CA-222001-00 | 0.0022UF, 20 PCNT, 250VAC, CERAMIC Y5U, DISC, YCAP | 2 | C122, C127 | |
| CA-227001-30 | 0.0027UF, 10 PCNT, 100V, CERAMIC X7R, 0805, | 11 | C108, C109, C128, C20, C23, C24, C55, C58, C59, C68, C98 | |
| CA-233001-10 | 0.0033UF, 10 PCNT, 100V, FILM, DIPPED, | 1 | C113 | |
| CA-233002-00 | 0.0033UF, 20 PCNT, 250VAC, CERAMIC, DISC, Y2CAP | 2 | C115, C118 | |
| CA-322001-10 | 0.022UF, 10 PCNT, 100V, FILM, DIPPED, | 2 | C27, C62 | |
| CA-410001-00 | 0.1UF, 20 PCNT, 250VAC, FILM, BOX STYLE, X2CAP | 1 | C126 | |
| CA-410002-10 | 0.1UF, 5 PCNT, 100V, FILM, DIPPED, | 4 | C12, C44, C47, C8 | |
| CA-410003-10 | 0.1UF, 10 PCNT, 250V, FILM, DIPPED, | 13 | C129, C134, C156, C157, C28, C34, C35, C63, C69, C70, C84, C87, C90 | |
| CA-410006-30 | 0.1UF, 10 PCNT, 50V, CERAMIC X7R, 1206, | 19 | C116, C125, C135, C155, C162, C163, C177, C178, C179, C180, C183, C185, C189, C19, C190, C191, C194, C54, C88 | |
| CA-410011-00 | 0.1UF, 10 PCNT, 400V, MPET FILM, DIPPED, | 2 | C107, C123 | |
| CA-422001-10 | 0.22UF, 5 PCNT, 50V, FILM, DIPPED, LOW PROFILE | 2 | C10, C45 | |
| CA-422004-30 | 0.22UF, 10 PCNT, 50V, CERAMIC X7R, 1206, | 2 | C121, C39 | |
| CA-447001-00 | 0.47UF, 20 PCNT, 250V, POLYPRO FILM, BOX, X2CAP | 1 | C117 | |
| CA-447003-00 | 0.47UF, 10 PCNT, 400V, FILM, WRAPPED, PULSE | 1 | C144 | |
| CA-510003-10 | 1.0UF, 20 PCNT, 50V, ELECTROLYTIC, , | 1 | C80 | |
| CA-510005-30 | 1.0UF, 20 PCNT, 50V, ELECTROLYTIC, SMT, | 2 | C13, C48 | |
| CA-510006-00 | 1.0UF, 20 PCNT, 250V, POLYPRO, BOX, X2CAP | 2 | C110, C112 | |
| CA-610002-10 | 10UF, 20 PCNT, 35V, ELECTROLYTIC, , | 7 | C114, C192, C3, C31, C38, C66, C86 | |
| CA-610006-30 | 10UF, 20 PCNT, 16V, ELECTROLYTIC, SMT, | 1 | C184 | |
| CA-647001-10 | 47UF, 10 PCNT, 10V, ELECTROLYTIC, , NON-POLAR | 11 | C102, C104, C105, C106, C11, C42, C46, C7, C71, C91, C92 | |
| CA-647002-10 | 47UF, 20 PCNT, 50V, ELECTROLYTIC, , LOW PROFILE | 5 | C21, C22, C56, C57, C89 | |
| CA-710002-10 | 100UF, 20 PCNT, 25V, ELECTROLYTIC, , | 11 | C139, C142, C143, C15, C32, C33, C51, C67, C72, C78, C79 | |
| CA-710004-10 | 100UF, 20 PCNT, 25V, ELECTROLYTIC, , LOW ESR | 3 | C138, C149, C150 | |
| CA-747001-10 | 470UF, 20 PCNT, 16V, ELECTROLYTIC, , | 7 | C131, C73, C74, C76, C77, C82, C83 | |
| CA-747004-00 | 470UF, 20 PCNT, 100V, ELECTROLYTIC, , LOW ESR | 10 | C152, C153, C159, C160, C165, C166, C169, C170, C173, C174 | |
| CA-747063-AE | 470UF, 20 PCNT, 63V, ELECTROLYTIC, , | 10 | C151, C154, C158, C161, C164, C167, C168, C171, C172, C175 | |
| CA-822200-AE | 2200UF, 20 PCNT, 200V, ELECTROLYTIC, , | 4 | C132, C133, C136, C137 | |
| CH-000102-00 | HEAT SINK, AUDIO, , PLX3002, | 4 | | |
| CH-000103-00 | CLAMP, TO-3PL, 22 GA, PLX3002, | 9 | | |
| CH-000104-00 | HEAT SINK, PS, , PLX3002, | 2 | | |

| Part Number | Description | Qty. | Reference | Comment |
|--------------|---|------|--|---------|
| CH-000114-00 | CLAMP, DIODE, 2 FINGER, PLX3002, | 4 | | |
| CH-000120-00 | BRACKET, OUTPUT, , DCA3022, | 1 | | |
| CO-000009-ZT | ZTAB, 0.25" TAB, 1 POS, MALE, AUTO INSERTABLE | 3 | J19, J20, J21 | |
| CO-000036-CO | CONNECTOR, SPEAKON, 4 POS, FEMALE, CHAS MNT, CSUNK HOLES, VERT PCB | 2 | J7, J8 | |
| CO-000106-00 | JACK, HD15, 15 POS, FEMALE, RIGHT ANGLE SWAGED JACK SCREW | 1 | J17 | |
| CO-000148-00 | XLR, NEUTRIK, 3 POS, FEMALE, VERTICAL | 2 | J10, J2 | |
| CO-000155-00 | HEADER, 0.1" CENTERS, 2 POS (1X2), MALE, RAMP LOCK | 1 | J13 | |
| CO-000161-00 | JACK, EURO, 3 POS, FEMALE, BLACK | 2 | J16, J18 | |
| CO-000170-00 | BARRIER STRIP, 0.375" CENTERS, 6 POS, , COVERED | 1 | J12 | |
| CO-300112-PJ | JACK, PHONE, 3 POS, FEMALE, | 2 | J1, J9 | |
| HW-000001-FC | FUSE CLIP, PC MOUNT, , , TIN PLATED BRASS, 3AG | 2 | | |
| IC-000024-00 | CONTROLLER, PWM, SG3525AN, , | 1 | U19 | |
| IC-000046-30 | OPAMP, DUAL, TL072, SMT, | 2 | U11, U12 | |
| IC-000047-30 | COMPARATOR, DUAL, LM393, SMT, | 1 | U10 | |
| IC-000048-30 | OPAMP, DUAL, MC33078, , | 2 | U1, U6 | |
| IC-000051-00 | OPTO ISOLATOR, , TCDT1101, , | 1 | U17 | |
| IC-000053-30 | TIMER, DUAL, LM556, , | 1 | U14 | |
| IC-000054-30 | COMPARATOR, QUAD, LM339AM, SMT, | 1 | U13 | |
| IC-000073-30 | TRANSCONDUCTANCE OPAMP, DUAL, LM13600M, , | 1 | U3 | |
| IC-000133-30 | COMPARATOR, SINGLE, LM311, SMT, | 4 | U4, U5, U8, U9 | |
| IC-000134-00 | DRIVER, MOSFET, IR2110, , | 1 | U18 | |
| IC-000135-00 | TOP SWITCH, , TOP210, , | 1 | U16 | |
| IC-000592-00 | OPTO ISOL, TCDT 1103, DIP, , , | 1 | U15 | |
| IC-005532-OP | OPAMP, DUAL, NE5532, , | 2 | U2, U7 | |
| LB-000250-00 | PRODUCT, OUTPUT, REAR, DCA 2CH 2RU, | 1 | | |
| MS-000048-HS | HEAT SINK, TO-220, 1.375" X 0.86" X 0.395", LONG TAB, PLUG-IN | 1 | | |
| MS-000112-00 | FUSE, 25A, 250V, 0.25" X 1.25", NORMAL-BLO | 1 | F1 | |
| MS-000115-30 | FUSE, 1.0A, 24V, 1206, SLO | 1 | R314 | |
| PA-000111-00 | LED HOLDER ASSY, , , , | 1 | | |
| PC-003606-00 | PCB, CX/CXV/DCA/PL3, , , | 1 | | |
| PL-000098-00 | INSULATOR, TRANSISTOR, 0.85" X 1.09", THERMALLY CONDUCTIVE, TO-220, | 4 | | |
| PL-000114-00 | INSULATOR, IGBT/RECTIFIER, 1.25" X 3.20", THERMALLY CONDUCTIVE, , | 2 | | |
| PL-000117-00 | INSULATOR, TRANSISTOR, , THERMALLY CONDUCTIVE, , | 1 | | |
| PL-000126-00 | SPRING SEAT, TRANSISTOR, PLX, NYLON, , | 9 | | |
| PL-000128-00 | SPACER, T-1 3/4 LED, 0.276", PLASTIC, BLACK, | 2 | | |
| PL-000135-00 | INSULATOR, TRANSISTOR, 1.25" X 1.75", MICA, , | 1 | | |
| PT-150000-AT | TRIM, 500, 20 PCNT, 0.15W, , | 2 | VR166, VR43 | |
| PT-310007-00 | GAIN, 10K, 20 PCNT, 0.05W, 21 DETENT, 11MM LENGTH | 2 | VR121, VR2 | |
| QD-000014-QD | DIODE RECTIFIER ULTRAFAST, 200V, 15A, , MUR1520, TO-220, 35NS | 8 | D21, D22, D46, D47, D74, D75, D80, D81 | |
| QD-000021-QD | DIODE ZENER, 10V, , 1W, 1N4740A, DO-41, | 3 | D32, D7, D88 | |
| QD-000031-QD | MOSFET N-CHANNEL, 60V, 50A, 150W, MTP45N06, TO-220, | 4 | Q38, Q41, Q83, Q86 | |
| QD-000042-00 | DIODE RECTIFIER ULTRAFAST, 400V, 3A, , MUR440, DO-201AD, 50NS | 2 | D70, D71 | |
| QD-000062-10 | TRANSISTOR NPN, 40V, 0.2A, 1.5W, 2N3904, TO-92, | 2 | Q20, Q65 | |
| QD-000063-10 | TRANSISTOR PNP, 40V, 0.2A, 1.5W, 2N3906, TO-92, | 2 | Q21, Q66 | |
| QD-000076-00 | TRANSISTOR NPN, 250V, 8A, 50W, MJE15032, TO-220, | 2 | Q27, Q72 | |
| QD-000077-00 | TRANSISTOR PNP, 250V, 8A, 50W, MJE15033, TO-220, | 2 | Q26, Q71 | |

