

# CROSSFIRE

## CQ30-2

### Stereo Equalizer Installation Manual



30 Band  
Stereo Equalizer



Thank you and congratulations for choosing Crossfire Car Audio. You have selected one of the finest audio reproduction products available, the competition series CQ30.2 equalizer. Your purchase of this 30 band competition series equalizer shows your interest in pure sonic reproduction and the high build quality that has become a personal goal of the design and engineering teams at Crossfire.

Providing you with sophisticated equalizers is not all Crossfire has accomplished. Check out our full line of amplifiers, signal processors, dynamic component systems and coaxial speakers, and of course our wide selection of high performance subwoofers. Explore the potential of Crossfire Car Audio, and most of all, enjoy the music!

## IMPORTANT

### PLEASE READ ALL INSTRUCTIONS BEFORE INSTALLATION!!!

The quality of installation may affect the performance and reliability of your Crossfire signal processor. Please take a few minutes to read the manual carefully. The time you spend on installation will prove to be worthwhile when it's time to listen to your investment. If you have any doubts or questions regarding installation or use, you may wish to contact your authorized Crossfire Car Audio dealer or call Crossfire at 562-906-0800 for further assistance.

## SPECIFICATIONS

Frequency Response	10K TO 30KHz +1dB
Maximum Output Level	6V
Input sensitivity	250mV - 6V
Subsonic Filter	-24dB @ 20Hz
Stereo Separation	>80dB
THD	0.02%
S/N Ratio	>100dB
Input Impedance	39K Ohms
Output Impedance	100 Ohms
Dimensions	187(W) x 319(L) x 41(H) MM
	7.38"(W) x 12.55"(L) x 1.61"(H) IN



1. FUSE  
The one amp fuse will help protect the CQ30.2 from damage in case of a short.
2. L.E.D. POWER INDICATOR  
This indicator lights up when the CQ30.2 is properly connected and the source unit is turned on.
3. POWER TERMINALS  
B+: connect to the vehicles positive 12 volt power supply.  
B-: connect to the vehicles chassis (GND)  
Remote turn-on: connect to the remote turn-on lead of the source unit.  
Delayed remote turn-on: connect to the remote turn-on leads of all signal processors and amplifiers following the CQ30.2. This will delay the turn on of these units by 2 seconds after the source unit is powered up.
4. EQUALIZER CONTROLS  
These knobs allow you to boost or cut the given frequencies up to 12dB.
5. INPUT PEAK L.E.D.  
This indicator will illuminate when the input level is too high.
6. OUTPUT PEAK L.E.D.  
This indicator will illuminate when output voltage reaches or surpasses the 7 volt RMS maximum.
7. INPUT LEVEL CONTROLS  
This gain control is used to adjust the input sensitivity of the CQ30.2 to match the radios output.
8. INPUTS  
Accepts signal from the output of the source unit via RCA patch cables.
9. OUTPUT LEVEL CONTROL  
Allows for the adjustment of the output to match the input level of the amplifier.
10. OUTPUT  
Connect this output to the amp(s) via RCA patch cables.
11. SUBSONIC FILTER SWITCH  
Turns the subsonic filter on and off.
12. EQUALIZER BYPASS SWITCH  
Allows for equalized and non-equalized comparisons of your signal.

## POWER CONNECTIONS

Before connecting anything, be sure to disconnect the ground from the car battery to prevent any damage to other audio components. All components should be hooked up before the battery is reconnected.

### B+ (BATTERY +12VOLTS)

Connect to this terminal a positive 12 volt lead using the same source of power used to power your amplifiers. This should eliminate any chance of picking up noise due to voltage differences. If you decide to run the power wire for the equalizer directly to the battery, be sure to add an inline fuse holder containing a 1 amp fuse at the battery in case of a short. Use a minimum of 16 awg stranded copper wire and be sure to apply grommets whenever the power wire is run through any metal wall.

### B- (GND)

When grounding your Crossfire CQ30.2, locate a metal area close to the unit that is a good source of ground (preferably the floor). Investigate the area you wish to use for electrical wires, vacuum lines, and brake or fuel lines. Using either a wire brush or sandpaper, eliminate unwanted paint to supply a better contact when grounding. Use the same gauge wire for ground as you did for the power. Terminate your ground wire using the correct size ring terminal and attach it to the bare metal using a #8 sheet metal screw. It is important for this connection to be solid. To complete the job, spread silicon over the screw and bare metal to prevent rust.

