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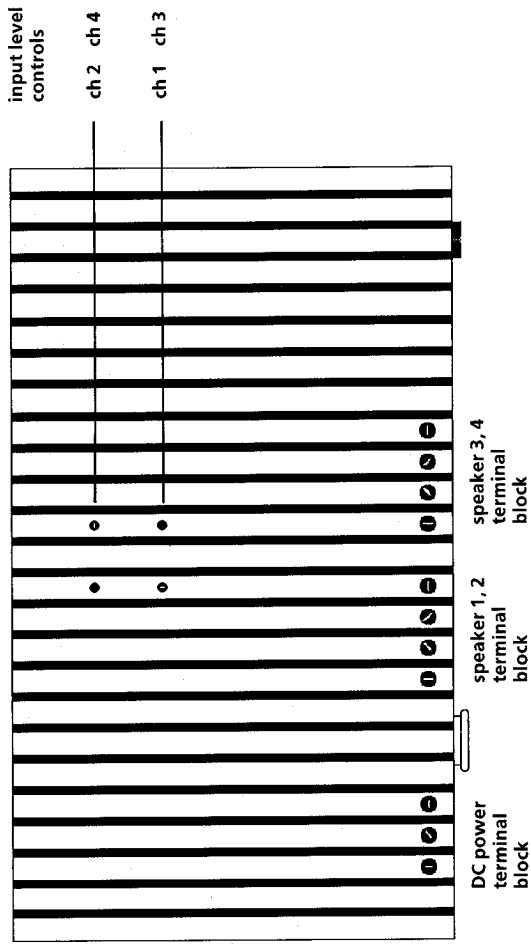
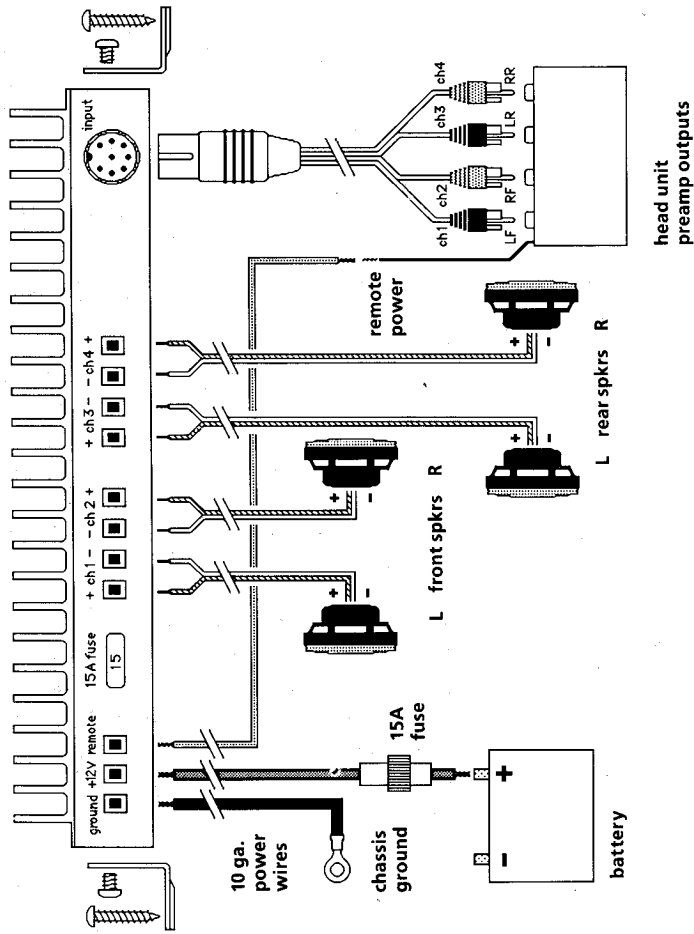
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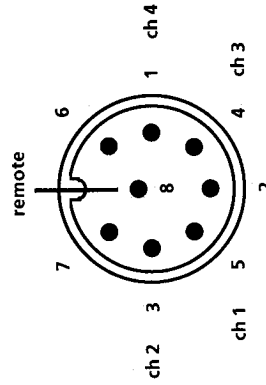
PQ8
Four channel automotive
power amplifier

System configuration A

Four channel, four speaker wiring



8-pin DIN input jack
pin locations viewed from
the front of the jack



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Introduction

Thank you for purchasing the a/d/s/ PQ8. The PQ8's discrete four channel, full-bridge design gives it unusually high power output and exceptional reproduction fidelity in a compact chassis. Its four amplifiers can be used to drive four separate full-range speaker systems or two subwoofers and two satellite speakers.

This manual provides information on the connection and use of your PQ8. Please read it thoroughly. We suggest you save this manual and the PQ8 packing materials for future use.