| Part Number | Description | Qty. | Reference | Comment |
|--------------|---|------|---|---------|
| QD-000102-30 | DIODE, 75V, 0.075A, , IMBD4148, SOT-23, 4NS | 48 | D1, D10, D11, D12, D14, D15, D17, D18, D2, D23, D24, D25, D26, D27, D28, D29, D3, D30, D33, D34, D35, D36, D37, D39, D4, D40, D42, D43, D48, D49, D5, D50, D51, D52, D55, D59, D63, D64, D65, D67, D69, D8, D89, D9, D90, D91, D93, D94 | |
| QD-000103-30 | TRANSISTOR NPN, 40V, 0.2A, 0.2W, MMST3904, SOT-23, | 24 | Q13, Q15, Q18, Q25, Q30, Q32, Q49, Q5, Q50, Q53, Q54, Q58, Q60, Q63, Q70, Q75, Q77, Q8, Q89, Q9, Q90, Q92, Q93, Q95 | |
| QD-000104-30 | TRANSISTOR PNP, 40V, 0.2A, 0.2W, MMST3906, SOT-23, | 34 | Q1, Q10, Q11, Q12, Q14, Q2, Q23, Q24, Q3, Q31, Q33, Q4, Q42, Q43, Q44, Q45, Q46, Q47, Q48, Q51, Q55, Q56, Q57, Q59, Q6, Q68, Q69, Q76, Q78, Q87, Q88, Q94, Q98, Q99 | |
| QD-000105-30 | TRANSISTOR NPN, 300V, 0.2A, 0.2W, MMBA42, SOT-23, | 4 | Q16, Q52, Q61, Q7 | |
| QD-000106-30 | TRANSISTOR PNP, 300V, 0.2A, 0.2W, MMBA92, SOT-23, | 2 | Q17, Q62 | |
| QD-000108-30 | DIODE, 200V, 0.2A, , BAS21, SOT-23, 50NS | 8 | D13, D16, D38, D41, D61, D68, D78, D79 | |
| QD-000110-30 | DIODE ZENER, 6.2V, , 0.3W, BZX84C6V2, SOT-23, | 2 | D56, D92 | |
| QD-000113-30 | DIODE ZENER, 10V, , 0.3W, BZX84C10, SOT-23, | 1 | D66 | |
| QD-000115-30 | DIODE RECTIFIER ULTRAFAST, 600V, 1A, , MURS160T3, SMB, 75NS | 3 | D58, D60, D86 | |
| QD-000116-30 | DIODE RECTIFIER ULTRAFAST, 200V, 1A, , MURS120, SMB, 35NS | 5 | D62, D76, D77, D82, D83 | |
| QD-000152-10 | DIODE ZENER, 12V, , 1W, 1N4742A, DO-41, | 1 | D57 | |
| QD-000153-00 | DIODE RECTIFIER ULTRAFAST, 400V, 30A, , APT30D40B, TO-247AD, 70NS | 4 | D72, D73, D84, D85 | |
| QD-000154-00 | TRANSISTOR NPN, 230V, 1A, 20W, 2SC4793, TO-220, | 2 | Q19, Q64 | |
| QD-000155-00 | TRANSISTOR PNP, 230V, 1A, 20W, 2SA1837, TO-220, | 2 | Q22, Q67 | |
| QD-000156-00 | TRANSISTOR PNP, 100V, 3A, 40W, TIP32C, TO-220, | 1 | Q91 | |
| QD-000169-00 | IGBT, 600V, 55A, 200W, IRG4PC50U, TO-247, | 2 | Q96, Q97 | |
| QD-000170-00 | BRIDGE RECTIFIER, , , RBV5006, , 600V 50A | 1 | BR1 | |
| QD-000287-10 | DIODE ZENER, 3.9V, 5 PCNT, 0.25W, 1N520B, DO-35, | 2 | D31, D6 | |
| QD-001943-PN | TRANSISTOR PNP, 230V, 15A, 150W, 2SA1943-R, TO-264, | 8 | Q28, Q34, Q36, Q39, Q73, Q79, Q81, Q84 | |
| QD-004744-ZA | DIODE ZENER, 15V, 5 PCNT, 3W, 1N5929B, , | 3 | D53, D54, D87 | |
| QD-005200-NP | TRANSISTOR NPN, 230V, 15A, 150W, 2SC5200, TO-264, | 8 | Q29, Q35, Q37, Q40, Q74, Q80, Q82, Q85 | |
| QD-005402-DX | DIODE, 200V, 3A, , 1N5402, DO-27, | 4 | D19, D20, D44, D45 | |
| RE-.04703-10 | 0.47, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 32 | R102, R103, R107, R108, R111, R112, R113, R114, R211, R212, R214, R215, R217, R218, R220, R222, R225, R226, R230, R231, R234, R235, R236, R237, R88, R89, R91, R92, R94, R95, R97, R99 | |
| RE-.15002-10 | 1.5, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 5 | R115, R116, R238, R239, R269 | |
| RE-.56002-10 | 5.6, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 7 | R203, R221, R354, R355, R373, R80, R98 | |
| RE-000210-NR | NTC, 10 OHMS, 15 AMPS, , , INRUSH LIMIT | 1 | R324 | |
| RE-000230-NR | NTC, 10K OHMS, , 15 PCNT, , -4.4 PCNT PER C | 2 | R155, R30 | |
| RE-001003-30 | 10, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 4 | R353, R356, R358, R359 | |
| RE-001502-10 | 15, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 13 | R208, R209, R210, R213, R216, R350, R367, R368, R85, R86, R87, R90, R93 | |
| RE-003921-30 | 39.2, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 6 | R246, R247, R248, R249, R349, R357 | |
| RE-004752-30 | 47.5, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 9 | R100, R110, R223, R233, R308, R309, R312, R313, R319 | |
| RE-005605-EM | 56, 5 PCNT, 2W, METAL OXIDE, , | 1 | R372 | |
| RE-007502-30 | 75, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 8 | R123, R124, R193, R194, R5, R6, R70, R71 | |

| Part Number | Description | Qty. | Reference | Comment |
|--------------|---|------|--|---------|
| RE-010002-30 | 100, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 10 | R144, R150, R21, R27, R334, R364, R381, R382, R383, R384 | |
| RE-015004-10 | 150, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 2 | R256, R278 | |
| RE-020002-30 | 200, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R204, R205, R81, R82 | |
| RE-027401-30 | 274, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R190, R191, R67, R68 | |
| RE-036501-30 | 365, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 1 | R320 | |
| RE-038301-30 | 383, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R167, R254, R255, R44 | |
| RE-047001-10 | 470, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 2 | R274, R275 | |
| RE-047002-00 | 470, 5 PCNT, 2W, METAL OXIDE FP, , | 3 | R276, R277, R279 | |
| RE-047502-30 | 475, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R151, R160, R28, R37 | |
| RE-053602-30 | 536, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 6 | R146, R22, R302, R361, R374, R377 | |
| RE-063402-30 | 634, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 1 | R370 | |
| RE-093101-30 | 931, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 1 | R379 | |
| RE-110006-30 | 1.00K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 11 | R1, R117, R118, R128, R165, R232, R250, R252, R369, R42, R7 | |
| RE-115002-30 | 1.50K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 16 | R101, R109, R147, R154, R157, R158, R162, R164, R23, R270, R273, R32, R34, R35, R39, R41 | |
| RE-116002-00 | 1.6K, 5 PCNT, 2W, METAL OXIDE FP, , | 2 | R257, R378 | |
| RE-117401-30 | 1.74K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 3 | R272, R310, R311 | |
| RE-120002-30 | 2.00K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R127, R171, R266, R48 | |
| RE-122103-30 | 2.21K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 16 | R170, R195, R198, R207, R240, R264, R265, R267, R306, R307, R347, R348, R47, R72, R75, R84 | |
| RE-130102-30 | 3.01K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R202, R290, R293, R79 | |
| RE-136502-30 | 3.65K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R297, R298, R299, R300 | |
| RE-147502-30 | 4.75K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 30 | R10, R11, R125, R126, R131, R137, R138, R163, R166, R17, R178, R179, R182, R185, R186, R187, R282, R287, R3, R327, R330, R362, R4, R40, R55, R56, R59, R62, R63, R64 | |
| RE-151002-00 | 5.1K, 5 PCNT, 2W, METAL OXIDE FP, , | 5 | R105, R219, R228, R251, R96 | |
| RE-159002-30 | 5.90K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 7 | R122, R152, R201, R206, R29, R78, R83 | |
| RE-175002-30 | 7.50K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 6 | R120, R132, R140, R15, R161, R38 | |
| RE-178701-30 | 7.87K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 1 | R360 | |
| RE-190902-30 | 9.09K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 1 | R258 | |
| RE-210003-30 | 10.0K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 9 | R121, R295, R305, R336, R338, R363, R366, R375, R376 | |
| RE-210009-30 | 10.0K, 0.1 PCNT, 1/10W, THIN FILM, 0805, 100V | 8 | R12, R129, R13, R130, R135, R136, R8, R9 | |
| RE-211303-30 | 11.3K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R315, R316, R317, R318 | |
| RE-212702-30 | 12.7K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 21 | R104, R106, R133, R134, R139, R14, R142, R159, R16, R169, R188, R19, R227, R241, R245, R259, R329, R337, R36, R46, R65 | |
| RE-215002-30 | 15.0K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 6 | R148, R168, R25, R262, R365, R45 | |
| RE-216501-0M | 16.5K, 1 PCNT, 1/2W, METAL FILM, , | 2 | R153, R31 | |
| RE-220002-30 | 20.0K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 14 | R141, R18, R229, R242, R244, R253, R271, R281, R291, R294, R303, R304, R331, R346 | |
| RE-224901-30 | 24.9K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 1 | R325 | |
| RE-230002-10 | 30K, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 2 | R351, R352 | |
| RE-230102-30 | 30.1K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 4 | R172, R173, R49, R50 | |
| RE-239202-30 | 39.2K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 13 | R143, R183, R184, R199, R20, R200, R243, R261, R323, R60, R61, R76, R77 | |