### R (REMOTETURN-ON)

Between the power and ground is a remote turn-on terminal. This terminal must be connected to a switched +12 volt source. Typically, remote turn-on leads are provided by the source unit which will turn on and off the amplifier in correspondence with the source. If a radio does not have a remote turn-on, then a power antenna wire may be used. Yet, if neither of these leads are available at the source, a switched +12 volt supply must be used. Run a minimum of 18 awg wire from the amplifier location to the source of the switched +12 volt lead. Remember, it's best to keep all +12 volt wire ran on one side of the vehicle and away from the RCA cable. Avoid running the wire near sharp edges that may easily cut through the insulation. Connect the source to the wire. Check your connections by turning on the source. The green light will illuminate if your connections are correct.

### DR (DELAYED REMOTE)

This is to be connected to all other signal processors and amplifiers remote turn-on input terminals. This will provide a 2 second delay to help eliminate pop or thump noises when the unit is turned off.

## SIGNAL CONNECTIONS

Review the system diagrams and choose the best variation for your vehicle. This should give you a good idea of how many RCA patch cables you will need.

Choose the correct length and style of RCA patch cables for your needs. Better RCA's have either multiple layers of shielding or twisted pair wiring and gold plated terminals for better noise rejection and outstanding contact (consult your dealer).

Be extra careful when running your RCA patch cables. Car environments are notorious for poorly insulated wires. This means that hiss, engine noise, and fan noise can easily be picked up through RCA cables if run incorrectly. As a precaution, avoid placing your RCA's near large wire looms and electric fans whenever possible.

Starting at the source, connect the patch cables to the source RCA output. Run the cables to the location of the CQ30.2. Connect your patch cables to the corresponding inputs. Be sure to check for correct balance (red is right and black or white is left) on both the radio and the equalizer. Next connect the output to your amplifier or crossover, checking for correct balance again.

## INPUT SENSITIVITY

1. Check the manuals of the processor(s) following the CQ30.2 for their maximum input levels (listed as input sensitivity). Most signal processors and amplifiers do not accept the 8volts RMS of input this processor can produce so signal should never reach peak output.

2. Adjust the input level of the CQ30.2 to 0.

3. Preset the output level of the CQ30.2 slightly above minimum gain.

4. Move the EQ bypass switch to the off position. Set the equalizer knobs straight up and down to zero

5. Set the input levels of all processors and amplifiers to 1/4 maximum.

6. Activate the radio power. Set the tone controls, balance and fader controls to the center or flat position.

These next steps are best accomplished with the following items: a test disc or cassette with a 1Khz test tone, a digital volt meter, and a couple of very dynamic tracks on your favorite CD or cassette. Follow the level adjustments below.

1. Plug in the test CD or cassette and play the 1Khz tone. If you are using a CD, you may wish to turn on the track repeat function. If you do not have a test CD, skip to step 3 b.

2. Unplug the output signal cable of the CQ30.2 going into the following component(s). Connect your volt meter to the output cable as shown below and turn the volt meter to AC voltage.

3-a. Turn the radio on and adjust the volume to  $\frac{1}{4}$  of maximum. Adjust the output of the CQ30.2 until the volt meter meets the maximum rated input acceptable into the next unit. Finish by placing the output signal cables back into the next component.

3-b. Turn the radio on and adjust the volume to  $\frac{1}{4}$  of maximum while playing your favorite CD or cassette. Adjust the output of the CQ30.2 until the onset of distortion is heard, then reduce the output level slightly.

4. Set the levels for all following components as suggested by that manufacture.

5. Take a few minutes now to listen to the system using your favorite music tracks to determine if the volume is satisfactory. At  $\frac{1}{4}$  maximum volume, the system should be at maximum and distortion should be faintly audible.

6. Check the Output clip indicator on the CQ30.2 at  $\frac{1}{4}$  volume. Make sure the LED is not illuminating. If the clip indicator is illuminating, reduce the output level until it completely shuts off. The level controls on the following processors or amplifiers may need adjustment as well.

## EQUALIZATION

How does an equalizer work?