Thank you,
Analog and Digital Systems, Inc.

About this manual

Correctly installing an automotive stereo system often requires special knowledge and experience. We strongly recommend that you seek professional services for the installation of your PQ8 and other system components.

This manual contains information about the typical connection, use and maintenance of the PQ8. Diagrams show the connections for typical systems. These diagrams provide sufficient information to guide the skilled technician in installation. Basic information about installation, such as the importance of wiring polarity or techniques for solving grounding problems, is not provided here. Please consult your a/d/s/ dealer or a qualified technician for details not covered here.

Controls and features

About names: Signal sources and processors for the car have many names — radio, head unit, compact disc player, radio/CD player, equalizer, and so on. We call all signal sources *head units*.

DC power terminal block provides connections for the 12VDC power wires. The wires are clamped securely in the terminals by screws accessible through holes in the top of the chassis directly above the terminals between the heatsink fins.

ground terminal connects the ground wire to the PQ8. The ground wire runs between the PQ8 and a connection point on the chassis of the automobile.

+ 12V terminal connects the power supply wire which runs between the PQ8 and the positive terminal of the battery.

remote terminal connects the control wire which provides remote power turn-on of the PQ8 by the head unit or a dash-mounted switch.

15A fuse protects both the PQ8 and the automobile's electrical system from fault conditions. The fuse is a standard automotive plug-in type ATO.

ch 1, ch 2 speaker terminal block connects the wires of two speaker systems to the PQ8. The wires are clamped securely in the terminals by screws accessible through holes in the top of the chassis directly above the terminals between the heatsink fins.

ch 3, ch 4 speaker terminal block connects the wires of two more speaker systems to the PQ8 in the same way as the ch 1, ch 2 terminal block.

input 8-pin DIN jack provides all input signal and remote power switch connections in a single jack. This jack offers quick and accurate hook-up to a/d/s/ signal processing units such as the 642CSi. The **remote** pin connection at this jack is in parallel with the **remote** power terminal on the PQ8. Pin-out information is in the **Specifications** section of this manual.

Input level controls adjust the gain of each amplifier channel for balancing and for matching the output level of the signal source. The controls are screwdriver adjustable using a narrow-blade (2mm) jeweler's screwdriver. The controls are accessible through holes in the top of the chassis between the heatsink fins.

Extruded aluminum chassis with integral heatsink makes the PQ8 mechanically strong and physically small. It provides excellent cooling for the power supply and amplifier circuitry.

Hardware kit for the PQ8 contains:
2 ea. Mounting brackets.
4 ea. Phillips-head machine screws to attach the mounting brackets to the PQ8.
4 ea. Phillips-head sheet metal screws to attach the mounting brackets and the PQ8 to the vehicle.
1 ea. screwdriver to tighten power and speaker wire terminal clamp screws.

Warnings

Be careful not to cut or drill into gas tanks, fuel lines, brake or hydraulic lines, vacuum lines or electrical wiring when working on your vehicle.

Do not use the PQ8 unmounted. Attach the PQ8 securely to the vehicle to prevent damage to either the PQ8 or the vehicle and its contents, particularly in the event of an accident.

Keep the PQ8 away from locations subject to leakage or immersion in water.

Do not mount the PQ8 so that the wire connections are unprotected or are subject to pinching or damage from nearby objects or people's feet.

The +12V power supply wire must be fused at the battery positive terminal connection. Use a fuse of the same current rating as the fuse in the PQ8. Disconnect the +12V wire at the battery end before making or breaking power connections at the PQ8's power terminals.

If you need to replace the PQ8 power fuse, replace it only with a fuse identical to that supplied with the PQ8. Use of a higher rating fuse may result in damage to the PQ8 which is not covered by the warranty.

Make sure your head unit and/or other equipment is turned off while connecting to the PQ8 input jacks and speaker terminals. Turn on the various components and slowly advance the volume control only after checking and double-checking all connections.

Associated equipment

The PQ8 will work well with many different types of signal sources and speakers, but the final result depends on your choice of equipment. Your a/d/s/ dealer can help you select components to complement the high performance of the PQ8. a/d/s/ automotive loudspeaker systems are particularly well suited for use with the PQ8, thanks to their broad frequency response, low distortion and wide dynamic range. Consult your a/d/s/ dealer for information.

Installation notes

The PQ8 generates heat in normal operation. Be sure that the cooling fins of the PQ8 are in free air and are not against a panel or other surface.

The +12V and ground wires **must** be 10 AWG stranded copper wire with heavy insulation. Smaller gauge wire will cause increased power losses and can lead to dangerous overheating conditions.