| Part Number | Description | Qty. | Reference | Comment |
|--------------|--|------|--|---------|
| RE-247503-30 | 47.5K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 5 | R149, R2, R26, R343, R43 | |
| RE-269801-30 | 69.8K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 4 | R283, R284, R285, R286 | |
| RE-310002-30 | 100K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 5 | R119, R156, R224, R33, R332 | |
| RE-310003-30 | 100K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 12 | R174, R176, R196, R197, R268, R288, R344, R345, R51, R53, R73, R74 | |
| RE-315002-30 | 150K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 12 | R175, R177, R180, R181, R333, R335, R341, R342, R52, R54, R57, R58 | |
| RE-339201-30 | 392K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 9 | R145, R189, R192, R24, R260, R263, R340, R66, R69 | |
| RE-348702-30 | 487K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 4 | R321, R322, R326, R328 | |
| RE-375005-BM | 750K, 5 PCNT, 1/2W, METAL FILM, , | 2 | R339, R371 | |
| RE-410001-30 | 1.0M, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 2 | R289, R292 | |
| SC-063100-PP | , PHILLIPS, PANHEAD, , , , #6-20, 0.625" L, , , ZINC, TYPE AB, CR3 | 20 | | |
| SC-081101-SP | SCR, PPH, PNH SERR BSE, , , , #8-18, 0.625" L, , BLK, TYPE AB, CR3 | 8 | | |
| SW-000053-00 | SWITCH, SPST X 10, 20 PIN DIP, PCB MOUNT LONG LEADS | 1 | SW1 | |
| SW-000104-00 | RELAY, SPDT, 24VDC COIL, 20A, 125VAC, T90 STYLE (FOR PLC MODELS) | 1 | K1 | |
| WC-0.5018-JW | JUMPER, TEFLON INSULATION, 18 AWG SOLID, 1 CONDUCTOR, , 0.5" L, | 1 | W120 | |
| WC-000002-10 | JUMPER, BARE, 22 AWG SOLID, 1 CONDUCTOR, , VARIABLE LENGTH, AUTO INSERT-ABLE | 2 | W1, W2 | |
| WC-000103-00 | RIBBON CABLE ASSY, , 28 AWG, 20 CONDUCTOR, PLC, 9" L, | 3 | J14A, J14B, J3A, J3B, J5A, J5B | |
| WC-000113-10 | JUMPER, 0.8" TEFLON INSULATION, 22 AWG, 1 CONDUCTOR, , 0.9" L, AUTO INSERTABLE | 1 | R280 | |
| WC-000115-00 | WIRE ASSY, AC SWITCH, 16 AWG, 1 CONDUCTOR, PLC, 14" L, BLACK | 1 | W7 | |
| WC-000115-01 | WIRE ASSY, AC SWITCH, 16 AWG, 1 CONDUCTOR, PLC, 7" L, RED | 1 | W6 | |
| WC-000117-00 | WIRE ASSY, SPEAKER, 16 AWG, 1 CONDUCTOR, PLC, 8.5 IN, BLACK | 1 | W12 | |
| WC-000117-01 | WIRE ASSY, SPEAKER, 16 AWG, 1 CONDUCTOR, PLC, 7.5 IN, WHITE | 1 | W9 | |
| WC-000117-02 | WIRE ASSY, SPEAKER, 16 AWG, 1 CONDUCTOR, PLC, 9 IN, GRAY | 1 | W11 | |
| WC-000117-03 | WIRE ASSY, SPEAKER, 16 AWG, 1 CONDUCTOR, PLC, 7.5 IN, BLACK | 1 | W10 | |
| WC-000118-00 | WIRE ASSY, , 16 AWG, 1 CONDUCTOR, PLC, 12.5" L, BLACK | 1 | W5 | |
| WC-000118-01 | WIRE ASSY, , 16 AWG, 1 CONDUCTOR, PLC, 10.5" L, RED | 1 | W8 | |
| XF-000005-00 | BEAD, 100MHZ, 271 OHM, | 6 | L10, L11, L12, L7, L8, L9 | |
| XF-000023-00 | INDUCTOR, COMMON MODE, , 2MH, , , | 2 | L3, L4 | |
| XF-000061-00 | INDUCTOR, 2 COUPLED WINDINGS, TOROID, 1.9UH, PL/DCA/CX, 230V, | 1 | L6 | |
| XF-000064-00 | TRANSFORMER, HOUSEKEEPING, , , , PLC, , | 1 | T1 | |
| XF-000066-00 | INDUCTOR, ZOBEL CURRENT SENSE, , 2UH, PLC, , | 2 | L1, L2 | |
| XF-000179-00 | TRANSFORMER, SWITCHING, 115KHZ, E55, 1500W, DCA1222, 120V/230V, | 1 | T2 | |

9.10 WP-003023-00, DCA 3022 PCB assembly

| Part Number | Description | Qty. | Reference | Comment |
|--------------|--|------|---|---------|
| CA-010002-30 | 10PF, 5 PCNT, 50V, CERAMIC NPO, 0805, | 2 | C14, C49 | |
| CA-015002-10 | 15PF, 10 PCNT, 500V, CERAMIC SL, DISC, | 2 | C16, C50 | |
| CA-047002-30 | 47PF, 5 PCNT, 50V, CERAMIC NPO, 0805, | 8 | C100, C187, C193, C29, C30, C64, C65, C99 | |
| CA-110001-10 | 100PF, 5 PCNT, 500V, MICA, DIPPED, | 1 | C147 | |
| CA-110002-30 | 100PF, 5 PCNT, 50V, CERAMIC NPO, 0805, | 8 | C18, C40, C41, C43, C5, C53, C6, C9 | |
| CA-122003-30 | 220PF, 5 PCNT, 50V, CERAMIC NPO, 1206, | 4 | C1, C2, C36, C37 | |
| CA-133001-10 | 330PF, 5 PCNT, 500V, MICA, DIPPED, | 2 | C145, C146 | |
| CA-147003-30 | 470PF, 5 PCNT, 50V, CERAMIC NPO, 1206, | 11 | C119, C148, C17, C181, C182, C186, C188, C26, C4, C52, C61 | |
| CA-168003-30 | 680PF, 5 PCNT, 50V, CERAMIC NPO, 0805, | 2 | C25, C60 | |
| CA-210005-30 | 0.001UF, 5 PCNT, 50V, CERAMIC NPO, 1206, | 11 | C120, C124, C195, C196, C75, C81, C85, C93, C94, C95, C96 | |
| CA-222001-00 | 0.0022UF, 20 PCNT, 250VAC, CERAMIC Y5U, DISC, YCAP | 2 | C122, C127 | |
| CA-227001-30 | 0.0027UF, 10 PCNT, 100V, CERAMIC X7R, 0805, | 11 | C108, C109, C128, C20, C23, C24, C55, C58, C59, C68, C98 | |
| CA-233001-10 | 0.0033UF, 10 PCNT, 100V, FILM, DIPPED, | 1 | C113 | |
| CA-233002-00 | 0.0033UF, 20 PCNT, 250VAC, CERAMIC, DISC, Y2CAP | 2 | C115, C118 | |
| CA-322001-10 | 0.022UF, 10 PCNT, 100V, FILM, DIPPED, | 2 | C27, C62 | |
| CA-410001-00 | 0.1UF, 20 PCNT, 250VAC, FILM, BOX STYLE, X2CAP | 1 | C126 | |
| CA-410002-10 | 0.1UF, 5 PCNT, 100V, FILM, DIPPED, | 4 | C12, C44, C47, C8 | |
| CA-410003-10 | 0.1UF, 10 PCNT, 250V, FILM, DIPPED, | 13 | C129, C134, C156, C157, C28, C34, C35, C63, C69, C70, C84, C87, C90 | |
| CA-410006-30 | 0.1UF, 10 PCNT, 50V, CERAMIC X7R, 1206, | 19 | C116, C125, C135, C155, C162, C163, C177, C178, C179, C180, C183, C185, C189, C19, C190, C191, C194, C54, C88 | |
| CA-410011-00 | 0.1UF, 10 PCNT, 400V, MPET FILM, DIPPED, | 2 | C107, C123 | |
| CA-422001-10 | 0.22UF, 5 PCNT, 50V, FILM, DIPPED, LOW PROFILE | 2 | C10, C45 | |
| CA-422004-30 | 0.22UF, 10 PCNT, 50V, CERAMIC X7R, 1206, | 2 | C121, C39 | |
| CA-447001-00 | 0.47UF, 20 PCNT, 250V, POLYPRO FILM, BOX, X2CAP | 1 | C117 | |
| CA-447003-00 | 0.47UF, 10 PCNT, 400V, FILM, WRAPPED, PULSE | 1 | C144 | |
| CA-510003-10 | 1.0UF, 20 PCNT, 50V, ELECTROLYTIC, , | 1 | C80 | |
| CA-510005-30 | 1.0UF, 20 PCNT, 50V, ELECTROLYTIC, SMT, | 2 | C13, C48 | |
| CA-510006-00 | 1.0UF, 20 PCNT, 250V, POLYPRO, BOX, X2CAP | 2 | C110, C112 | |
| CA-610002-10 | 10UF, 20 PCNT, 35V, ELECTROLYTIC, , | 7 | C114, C192, C3, C31, C38, C66, C86 | |
| CA-610006-30 | 10UF, 20 PCNT, 16V, ELECTROLYTIC, SMT, | 1 | C184 | |
| CA-647001-10 | 47UF, 10 PCNT, 10V, ELECTROLYTIC, , NON-POLAR | 11 | C102, C104, C105, C106, C11, C42, C46, C7, C71, C91, C92 | |
| CA-647002-10 | 47UF, 20 PCNT, 50V, ELECTROLYTIC, , LOW PROFILE | 5 | C21, C22, C56, C57, C89 | |
| CA-710002-10 | 100UF, 20 PCNT, 25V, ELECTROLYTIC, , | 11 | C139, C142, C143, C15, C32, C33, C51, C67, C72, C78, C79 | |
| CA-710004-10 | 100UF, 20 PCNT, 25V, ELECTROLYTIC, , LOW ESR | 3 | C138, C149, C150 | |
| CA-747001-10 | 470UF, 20 PCNT, 16V, ELECTROLYTIC, , | 7 | C131, C73, C74, C76, C77, C82, C83 | |
| CA-747004-00 | 470UF, 20 PCNT, 100V, ELECTROLYTIC, , LOW ESR | 10 | C152, C153, C159, C160, C165, C166, C169, C170, C173, C174 | |
| CA-747063-AE | 470UF, 20 PCNT, 63V, ELECTROLYTIC, , | 10 | C151, C154, C158, C161, C164, C167, C168, C171, C172, C175 | |
| CA-822200-AE | 2200UF, 20 PCNT, 200V, ELECTROLYTIC, , | 6 | C132, C133, C136, C137, C140, C141 | |
| CH-000102-00 | HEAT SINK, AUDIO, , PLX3002, | 4 | | |
| CH-000103-00 | CLAMP, TO-3PL, 22 GA, PLX3002, | 9 | | |
| CH-000104-00 | HEAT SINK, PS, , PLX3002, | 2 | | |