Simply put, an equalizer corrects deviations over a given bandwidth. The knobs on the CQ30.2 are each numbered with the center of the frequency "Q" they adjust. By rotating these knobs clockwise or counter clockwise you can boost or cut a particular frequency to smooth the response of your system and acquire a desired sound.

Adjusting your equalizer-

Adjusting your CQ30.2 is not an easy task. For this reason we recommend the use of an RTA, or Real Time Analyzer. If you are not using an RTA it will be hard to distinguish frequency dips and peaks, making it harder to know how much to adjust each. Although we highly recommend using a Real Time Analyzer, you may adjust the CQ30.2 to your own taste by ear. However you go about tuning your system, please follow the basic steps on the next page.

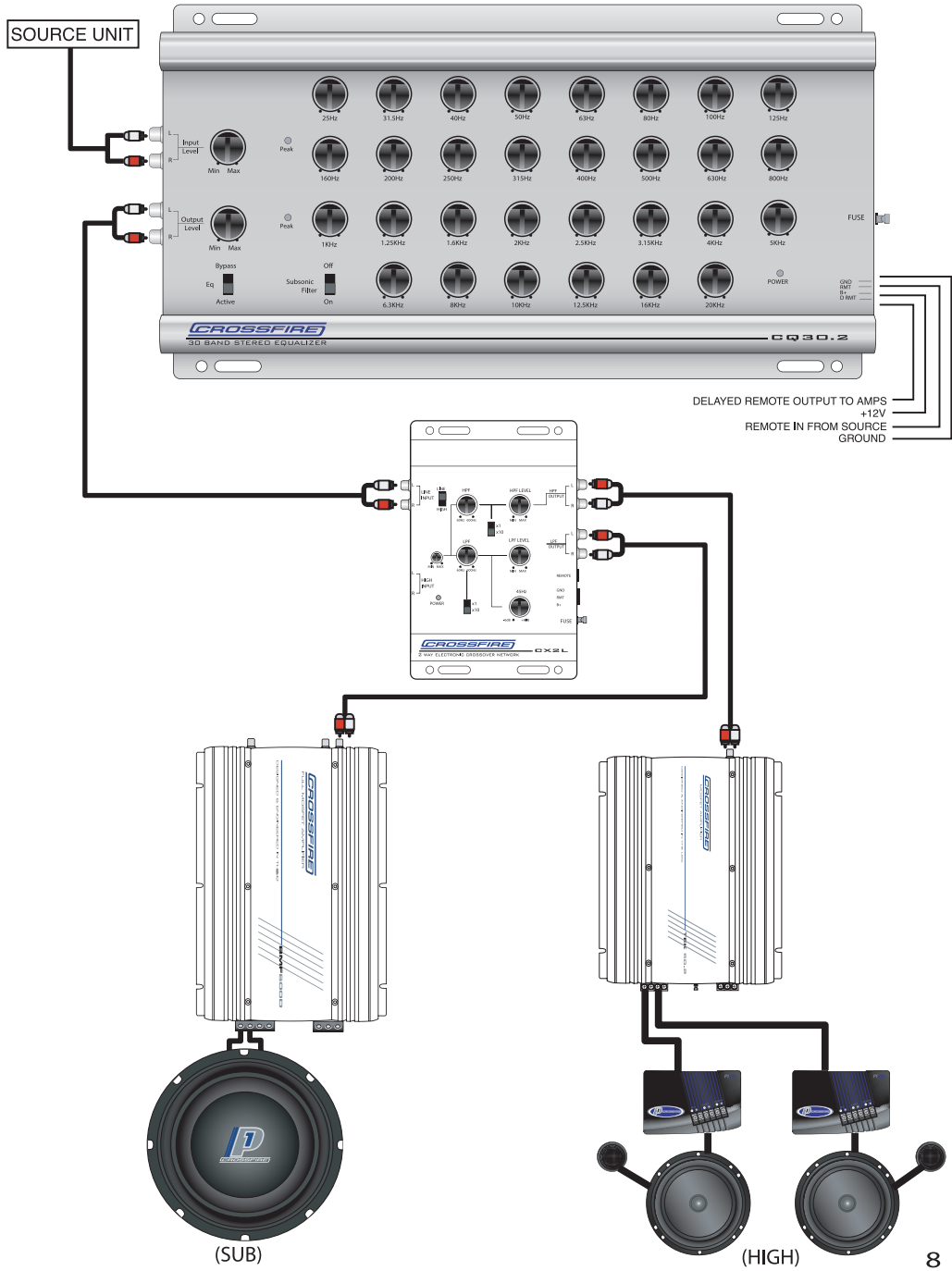
1. Always start with the frequencies that need to be cut or reduced. reason: boosting frequencies by 3, 6, or 12dB is often accompanied by system noise boosted an equal amount. Cutting frequencies will cut noise.
2. Remember to adjust no more than two frequencies at one time. This makes it easier to distinguish whether the changes make an improvement or not. Since the CQ30.2 is typically mounted in the trunk it's important to listen to the changes in the response after each setting.
3. Always use extreme caution when boosting frequencies. For every 3dB of boost, twice the power is demanded from the amplifier at that particular frequency. For example, if your amplifier is 25 watts at 0 dB at a particular frequency, then at 3 dB of boost it will need to supply 50 watts, and at 6 dB of boost it requires 100 watts or 4 times the power. If too much boost is applied, the chances are your amplifier will clip at these frequencies and possibly damage your speakers and/or amplifier.
4. Avoid equalizing more than +/- 6 dB. If you have this size of a deviation the chances are you have a phase problem. This could be in part due to the location of the speaker or as simple as a polarity problem at one or more speakers.