The remote wire can be relatively light wire; 18 AWG is recommended. Keep the length of all wires as short as possible.

Make all speaker connections with 16 AWG or larger wire.

The PQ8 can receive input signals either from low level sources (the pre-amp outputs on the head unit or the outputs from an electronic crossover used in a subwoofer/satellite system) or from high level sources such as the speaker outputs of a head unit. The PQ8's input jack is used for either type of source. The adjustment range of the PQ8's input level controls lets it work with either type of source. See **Operation**, following, for information on setting levels.

The inputs to the PQ8 are connected through the input 8-pin DIN jack. Shielded cables from the head unit can be soldered to a mating DIN plug for connection to the PQ8. Alternatively, an a/d/s/ female phono jack-to-male DIN plug adapter can be used to mate standard stereo connecting cables to the PQ8.

Be careful to correctly match head unit output channels to PQ8 amplifier channels and speakers so that the head unit's balance and fader controls work correctly. See the pin-out information in the connection diagrams and **Specifications** section of this manual.

System configurations

Your system will probably be like one of two typical configurations. Diagrams of these typical systems are found inside the front and rear covers of the manual.

A Four channel, four full-range speaker stereo Usually, the four channels of the PQ8 are driven from four outputs on the head unit. These outputs typically are Left Front, Right Front, Left Rear and Right Rear. The speakers connected to the PQ8 are located in the corresponding positions in the vehicle.

When the head unit has only two stereo outputs (Left and Right), these outputs are split with "Y" adapters to provide two Left outputs and two Right outputs.

B Four channel, two subwoofer/two satellite speaker stereo In the case of the subwoofer/satellite system, the head unit's outputs are fed through an electronic crossover to the PQ8. Two of the channels are high pass filtered for driving a pair of stereo satellite speakers (typically operating above 170Hz). The remaining two channels are low pass filtered for driving a pair of subwoofers (typically below 85Hz).

When the head unit has only two outputs (Left and Right), the a/d/s/ electronic crossover takes two inputs and provides four outputs as a normal part of its function.

There are many other configurations possible—for example, two PQ8's can be used to make a powerful eight channel system with four satellites and four subwoofers. However, all will be variations of the two basic configurations.

Input level adjustment and operation

Operation of the PQ8 consists of correctly adjusting the input level controls and avoiding use conditions which result in distortion and poor sound quality.

Trying the system Once you have checked that all connections to the PQ8 are secure and correct, you may try the system. Initially set the PQ8's input level controls to mid-rotation (halfway up). Center all head unit controls and turn the volume control fully off. Turn on the power to your head unit, and then if the PQ8 is separately switched, turn on the remote switch for the PQ8. Leave the volume control on the head unit turned down for a moment to allow the PQ8 to power up. You may hear a mild 'pip' through the speakers when the PQ8 turns on.

Select a program source on the head unit and slowly turn up the volume control. If no sound or distorted sound is heard, immediately turn off the system, check fuses and check all power and signal wiring for correct and secure connections. If the problem persists, consult with your dealer or service technician.

Before following the procedure for adjusting input levels, **be sure** your speakers are rated for the maximum power output capability of the PQ8.

In case of difficulty

Note: In some head units, the output levels from the radio and from cassette tapes or compact discs may be substantially different. Check all sources when setting the PQ8's input level controls to be sure that all provide maximum undistorted output.

Head unit maximum volume control setting Set the PQ8's input level controls fully counter-clockwise (fully off). Set the tone, balance and fader controls of the head unit to their middle positions (all flat and balanced). Set the head unit's volume control fully on.

Now set the head unit's fader so that only the rear speakers are on. Adjust the head unit's volume control to its maximum setting as before. Turn the PQ8's input level controls for the rear speakers further clockwise until the sound is distorted (limited by either the amplifier or the speakers). Again, turn down the head unit's volume as soon as the adjustments are complete.

Now center the head unit's fader control, adjust the volume for a comfortable level and slightly adjust the PQ8's input level controls so that the levels from each speaker are balanced.

The above procedure maximizes the system signal-to-noise ratio and its overall reliability. These settings of the input level controls should result in a satisfactory range of sound levels from very soft to full output.

Each of the PQ8's level controls adjusts a single channel. Adjust the PQ8's level controls clockwise until the sound is at a comfortable level for you and the channels are balanced. Now listen for clarity and freedom from distortion in the sound. If you hear distortion, slowly turn the head unit's volume down until the sound is clear. If you don't initially hear distortion, leave the head unit's volume control fully on. In either case the resulting head unit volume control setting is the maximum for undistorted output from the unit.