| Part Number | Description | Qty. | Reference | Comment |
|--------------|---|------|--|---------|
| CH-000114-00 | CLAMP, DIODE, 2 FINGER, PLX3002, | 4 | | |
| CH-000120-00 | BRACKET, OUTPUT, , DCA3022, | 1 | | |
| CO-000009-ZT | ZTAB, 0.25" TAB, 1 POS, MALE, AUTO INSERTABLE | 3 | J19, J20, J21 | |
| CO-000036-CO | CONNECTOR, SPEAKON, 4 POS, FEMALE, CHAS MNT, CSUNK HOLES, VERT PCB | 2 | J7, J8 | |
| CO-000106-00 | JACK, HD15, 15 POS, FEMALE, RIGHT ANGLE SWAGED JACK SCREW | 1 | J17 | |
| CO-000148-00 | XLR, NEUTRIK, 3 POS, FEMALE, VERTICAL | 2 | J10, J2 | |
| CO-000155-00 | HEADER, 0.1" CENTERS, 2 POS (1X2), MALE, RAMP LOCK | 1 | J13 | |
| CO-000161-00 | JACK, EURO, 3 POS, FEMALE, BLACK | 2 | J16, J18 | |
| CO-000170-00 | BARRIER STRIP, 0.375" CENTERS, 6 POS, , COVERED | 1 | J12 | |
| CO-300112-PJ | JACK, PHONE, 3 POS, FEMALE, | 2 | J1, J9 | |
| HW-000001-FC | FUSE CLIP, PC MOUNT, , , TIN PLATED BRASS, 3AG | 2 | | |
| IC-000024-00 | CONTROLLER, PWM, SG3525AN, , | 1 | U19 | |
| IC-000046-30 | OPAMP, DUAL, TL072, SMT, | 2 | U11, U12 | |
| IC-000047-30 | COMPARATOR, DUAL, LM393, SMT, | 1 | U10 | |
| IC-000048-30 | OPAMP, DUAL, MC33078, , | 2 | U1, U6 | |
| IC-000051-00 | OPTO ISOLATOR, , TCDT1101, , | 1 | U17 | |
| IC-000053-30 | TIMER, DUAL, LM556, , | 1 | U14 | |
| IC-000054-30 | COMPARATOR, QUAD, LM339AM, SMT, | 1 | U13 | |
| IC-000073-30 | TRANSCONDUCTANCE OPAMP, DUAL, LM13600M, , | 1 | U3 | |
| IC-000133-30 | COMPARATOR, SINGLE, LM311, SMT, | 4 | U4, U5, U8, U9 | |
| IC-000134-00 | DRIVER, MOSFET, IR2110, , | 1 | U18 | |
| IC-000135-00 | TOP SWITCH, , TOP210, , | 1 | U16 | |
| IC-000592-00 | OPTO ISOL, TCDT 1103, DIP, , , | 1 | U15 | |
| IC-005532-OP | OPAMP, DUAL, NE5532, , | 2 | U2, U7 | |
| LB-000250-00 | PRODUCT, OUTPUT, REAR, DCA 2CH 2RU, | 1 | | |
| MS-000048-HS | HEAT SINK, TO-220, 1.375" X 0.86" X 0.395", LONG TAB, PLUG-IN | 1 | | |
| MS-000112-00 | FUSE, 25A, 250V, 0.25" X 1.25", NORMAL-BLO | 1 | F1 | |
| MS-000115-30 | FUSE, 1.0A, 24V, 1206, SLO | 1 | R314 | |
| PA-000111-00 | LED HOLDER ASSY, , , , | 1 | | |
| PC-003606-00 | PCB, CX/CXV/DCA/PL3, , , | 1 | | |
| PL-000098-00 | INSULATOR, TRANSISTOR, 0.85" X 1.09", THERMALLY CONDUCTIVE, TO-220, | 4 | | |
| PL-000114-00 | INSULATOR, IGBT/RECTIFIER, 1.25" X 3.20", THERMALLY CONDUCTIVE, , | 2 | | |
| PL-000117-00 | INSULATOR, TRANSISTOR, , THERMALLY CONDUCTIVE, , | 1 | | |
| PL-000126-00 | SPRING SEAT, TRANSISTOR, PLX, NYLON, , | 9 | | |
| PL-000128-00 | SPACER, T-1 3/4 LED, 0.276", PLASTIC, BLACK, | 2 | | |
| PL-000135-00 | INSULATOR, TRANSISTOR, 1.25" X 1.75", MICA, , | 1 | | |
| PT-150000-AT | TRIM, 500, 20 PCNT, 0.15W, , | 2 | VR166, VR43 | |
| PT-310007-00 | GAIN, 10K, 20 PCNT, 0.05W, 21 DETENT, 11MM LENGTH | 2 | VR121, VR2 | |
| QD-000014-QD | DIODE RECTIFIER ULTRAFAST, 200V, 15A, , MUR1520, TO-220, 35NS | 8 | D21, D22, D46, D47, D74, D75, D80, D81 | |
| QD-000021-QD | DIODE ZENER, 10V, , 1W, 1N4740A, DO-41, | 3 | D32, D7, D88 | |
| QD-000031-QD | MOSFET N-CHANNEL, 60V, 50A, 150W, MTP45N06, TO-220, | 4 | Q38, Q41, Q83, Q86 | |
| QD-000042-00 | DIODE RECTIFIER ULTRAFAST, 400V, 3A, , MUR440, DO-201AD, 50NS | 2 | D70, D71 | |
| QD-000062-10 | TRANSISTOR NPN, 40V, 0.2A, 1.5W, 2N3904, TO-92, | 2 | Q20, Q65 | |
| QD-000063-10 | TRANSISTOR PNP, 40V, 0.2A, 1.5W, 2N3906, TO-92, | 2 | Q21, Q66 | |
| QD-000076-00 | TRANSISTOR NPN, 250V, 8A, 50W, MJE15032, TO-220, | 2 | Q27, Q72 | |
| QD-000077-00 | TRANSISTOR PNP, 250V, 8A, 50W, MJE15033, TO-220, | 2 | Q26, Q71 | |