#### Checking the Level Settings

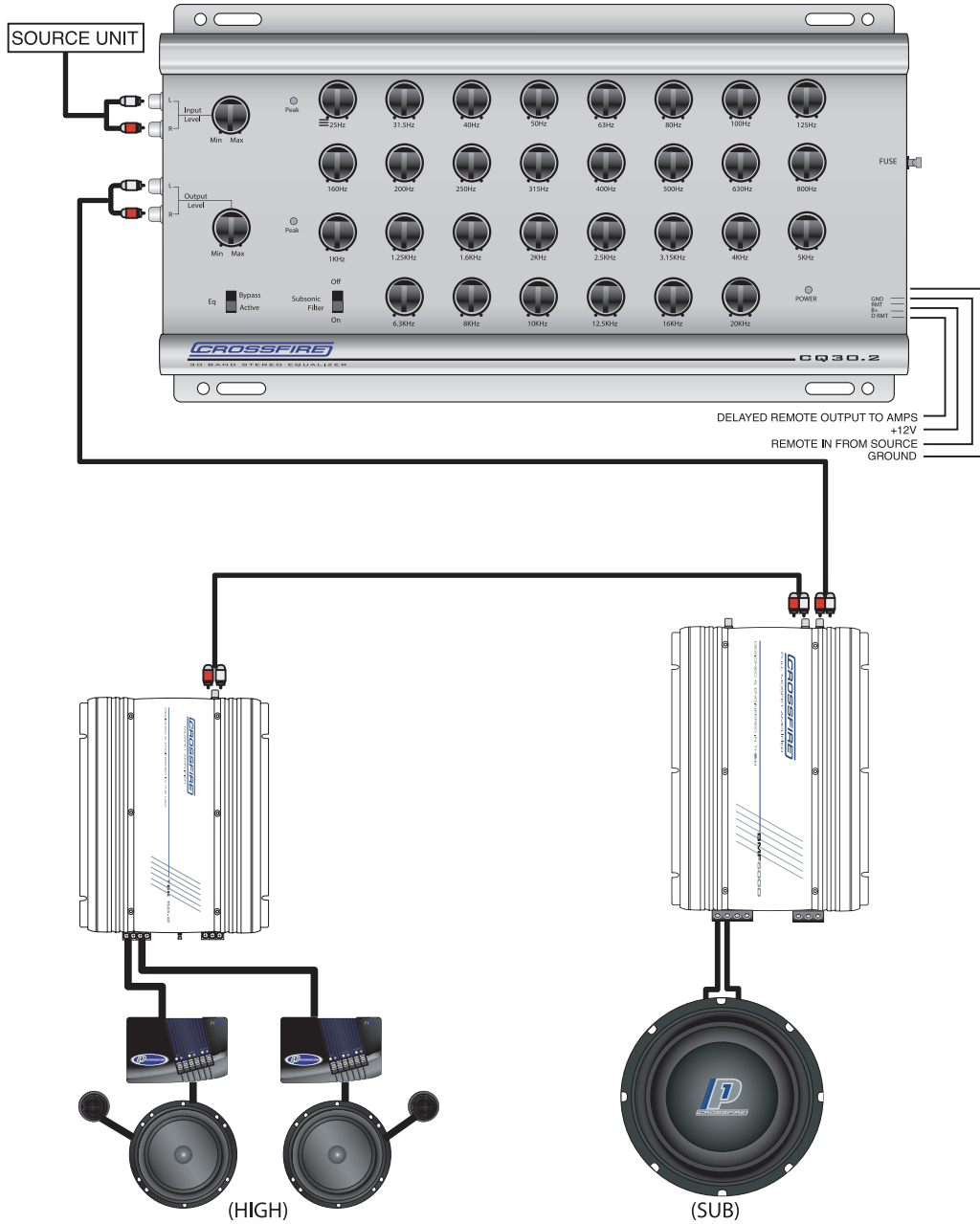
Now that you're done equalizing, you should check the output levels of the CQ30.2 once again. Every time you made an adjustment the output level was adversely affected. Simply insert the compact disc or cassette tape used to make your initial settings. Turn the volume to 3/4 if distortion is heard or the peak indicator LED is illuminating, turn the outputs down; if volume is lost you may wish to increase the output as long as the peak indicator lights are not illuminating. Be careful not to overdrive your amplifiers.