PQ8 input level control settings for maximum undistorted output

For this step we suggest that you adjust the PQ8's amplifier channels in pairs. Leave the head unit's volume control at the maximum setting found in the step above. Adjust the head unit's fader so that only the front pair of speakers is on. Turn the PQ8's input level controls for the front speakers further clockwise until the sound is distorted (limited by either the amplifier or the speakers). The sound level will likely be very loud, so when the levels are reached where distortion occurs, quickly turn down the head unit's volume control.

Distortion, especially when it occurs at high volume, may simply be the result of overdriving the amplifier or the speakers or both. Overcoming the noise resulting from driving at highway speeds with the windows down, for example, will tax the abilities of any automotive sound system. The obvious cure is to reduce the volume level of the system.

A defective loudspeaker can also cause distortion. Fuzzy or raspy sound, especially at loud levels, is a sign of loudspeaker failure. Listen to each driver of each loudspeaker system in turn to determine which speaker is defective, and replace it.

Thermal cycling The PQ8 is protected from excessive temperatures by a thermal cutoff which turns off the power converter when the heatsink temperature exceeds approximately 80°C. Normal operation of the PQ8 resumes automatically when the heatsink cools down.

The PQ8 may run excessively hot when:

- cooling air to the heatsink is blocked
 - the ambient temperature of the air around the PQ8 is very high
- Remove anything which blocks the flow of air over the PQ8.

The most common difficulties are noise and/or distortion, and thermal cycling. A blown PQ8 fuse is an unusual occurrence. If you want to talk to us about any problems, call:

a/d/s/ Customer Service
617. 729. 1140, between 9am and 5pm, Eastern time.

System noise and distortion The background noise level of the system will vary widely with different equipment and the choices of individual component grounding points. This noise usually consists of "alternator whine," a buzzing sound which changes in pitch as the engine RPM changes.

Do not confuse this noise with the normal background "hiss" which occurs when playing tapes at high levels, or the various "static" noises which normally occur with AM and FM radio reception. The tape hiss and static noises are either normal or the result of problems with the head unit and have nothing to do with the PQ8. Most noise problems resulting from grounding problems are audible even when the volume control of the head unit is turned fully down.

Noise in the system may be normal, depending on its source. Tape "hiss" and radio "static" are common and sometimes unavoidable noises in the system; review Input level adjustment, preceding, to minimize these noises. Engine speed related noises, especially those heard at low volumes, usually are solvable.

Maintenance

The PQ8 requires little routine maintenance. Keep the chassis free from dust and dirt, and check the quality of the various connections every few months, with the power off.

Do not use solvents or liquid cleaners of any kind on the PQ8's chassis. Dust and dirt can be removed with a dry cloth or soft brush.

Loss of sound A blown PQ8 fuse is unusual and may result from problems within the PQ8. Use only a replacement fuse of the exact type and rating specified for the PQ8. The power fuse plugs into a fuse block in the PQ8's connector panel. If a replacement fuse blows immediately, take the PQ8 to your a/d/s/ dealer or authorized service agency for assistance.

Occasionally, the protection circuits of the PQ8 which detect power output beyond the safe capabilities of the amplifier may turn the PQ8 off momentarily. When this occurs, reduce the volume level of the system. A defective loudspeaker also may trigger this condition. Listen for distortion from the speakers at medium volume levels; if you hear distortion, try to determine which speaker is defective and replace it.

Specifications

Power output (Watts), all channels driven, continuous <i>FTC rated, 20Hz to 20kHz, ≤0.3% THD</i>	4 x 20
4 Ohm, 4 channel	
2 Ohm, 4 channel (0.5% THD)	4 x 35
Typical midband, 1kHz, <1% THD	4 x 22
4 Ohm, 4 channel	
2 Ohm, 4 channel	4 x 38
IHF dynamic headroom	>0.8 dB
Damping factor	>50 into 4 Ohms
Frequency response	10Hz to 40kHz, ± 1dB
Signal to noise ratio	>100dB A re full power, 20kHz bandwidth
Input sensitivity	45mV-1.2V for 1 Watt output
Input impedance	50kOhms
Input DC power supply current over 10 to 16VDC operating range:	
No signal	1.2A
Average	5A
Maximum output	15A
Remote	0.01A
Power fuse	Type ATO, 15 Amp
8-pin DIN input jack connections	
pin 1	ch 4 input
pin 2	Audio signal ground
pin 3	ch 2 input
pin 4	ch 3 input
pin 5	ch 1 input
pin 6	No connection
pin 7	No connection
pin 8	remote power control
Dimensions	250mm/9 ⁷ / ₈ " w. by 50mm/2" h. by 160mm/6 ³ / ₈ " d.
Weight	2.3 kg/5 lbs

Specifications subject to change without notice

System configuration B

Four channel, subwoofer/satellite wiring