| Part Number | Description | Qty. | Reference | Comment |
|--------------|---|------|---|---------|
| QD-000102-30 | DIODE, 75V, 0.075A, , IMBD4148, SOT-23, 4NS | 48 | D1, D10, D11, D12, D14, D15, D17, D18, D2, D23, D24, D25, D26, D27, D28, D29, D3, D30, D33, D34, D35, D36, D37, D39, D4, D40, D42, D43, D48, D49, D5, D50, D51, D52, D55, D59, D63, D64, D65, D67, D69, D8, D89, D9, D90, D91, D93, D94 | |
| QD-000103-30 | TRANSISTOR NPN, 40V, 0.2A, 0.2W, MMST3904, SOT-23, | 24 | Q13, Q15, Q18, Q25, Q30, Q32, Q49, Q5, Q50, Q53, Q54, Q58, Q60, Q63, Q70, Q75, Q77, Q8, Q89, Q9, Q90, Q92, Q93, Q95 | |
| QD-000104-30 | TRANSISTOR PNP, 40V, 0.2A, 0.2W, MMST3906, SOT-23, | 34 | Q1, Q10, Q11, Q12, Q14, Q2, Q23, Q24, Q3, Q31, Q33, Q4, Q42, Q43, Q44, Q45, Q46, Q47, Q48, Q51, Q55, Q56, Q57, Q59, Q6, Q68, Q69, Q76, Q78, Q87, Q88, Q94, Q98, Q99 | |
| QD-000105-30 | TRANSISTOR NPN, 300V, 0.2A, 0.2W, MMBA42, SOT-23, | 4 | Q16, Q52, Q61, Q7 | |
| QD-000106-30 | TRANSISTOR PNP, 300V, 0.2A, 0.2W, MMBA92, SOT-23, | 2 | Q17, Q62 | |
| QD-000108-30 | DIODE, 200V, 0.2A, , BAS21, SOT-23, 50NS | 8 | D13, D16, D38, D41, D61, D68, D78, D79 | |
| QD-000110-30 | DIODE ZENER, 6.2V, , 0.3W, BZX84C6V2, SOT-23, | 2 | D56, D92 | |
| QD-000113-30 | DIODE ZENER, 10V, , 0.3W, BZX84C10, SOT-23, | 1 | D66 | |
| QD-000115-30 | DIODE RECTIFIER ULTRAFAST, 600V, 1A, , MURS160T3, SMB, 75NS | 3 | D58, D60, D86 | |
| QD-000116-30 | DIODE RECTIFIER ULTRAFAST, 200V, 1A, , MURS120, SMB, 35NS | 5 | D62, D76, D77, D82, D83 | |
| QD-000152-10 | DIODE ZENER, 12V, , 1W, 1N4742A, DO-41, | 1 | D57 | |
| QD-000153-00 | DIODE RECTIFIER ULTRAFAST, 400V, 30A, , APT30D40B, TO-247AD, 70NS | 4 | D72, D73, D84, D85 | |
| QD-000154-00 | TRANSISTOR NPN, 230V, 1A, 20W, 2SC4793, TO-220, | 2 | Q19, Q64 | |
| QD-000155-00 | TRANSISTOR PNP, 230V, 1A, 20W, 2SA1837, TO-220, | 2 | Q22, Q67 | |
| QD-000156-00 | TRANSISTOR PNP, 100V, 3A, 40W, TIP32C, TO-220, | 1 | Q91 | |
| QD-000169-00 | IGBT, 600V, 55A, 200W, IRG4PC50U, TO-247, | 2 | Q96, Q97 | |
| QD-000170-00 | BRIDGE RECTIFIER, , , RBV5006, , 600V 50A | 1 | BR1 | |
| QD-000287-10 | DIODE ZENER, 3.9V, 5 PCNT, 0.25W, 1N520B, DO-35, | 2 | D31, D6 | |
| QD-001943-PN | TRANSISTOR PNP, 230V, 15A, 150W, 2SA1943-R, TO-264, | 8 | Q28, Q34, Q36, Q39, Q73, Q79, Q81, Q84 | |
| QD-004744-ZA | DIODE ZENER, 15V, 5 PCNT, 3W, 1N5929B, , | 3 | D53, D54, D87 | |
| QD-005200-NP | TRANSISTOR NPN, 230V, 15A, 150W, 2SC5200, TO-264, | 8 | Q29, Q35, Q37, Q40, Q74, Q80, Q82, Q85 | |
| QD-005402-DX | DIODE, 200V, 3A, , 1N5402, DO-27, | 4 | D19, D20, D44, D45 | |
| RE-.04703-10 | 0.47, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 32 | R102, R103, R107, R108, R111, R112, R113, R114, R211, R212, R214, R215, R217, R218, R220, R222, R225, R226, R230, R231, R234, R235, R236, R237, R88, R89, R91, R92, R94, R95, R97, R99 | |
| RE-.15002-10 | 1.5, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 5 | R115, R116, R238, R239, R269 | |
| RE-.56002-10 | 5.6, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 7 | R203, R221, R354, R355, R373, R80, R98 | |
| RE-000210-NR | NTC, 10 OHMS, 15 AMPS, , , INRUSH LIMIT | 1 | R324 | |
| RE-000230-NR | NTC, 10K OHMS, , 15 PCNT, , -4.4 PCNT PER C | 2 | R155, R30 | |
| RE-001003-30 | 10, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 4 | R353, R356, R358, R359 | |
| RE-001502-10 | 15, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 13 | R208, R209, R210, R213, R216, R350, R367, R368, R85, R86, R87, R90, R93 | |
| RE-003921-30 | 39.2, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 6 | R246, R247, R248, R249, R349, R357 | |
| RE-004752-30 | 47.5, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 9 | R100, R110, R223, R233, R308, R309, R312, R313, R319 | |
| RE-005605-EM | 56, 5 PCNT, 2W, METAL OXIDE, , | 1 | R372 | |
| RE-007502-30 | 75, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 8 | R123, R124, R193, R194, R5, R6, R70, R71 | |

| Part Number | Description | Qty. | Reference | Comment |
|--------------|---|------|--|---------|
| RE-010002-30 | 100, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 10 | R144, R150, R21, R27, R334, R364, R381, R382, R383, R384 | |
| RE-015004-10 | 150, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 2 | R256, R278 | |
| RE-020002-30 | 200, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R204, R205, R81, R82 | |
| RE-027401-30 | 274, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R190, R191, R67, R68 | |
| RE-038301-30 | 383, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R167, R254, R255, R44 | |
| RE-047002-00 | 470, 5 PCNT, 2W, METAL OXIDE FP, , | 4 | R276, R277, R279, R280 | |
| RE-047502-30 | 475, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R151, R160, R28, R37 | |
| RE-049901-30 | 499, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 1 | R320 | |
| RE-053602-30 | 536, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 6 | R146, R22, R302, R361, R374, R377 | |
| RE-063402-30 | 634, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 1 | R370 | |
| RE-068002-00 | 680, 5 PCNT, 2W, METAL OXIDE FP, , | 2 | R274, R275 | |
| RE-093101-30 | 931, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 1 | R379 | |
| RE-110006-30 | 1.00K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 11 | R1, R117, R118, R128, R165, R232, R250, R252, R369, R42, R7 | |
| RE-115002-30 | 1.50K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 16 | R101, R109, R147, R154, R157, R158, R162, R164, R23, R270, R273, R32, R34, R35, R39, R41 | |
| RE-116002-00 | 1.6K, 5 PCNT, 2W, METAL OXIDE FP, , | 2 | R257, R378 | |
| RE-117401-30 | 1.74K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 3 | R272, R310, R311 | |
| RE-120002-30 | 2.00K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R127, R171, R266, R48 | |
| RE-122103-30 | 2.21K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 20 | R170, R182, R185, R195, R198, R207, R240, R264, R265, R267, R306, R307, R347, R348, R47, R59, R62, R72, R75, R84 | |
| RE-130102-30 | 3.01K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R202, R290, R293, R79 | |
| RE-145302-30 | 4.53K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R297, R298, R299, R300 | |
| RE-147502-30 | 4.75K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 26 | R10, R11, R125, R126, R131, R137, R138, R163, R166, R17, R178, R179, R186, R187, R282, R287, R3, R327, R330, R362, R4, R40, R55, R56, R63, R64 | |
| RE-151002-00 | 5.1K, 5 PCNT, 2W, METAL OXIDE FP, , | 5 | R105, R219, R228, R251, R96 | |
| RE-159002-30 | 5.90K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 7 | R122, R152, R201, R206, R29, R78, R83 | |
| RE-175002-30 | 7.50K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 6 | R120, R132, R140, R15, R161, R38 | |
| RE-178701-30 | 7.87K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 1 | R360 | |
| RE-184501-30 | 8.45K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R315, R316, R317, R318 | |
| RE-190902-30 | 9.09K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 2 | R258, R295 | |
| RE-210003-30 | 10.0K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 8 | R121, R305, R336, R338, R363, R366, R375, R376 | |
| RE-210009-30 | 10.0K, 0.1 PCNT, 1/10W, THIN FILM, 0805, 100V | 8 | R12, R129, R13, R130, R135, R136, R8, R9 | |
| RE-212702-30 | 12.7K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 21 | R104, R106, R133, R134, R139, R14, R142, R159, R16, R169, R188, R19, R227, R241, R245, R259, R329, R337, R36, R46, R65 | |
| RE-215002-30 | 15.0K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 6 | R148, R168, R25, R262, R365, R45 | |
| RE-216501-CM | 16.5K, 1 PCNT, 1/2W, METAL FILM, , | 2 | R153, R31 | |
| RE-220002-30 | 20.0K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 18 | R141, R18, R183, R184, R229, R242, R244, R253, R271, R281, R291, R294, R303, R304, R331, R346, R60, R61 | |
| RE-224901-30 | 24.9K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 1 | R325 | |
| RE-230002-10 | 30K, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 2 | R351, R352 | |
| RE-230102-30 | 30.1K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 4 | R172, R173, R49, R50 | |
| RE-239202-30 | 39.2K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 9 | R143, R199, R20, R200, R243, R261, R323, R76, R77 | |

| Part Number | Description | Qty. | Reference | Comment |
|--------------|--|------|--|---------|
| RE-247503-30 | 47.5K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 5 | R149, R2, R26, R343, R43 | |
| RE-310002-30 | 100K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 5 | R119, R156, R224, R33, R332 | |
| RE-310003-30 | 100K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 16 | R174, R176, R196, R197, R268, R283, R284, R285, R286, R288, R344, R345, R51, R53, R73, R74 | |
| RE-315002-30 | 150K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 12 | R175, R177, R180, R181, R333, R335, R341, R342, R52, R54, R57, R58 | |
| RE-339201-30 | 392K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 9 | R145, R189, R192, R24, R260, R263, R340, R66, R69 | |
| RE-348702-30 | 487K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 4 | R321, R322, R326, R328 | |
| RE-375005-BM | 750K, 5 PCNT, 1/2W, METAL FILM, , | 2 | R339, R371 | |
| RE-410001-30 | 1.0M, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 2 | R289, R292 | |
| SC-063100-PP | , PHILLIPS, PANHEAD, , , , #6-20, 0.625" L, , , ZINC, TYPE AB, CR3 | 20 | | |
| SC-081101-SP | SCR, PPH, PNH SERR BSE, , , , #8-18, 0.625" L, , BLK, TYPE AB, CR3 | 8 | | |
| SW-000053-00 | SWITCH, SPST X 10, 20 PIN DIP, PCB MOUNT LONG LEADS | 1 | SW1 | |
| SW-000104-00 | RELAY, SPDT, 24VDC COIL, 20A, 125VAC, T90 STYLE (FOR PLC MODELS) | 1 | K1 | |
| WC-0.5018-JW | JUMPER, TEFLON INSULATION, 18 AWG SOLID, 1 CONDUCTOR, , 0.5" L, | 1 | W120 | |
| WC-000002-10 | JUMPER, BARE, 22 AWG SOLID, 1 CONDUCTOR, , VARIABLE LENGTH, AUTO INSERT-ABLE | 2 | W1, W2 | |
| WC-000103-00 | RIBBON CABLE ASSY, , 28 AWG, 20 CONDUCTOR, PLC, 9" L, | 3 | J14A, J14B, J3A, J3B, J5A, J5B | |
| WC-000115-00 | WIRE ASSY, AC SWITCH, 16 AWG, 1 CONDUCTOR, PLC, 14" L, BLACK | 1 | W7 | |
| WC-000115-01 | WIRE ASSY, AC SWITCH, 16 AWG, 1 CONDUCTOR, PLC, 7" L, RED | 1 | W6 | |
| WC-000117-00 | WIRE ASSY, SPEAKER, 16 AWG, 1 CONDUCTOR, PLC, 8.5 IN, BLACK | 1 | W12 | |
| WC-000117-01 | WIRE ASSY, SPEAKER, 16 AWG, 1 CONDUCTOR, PLC, 7.5 IN, WHITE | 1 | W9 | |
| WC-000117-02 | WIRE ASSY, SPEAKER, 16 AWG, 1 CONDUCTOR, PLC, 9 IN, GRAY | 1 | W11 | |
| WC-000117-03 | WIRE ASSY, SPEAKER, 16 AWG, 1 CONDUCTOR, PLC, 7.5 IN, BLACK | 1 | W10 | |
| WC-000118-00 | WIRE ASSY, , 16 AWG, 1 CONDUCTOR, PLC, 12.5" L, BLACK | 1 | W5 | |
| WC-000118-01 | WIRE ASSY, , 16 AWG, 1 CONDUCTOR, PLC, 10.5" L, RED | 1 | W8 | |
| XF-000005-00 | BEAD, 100MHZ, 271 OHM, | 6 | L10, L11, L12, L7, L8, L9 | |
| XF-000023-00 | INDUCTOR, COMMON MODE, , 2MH, , , | 2 | L3, L4 | |
| XF-000061-00 | INDUCTOR, 2 COUPLED WINDINGS, TOROID, 1.9UH, PL/DCA/CX, 230V, | 1 | L6 | |
| XF-000064-00 | TRANSFORMER, HOUSEKEEPING, , , , PLC, , | 1 | T1 | |
| XF-000066-00 | INDUCTOR, ZOBEL CURRENT SENSE, , 2UH, PLC, , | 2 | L1, L2 | |
| XF-000150-00 | TRANSFORMER, SWITCHING, 115KHZ, E55, 1500W, DCA3022, 120V/230V, | 1 | T2 | |

9.11 WP-003423-00, DCA 3422 PCB assembly

| Part Number | Description | Qty. | Reference | Comment |
|--------------|--|------|---|---------|
| CA-010002-30 | 10PF, 5 PCNT, 50V, CERAMIC NPO, 0805, | 2 | C14, C49 | |
| CA-015002-10 | 15PF, 10 PCNT, 500V, CERAMIC SL, DISC, | 2 | C16, C50 | |
| CA-047002-30 | 47PF, 5 PCNT, 50V, CERAMIC NPO, 0805, | 8 | C100, C187, C193, C29, C30, C64, C65, C99 | |
| CA-110001-10 | 100PF, 5 PCNT, 500V, MICA, DIPPED, | 1 | C147 | |
| CA-110002-30 | 100PF, 5 PCNT, 50V, CERAMIC NPO, 0805, | 8 | C18, C40, C41, C43, C5, C53, C6, C9 | |
| CA-122003-30 | 220PF, 5 PCNT, 50V, CERAMIC NPO, 1206, | 4 | C1, C2, C36, C37 | |
| CA-133001-10 | 330PF, 5 PCNT, 500V, MICA, DIPPED, | 2 | C145, C146 | |
| CA-147003-30 | 470PF, 5 PCNT, 50V, CERAMIC NPO, 1206, | 11 | C119, C148, C17, C181, C182, C186, C188, C26, C4, C52, C61 | |
| CA-168003-30 | 680PF, 5 PCNT, 50V, CERAMIC NPO, 0805, | 2 | C25, C60 | |
| CA-210005-30 | 0.001UF, 5 PCNT, 50V, CERAMIC NPO, 1206, | 11 | C120, C124, C195, C196, C75, C81, C85, C93, C94, C95, C96 | |
| CA-222001-00 | 0.0022UF, 20 PCNT, 250VAC, CERAMIC Y5U, DISC, YCAP | 2 | C122, C127 | |
| CA-227001-30 | 0.0027UF, 10 PCNT, 100V, CERAMIC X7R, 0805, | 11 | C108, C109, C128, C20, C23, C24, C55, C58, C59, C68, C98 | |
| CA-233001-10 | 0.0033UF, 10 PCNT, 100V, FILM, DIPPED, | 1 | C113 | |
| CA-233002-00 | 0.0033UF, 20 PCNT, 250VAC, CERAMIC, DISC, Y2CAP | 2 | C115, C118 | |
| CA-322001-10 | 0.022UF, 10 PCNT, 100V, FILM, DIPPED, | 2 | C27, C62 | |
| CA-410001-00 | 0.1UF, 20 PCNT, 250VAC, FILM, BOX STYLE, X2CAP | 1 | C126 | |
| CA-410002-10 | 0.1UF, 5 PCNT, 100V, FILM, DIPPED, | 4 | C12, C44, C47, C8 | |
| CA-410003-10 | 0.1UF, 10 PCNT, 250V, FILM, DIPPED, | 13 | C129, C134, C156, C157, C28, C34, C35, C63, C69, C70, C84, C87, C90 | |
| CA-410006-30 | 0.1UF, 10 PCNT, 50V, CERAMIC X7R, 1206, | 19 | C116, C125, C135, C155, C162, C163, C177, C178, C179, C180, C183, C185, C189, C19, C190, C191, C194, C54, C88 | |
| CA-410011-00 | 0.1UF, 10 PCNT, 400V, MPET FILM, DIPPED, | 2 | C107, C123 | |
| CA-422001-10 | 0.22UF, 5 PCNT, 50V, FILM, DIPPED, LOW PROFILE | 2 | C10, C45 | |
| CA-422004-30 | 0.22UF, 10 PCNT, 50V, CERAMIC X7R, 1206, | 2 | C121, C39 | |
| CA-447001-00 | 0.47UF, 20 PCNT, 250V, POLYPRO FILM, BOX, X2CAP | 1 | C117 | |
| CA-447003-00 | 0.47UF, 10 PCNT, 400V, FILM, WRAPPED, PULSE | 1 | C144 | |
| CA-510003-10 | 1.0UF, 20 PCNT, 50V, ELECTROLYTIC, , | 1 | C80 | |
| CA-510005-30 | 1.0UF, 20 PCNT, 50V, ELECTROLYTIC, SMT, | 2 | C13, C48 | |
| CA-510006-00 | 1.0UF, 20 PCNT, 250V, POLYPRO, BOX, X2CAP | 2 | C110, C112 | |
| CA-610002-10 | 10UF, 20 PCNT, 35V, ELECTROLYTIC, , | 7 | C114, C192, C3, C31, C38, C66, C86 | |
| CA-610006-30 | 10UF, 20 PCNT, 16V, ELECTROLYTIC, SMT, | 1 | C184 | |
| CA-622006-10 | 22UF, 20 PCNT, 16V, ELECTROLYTIC, , | 4 | C21, C22, C56, C57 | |
| CA-647001-10 | 47UF, 10 PCNT, 10V, ELECTROLYTIC, , NON-POLAR | 11 | C102, C104, C105, C106, C11, C42, C46, C7, C71, C91, C92 | |
| CA-647002-10 | 47UF, 20 PCNT, 50V, ELECTROLYTIC, , LOW PROFILE | 1 | C89 | |
| CA-710002-10 | 100UF, 20 PCNT, 25V, ELECTROLYTIC, , | 11 | C139, C142, C143, C15, C32, C33, C51, C67, C72, C78, C79 | |
| CA-710004-10 | 100UF, 20 PCNT, 25V, ELECTROLYTIC, , LOW ESR | 3 | C138, C149, C150 | |
| CA-747001-10 | 470UF, 20 PCNT, 16V, ELECTROLYTIC, , | 7 | C131, C73, C74, C76, C77, C82, C83 | |
| CA-747004-00 | 470UF, 20 PCNT, 100V, ELECTROLYTIC, , LOW ESR | 10 | C152, C153, C159, C160, C165, C166, C169, C170, C173, C174 | |
| CA-747063-AE | 470UF, 20 PCNT, 63V, ELECTROLYTIC, , | 10 | C151, C154, C158, C161, C164, C167, C168, C171, C172, C175 | |
| CA-822200-AE | 2200UF, 20 PCNT, 200V, ELECTROLYTIC, , | 6 | C132, C133, C136, C137, C140, C141 | |
| CH-000102-00 | HEAT SINK, AUDIO, , PLX3002, | 4 | | |
| CH-000103-00 | CLAMP, TO-3PL, 22 GA, PLX3002, | 9 | | |

| Part Number | Description | Qty. | Reference | Comment |
|--------------|---|------|--------------------|---------|
| CH-000104-00 | HEAT SINK, PS, , PLX3002, | 2 | | |
| CH-000114-00 | CLAMP, DIODE, 2 FINGER, PLX3002, | 4 | | |
| CH-000120-00 | BRACKET, OUTPUT, , DCA3022, | 1 | | |
| CO-000009-ZT | ZTAB, 0.25" TAB, 1 POS, MALE, AUTO INSERTABLE | 3 | J19, J20, J21 | |
| CO-000036-CO | CONNECTOR, SPEAKON, 4 POS, FEMALE, CHAS MNT, CSUNK HOLES, VERT PCB | 2 | J7, J8 | |
| CO-000106-00 | JACK, HD15, 15 POS, FEMALE, RIGHT ANGLE SWAGED JACK SCREW | 1 | J17 | |
| CO-000148-00 | XLR, NEUTRIK, 3 POS, FEMALE, VERTICAL | 2 | J10, J2 | |
| CO-000155-00 | HEADER, 0.1" CENTERS, 2 POS (1X2), MALE, RAMP LOCK | 1 | J13 | |
| CO-000161-00 | JACK, EURO, 3 POS, FEMALE, BLACK | 2 | J16, J18 | |
| CO-000170-00 | BARRIER STRIP, 0.375" CENTERS, 6 POS, , COVERED | 1 | J12 | |
| CO-300112-PJ | JACK, PHONE, 3 POS, FEMALE, | 2 | J1, J9 | |
| HW-000001-FC | FUSE CLIP, PC MOUNT, , , TIN PLATED BRASS, 3AG | 2 | | |
| IC-000024-00 | CONTROLLER, PWM, SG3525AN, , | 1 | U19 | |
| IC-000046-30 | OPAMP, DUAL, TL072, SMT, | 2 | U11, U12 | |
| IC-000047-30 | COMPARATOR, DUAL, LM393, SMT, | 1 | U10 | |
| IC-000048-30 | OPAMP, DUAL, MC33078, , | 2 | U1, U6 | |
| IC-000051-00 | OPTO ISOLATOR, , TCDT1101, , | 1 | U17 | |
| IC-000053-30 | TIMER, DUAL, LM556, , | 1 | U14 | |
| IC-000054-30 | COMPARATOR, QUAD, LM339AM, SMT, | 1 | U13 | |
| IC-000073-30 | TRANSCONDUCTANCE OPAMP, DUAL, LM13600M, , | 1 | U3 | |
| IC-000133-30 | COMPARATOR, SINGLE, LM311, SMT, | 4 | U4, U5, U8, U9 | |
| IC-000134-00 | DRIVER, MOSFET, IR2110, , | 1 | U18 | |
| IC-000135-00 | TOP SWITCH, , TOP210, , | 1 | U16 | |
| IC-000592-00 | OPTO ISOL, TCDT 1103, DIP, , , | 1 | U15 | |
| IC-005532-OP | OPAMP, DUAL, NE5532, , | 2 | U2, U7 | |
| LB-000250-00 | PRODUCT, OUTPUT, REAR, DCA 2CH 2RU, | 1 | | |
| MS-000048-HS | HEAT SINK, TO-220, 1.375" X 0.86" X 0.395", LONG TAB, PLUG-IN | 1 | | |
| MS-000112-00 | FUSE, 25A, 250V, 0.25" X 1.25", NORMAL-BLO | 1 | F1 | |
| MS-000115-30 | FUSE, 1.0A, 24V, 1206, SLO | 1 | R314 | |
| PA-000111-00 | LED HOLDER ASSY, , , , | 1 | | |
| PC-003606-00 | PCB, CX/CXV/DCA/PL3, , , | 1 | | |
| PL-000098-00 | INSULATOR, TRANSISTOR, 0.85" X 1.09", THERMALLY CONDUCTIVE, TO-220, | 4 | | |
| PL-000114-00 | INSULATOR, IGBT/RECTIFIER, 1.25" X 3.20", THERMALLY CONDUCTIVE, , | 2 | | |
| PL-000117-00 | INSULATOR, TRANSISTOR, , THERMALLY CONDUCTIVE, , | 1 | | |
| PL-000126-00 | SPRING SEAT, TRANSISTOR, PLX, NYLON, , | 9 | | |
| PL-000128-00 | SPACER, T-1 3/4 LED, 0.276", PLASTIC, BLACK, | 2 | | |
| PL-000135-00 | INSULATOR, TRANSISTOR, 1.25" X 1.75", MICA, , | 1 | | |
| PT-150000-AT | TRIM, 500, 20 PCNT, 0.15W, , | 2 | VR166, VR43 | |
| PT-310007-00 | GAIN, 10K, 20 PCNT, 0.05W, 21 DETENT, 11MM LENGTH | 2 | VR121, VR2 | |
| QD-000014-QD | DIODE RECTIFIER ULTRAFast, 200V, 15A, , MUR1520, TO-220, 35NS | 4 | D21, D22, D46, D47 | |
| QD-000021-QD | DIODE ZENER, 10V, , 1W, 1N4740A, DO-41, | 2 | D32, D7 | |
| QD-000031-QD | MOSFET N-CHANNEL, 60V, 50A, 150W, MTP45N06, TO-220, | 4 | Q38, Q41, Q83, Q86 | |
| QD-000042-00 | DIODE RECTIFIER ULTRAFast, 400V, 3A, , MUR440, DO-201AD, 50NS | 2 | D70, D71 | |
| QD-000062-10 | TRANSISTOR NPN, 40V, 0.2A, 1.5W, 2N3904, TO-92, | 2 | Q20, Q65 | |
| QD-000063-10 | TRANSISTOR PNP, 40V, 0.2A, 1.5W, 2N3906, TO-92, | 2 | Q21, Q66 | |
| QD-000074-00 | DIODE RECTIFIER ULTRAFast, 400V, 15A, , MUR1540, TO-220, 50NS | 4 | D74, D75, D80, D81 | |
| QD-000076-00 | TRANSISTOR NPN, 250V, 8A, 50W, MJE15032, TO-220, | 2 | Q27, Q72 | |
| QD-000077-00 | TRANSISTOR PNP, 250V, 8A, 50W, MJE15033, TO-220, | 2 | Q26, Q71 | |

| Part Number | Description | Qty. | Reference | Comment |
|--------------|---|------|---|---------|
| QD-000102-30 | DIODE, 75V, 0.075A, , IMBD4148, SOT-23, 4NS | 48 | D1, D10, D11, D12, D14, D15, D17, D18, D2, D23, D24, D25, D26, D27, D28, D29, D3, D30, D33, D34, D35, D36, D37, D39, D4, D40, D42, D43, D48, D49, D5, D50, D51, D52, D55, D59, D63, D64, D65, D67, D69, D8, D89, D9, D90, D91, D93, D94 | |
| QD-000103-30 | TRANSISTOR NPN, 40V, 0.2A, 0.2W, MMST3904, SOT-23, | 24 | Q13, Q15, Q18, Q25, Q30, Q32, Q49, Q5, Q50, Q53, Q54, Q58, Q60, Q63, Q70, Q75, Q77, Q8, Q89, Q9, Q90, Q92, Q93, Q95 | |
| QD-000104-30 | TRANSISTOR PNP, 40V, 0.2A, 0.2W, MMST3906, SOT-23, | 34 | Q1, Q10, Q11, Q12, Q14, Q2, Q23, Q24, Q3, Q31, Q33, Q4, Q42, Q43, Q44, Q45, Q46, Q47, Q48, Q51, Q55, Q56, Q57, Q59, Q6, Q68, Q69, Q76, Q78, Q87, Q88, Q94, Q98, Q99 | |
| QD-000105-30 | TRANSISTOR NPN, 300V, 0.2A, 0.2W, MMBA42, SOT-23, | 4 | Q16, Q52, Q61, Q7 | |
| QD-000106-30 | TRANSISTOR PNP, 300V, 0.2A, 0.2W, MMBA92, SOT-23, | 2 | Q17, Q62 | |
| QD-000108-30 | DIODE, 200V, 0.2A, , BAS21, SOT-23, 50NS | 8 | D13, D16, D38, D41, D61, D68, D78, D79 | |
| QD-000110-30 | DIODE ZENER, 6.2V, , 0.3W, BZX84C6V2, SOT-23, | 2 | D56, D92 | |
| QD-000113-30 | DIODE ZENER, 10V, , 0.3W, BZX84C10, SOT-23, | 1 | D66 | |
| QD-000115-30 | DIODE RECTIFIER ULTRAFAST, 600V, 1A, , MURS160T3, SMB, 75NS | 3 | D58, D60, D86 | |
| QD-000116-30 | DIODE RECTIFIER ULTRAFAST, 200V, 1A, , MURS120, SMB, 35NS | 5 | D62, D76, D77, D82, D83 | |
| QD-000152-10 | DIODE ZENER, 12V, , 1W, 1N4742A, DO-41, | 1 | D57 | |
| QD-000153-00 | DIODE RECTIFIER ULTRAFAST, 400V, 30A, , APT30D40B, TO-247AD, 70NS | 4 | D72, D73, D84, D85 | |
| QD-000154-00 | TRANSISTOR NPN, 230V, 1A, 20W, 2SC4793, TO-220, | 2 | Q19, Q64 | |
| QD-000155-00 | TRANSISTOR PNP, 230V, 1A, 20W, 2SA1837, TO-220, | 2 | Q22, Q67 | |
| QD-000156-00 | TRANSISTOR PNP, 100V, 3A, 40W, TIP32C, TO-220, | 1 | Q91 | |
| QD-000169-00 | IGBT, 600V, 55A, 200W, IRG4PC50U, TO-247, | 2 | Q96, Q97 | |
| QD-000170-00 | BRIDGE RECTIFIER, , , RBV5006, , 600V 50A | 1 | BR1 | |
| QD-000287-10 | DIODE ZENER, 3.9V, 5 PCNT, 0.25W, 1N520B, DO-35, | 2 | D31, D6 | |
| QD-001943-PN | TRANSISTOR PNP, 230V, 15A, 150W, 2SA1943-R, TO-264, | 8 | Q28, Q34, Q36, Q39, Q73, Q79, Q81, Q84 | |
| QD-004744-ZA | DIODE ZENER, 15V, 5 PCNT, 3W, 1N5929B, , | 4 | D53, D54, D87, D88 | |
| QD-005200-NP | TRANSISTOR NPN, 230V, 15A, 150W, 2SC5200, TO-264, | 8 | Q29, Q35, Q37, Q40, Q74, Q80, Q82, Q85 | |
| QD-005402-DX | DIODE, 200V, 3A, , 1N5402, DO-27, | 4 | D19, D20, D44, D45 | |
| RE-.04703-10 | 0.47, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 32 | R102, R103, R107, R108, R111, R112, R113, R114, R211, R212, R214, R215, R217, R218, R220, R222, R225, R226, R230, R231, R234, R235, R236, R237, R88, R89, R91, R92, R94, R95, R97, R99 | |
| RE-.15002-10 | 1.5, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 5 | R115, R116, R238, R239, R269 | |
| RE-.56002-10 | 5.6, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 7 | R203, R221, R354, R355, R373, R80, R98 | |
| RE-000210-NR | NTC, 10 OHMS, 15 AMPS, , , INRUSH LIMIT | 1 | R324 | |
| RE-000230-NR | NTC, 10K OHMS, , 15 PCNT, , -4.4 PCNT PER C | 2 | R155, R30 | |
| RE-001003-30 | 10, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 4 | R353, R356, R358, R359 | |
| RE-001502-10 | 15, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 13 | R208, R209, R210, R213, R216, R350, R367, R368, R85, R86, R87, R90, R93 | |
| RE-003921-30 | 39.2, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 6 | R246, R247, R248, R249, R349, R357 | |
| RE-004752-30 | 47.5, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 9 | R100, R110, R223, R233, R308, R309, R312, R313, R319 | |
| RE-005605-EM | 56, 5 PCNT, 2W, METAL OXIDE, , | 1 | R372 | |
| RE-007502-30 | 75, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 8 | R123, R124, R193, R194, R5, R6, R70, R71 | |

| Part Number | Description | Qty. | Reference | Comment |
|--------------|---|------|--|---------|
| RE-010002-30 | 100, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 10 | R144, R150, R21, R27, R334, R364, R381, R382, R383, R384 | |
| RE-015004-10 | 150, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 1 | R278 | |
| RE-020002-30 | 200, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R204, R205, R81, R82 | |
| RE-027401-30 | 274, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R190, R191, R67, R68 | |
| RE-030003-00 | 300, 5 PCNT, 2W, METAL OXIDE FP, , | 1 | R256 | |
| RE-038301-30 | 383, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R167, R254, R255, R44 | |
| RE-047002-00 | 470, 5 PCNT, 2W, METAL OXIDE FP, , | 2 | R279, R280 | |
| RE-047502-30 | 475, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R151, R160, R28, R37 | |
| RE-053602-30 | 536, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 6 | R146, R22, R302, R361, R374, R377 | |
| RE-063402-30 | 634, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 1 | R370 | |
| RE-068002-00 | 680, 5 PCNT, 2W, METAL OXIDE FP, , | 2 | R274, R275 | |
| RE-082002-00 | 820, 5 PCNT, 2W, METAL OXIDE FP, , | 2 | R276, R277 | |
| RE-093101-30 | 931, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 1 | R379 | |
| RE-110006-30 | 1.00K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 11 | R1, R117, R118, R128, R165, R232, R250, R252, R369, R42, R7 | |
| RE-115002-30 | 1.50K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 16 | R101, R109, R147, R154, R157, R158, R162, R164, R23, R270, R273, R32, R34, R35, R39, R41 | |
| RE-116202-30 | 1.62K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R195, R198, R72, R75 | |
| RE-117401-30 | 1.74K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 3 | R272, R310, R311 | |
| RE-120002-30 | 2.00K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R127, R171, R266, R48 | |
| RE-122103-30 | 2.21K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 12 | R170, R207, R240, R264, R265, R267, R306, R307, R347, R348, R47, R84 | |
| RE-124005-EM | 2.4K, 5 PCNT, 2W, METAL FILM, , | 2 | R257, R378 | |
| RE-130102-30 | 3.01K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 5 | R202, R290, R293, R320, R79 | |
| RE-143201-30 | 4.32K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R182, R185, R59, R62 | |
| RE-147502-30 | 4.75K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 30 | R10, R11, R125, R126, R131, R137, R138, R163, R166, R17, R178, R179, R186, R187, R282, R287, R297, R298, R299, R3, R300, R327, R330, R362, R4, R40, R55, R56, R63, R64 | |
| RE-152301-30 | 5.23K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 4 | R315, R316, R317, R318 | |
| RE-159002-30 | 5.90K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 7 | R122, R152, R201, R206, R29, R78, R83 | |
| RE-175002-30 | 7.50K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 6 | R120, R132, R140, R15, R161, R38 | |
| RE-178701-30 | 7.87K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 1 | R360 | |
| RE-182005-EM | 8.2K, 5 PCNT, 2W, METAL OXIDE FP, , | 5 | R105, R219, R228, R251, R96 | |
| RE-190902-30 | 9.09K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 1 | R258 | |
| RE-210003-30 | 10.0K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 9 | R121, R295, R305, R336, R338, R363, R366, R375, R376 | |
| RE-210009-30 | 10.0K, 0.1 PCNT, 1/10W, THIN FILM, 0805, 100V | 8 | R12, R129, R13, R130, R135, R136, R8, R9 | |
| RE-212702-30 | 12.7K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 25 | R104, R106, R133, R134, R139, R14, R142, R159, R16, R169, R188, R19, R199, R200, R227, R241, R245, R259, R329, R337, R36, R46, R65, R76, R77 | |
| RE-215002-30 | 15.0K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 6 | R148, R168, R25, R262, R365, R45 | |
| RE-216501-EM | 16.5K, 1 PCNT, 1/2W, METAL FILM, , | 2 | R153, R31 | |
| RE-220002-30 | 20.0K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 14 | R141, R18, R229, R242, R244, R253, R271, R281, R291, R294, R303, R304, R331, R346 | |
| RE-224901-30 | 24.9K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 1 | R325 | |
| RE-230002-10 | 30K, 5 PCNT, 2W, METAL OXIDE FP, MINI, | 2 | R351, R352 | |
| RE-230102-30 | 30.1K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 4 | R172, R173, R49, R50 | |

| Part Number | Description | Qty. | Reference | Comment |
|--------------|--|------|--|---------|
| RE-239202-30 | 39.2K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 9 | R143, R183, R184, R20, R243, R261, R323, R60, R61 | |
| RE-247503-30 | 47.5K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 5 | R149, R2, R26, R343, R43 | |
| RE-310002-30 | 100K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 5 | R119, R156, R224, R33, R332 | |
| RE-310003-30 | 100K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 7 | R196, R197, R268, R344, R345, R73, R74 | |
| RE-315002-30 | 150K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 21 | R174, R175, R176, R177, R180, R181, R283, R284, R285, R286, R288, R333, R335, R341, R342, R51, R52, R53, R54, R57, R58 | |
| RE-339201-30 | 392K, 1 PCNT, 1/10W, THICK FILM, 0805, 100V | 9 | R145, R189, R192, R24, R260, R263, R340, R66, R69 | |
| RE-348702-30 | 487K, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 4 | R321, R322, R326, R328 | |
| RE-375005-BM | 750K, 5 PCNT, 1/2W, METAL FILM, , | 2 | R339, R371 | |
| RE-410001-30 | 1.0M, 1 PCNT, 1/8W, THICK FILM, 1206, 200V | 2 | R289, R292 | |
| SC-063100-PP | , PHILLIPS, PANHEAD, , , , #6-20, 0.625" L, , , ZINC, TYPE AB, CR3 | 20 | | |
| SC-081101-SP | SCR, PPH, PNH SERR BSE, , , , #8-18, 0.625" L, , BLK, TYPE AB, CR3 | 8 | | |
| SW-000053-00 | SWITCH, SPST X 10, 20 PIN DIP, PCB MOUNT LONG LEADS | 1 | SW1 | |
| SW-000104-00 | RELAY, SPDT, 24VDC COIL, 20A, 125VAC, T90 STYLE (FOR PLC MODELS) | 1 | K1 | |
| WC-0.5018-JW | JUMPER, TEFLON INSULATION, 18 AWG SOLID, 1 CONDUCTOR, , 0.5" L, | 1 | W120 | |
| WC-000002-10 | JUMPER, BARE, 22 AWG SOLID, 1 CONDUCTOR, , VARIABLE LENGTH, AUTO INSERT-ABLE | 2 | W1, W2 | |
| WC-000103-00 | RIBBON CABLE ASSY, , 28 AWG, 20 CONDUCTOR, PLC, 9" L, | 3 | J14A, J14B, J3A, J3B, J5A, J5B | |
| WC-000115-00 | WIRE ASSY, AC SWITCH, 16 AWG, 1 CONDUCTOR, PLC, 14" L, BLACK | 1 | W7 | |
| WC-000115-01 | WIRE ASSY, AC SWITCH, 16 AWG, 1 CONDUCTOR, PLC, 7" L, RED | 1 | W6 | |
| WC-000117-00 | WIRE ASSY, SPEAKER, 16 AWG, 1 CONDUCTOR, PLC, 8.5 IN, BLACK | 1 | W12 | |
| WC-000117-01 | WIRE ASSY, SPEAKER, 16 AWG, 1 CONDUCTOR, PLC, 7.5 IN, WHITE | 1 | W9 | |
| WC-000117-02 | WIRE ASSY, SPEAKER, 16 AWG, 1 CONDUCTOR, PLC, 9 IN, GRAY | 1 | W11 | |
| WC-000117-03 | WIRE ASSY, SPEAKER, 16 AWG, 1 CONDUCTOR, PLC, 7.5 IN, BLACK | 1 | W10 | |
| WC-000118-00 | WIRE ASSY, , 16 AWG, 1 CONDUCTOR, PLC, 12.5" L, BLACK | 1 | W5 | |
| WC-000118-01 | WIRE ASSY, , 16 AWG, 1 CONDUCTOR, PLC, 10.5" L, RED | 1 | W8 | |
| XF-000005-00 | BEAD, 100MHZ, 271 OHM, | 6 | L10, L11, L12, L7, L8, L9 | |
| XF-000023-00 | INDUCTOR, COMMON MODE, , 2MH, , , | 2 | L3, L4 | |
| XF-000061-00 | INDUCTOR, 2 COUPLED WINDINGS, TOROID, 1.9UH, PL/DCA/CX, 230V, | 1 | L6 | |
| XF-000064-00 | TRANSFORMER, HOUSEKEEPING, , , , PLC, , | 1 | T1 | |
| XF-000066-00 | INDUCTOR, ZOBEL CURRENT SENSE, , 2UH, PLC, , | 2 | L1, L2 | |
| XF-000183-00 | TRANSFORMER, SWITCHING, 115KHZ, E55, 1500W, DCA3422, 120V/230V, | 1 | T2 | |

Contact information

Service manuals and other service documents are available for download from www.qscservice.com. If you need any further information regarding this service procedure, please contact QSC Technical Services at the addresses or numbers below.

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