# SYSTEM DIAGRAMS



# SYSTEM DIAGRAMS



## Crossfire Limited Warranty

This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state. This warranty is only valid on Crossfire products purchased in the U.S.A. from an authorized Crossfire dealer. All Crossfire amplifiers are warranted to be free from defects in materials and workmanship under normal use and serviced for a period of (2) years when the unit is installed by an authorized Crossfire dealer. Non-authorized dealer installed products carry a (1) year parts and labor limited warranty. The extent and conditions of Crossfire's limited warranty are as follows:

- i. Crossfire will either repair or replace (at our option) any unit which Crossfire has examined and found to be defective and under warranty, to the original purchaser, provided the defect occurs within (2) years of the date of purchase when the unit is installed by an authorized Crossfire dealer. This warranty includes both parts and labor and applies to the original purchaser only.
- ii. Crossfire will either repair or replace (at our option) any unit which Crossfire has examined and found to be defective and under warranty, to the original purchaser, provided the defect occurs within (1) year of the date of purchase when the unit is installed by a non-authorized Crossfire dealer. This (1) year warranty includes both parts and labor and applies to the original purchaser only.
- iii. This warranty will be void to any unit found with the original factory serial number removed, altered or defaced. All units received by Crossfire for warranty with their original serial numbers removed will not be repaired and returned to sender freight collect.
- iv. The provisions of this warranty shall not apply to products used for any industrial, professional or commercial purposes or any other uses for which it was not designed.
- v. This warranty does not cover costs for removal of product for repair or reinstallation of the product after repair, nor does it cover the cost of returning the product to Crossfire's service center for repair.
- vi. This warranty does not apply to repairs or replacements necessitated by any cause beyond the control of Crossfire. Including, but not limited to, any malfunction, defect or failure caused by or resulting from unauthorized service or parts, improper maintenance, operation contrary to furnished instructions, shipping or transit accidents, incorrect power line voltages, fire, flood or any other acts of nature, or normal wear and tear.
- vii. The foregoing is in lieu of all other expressed warranties and Crossfire does not assume or authorize any party to assume for it any other obligation or liability. The duration of any warranties, which may be implied by law (including the warranties of merchantability and fitness), is limited to the term of this warranty. In no event shall Crossfire be liable for special, incidental or consequential damages arising from obligations under this warranty due to causes beyond its control.  
Some states do not allow limitations on how long an implied warranty lasts and/or do not allow the exclusions or limitation of consequential damages, so the above limitations and exclusions may not apply to you.

viii. Return policy  
Your unit will be serviced free of charges on an in-warranty basis only. If improper operation occurs, contact your authorized Crossfire dealer for assistance with the return and factory repair of your Crossfire product. If an authorized Crossfire dealer is not available, the following procedure must be followed: phone (562 906-0800) or fax (562 941-2284) in your name, address, telephone number and the model number of the item to be returned to receive a return authorization number. Your return authorization number must be clearly written on the outside of the packing box returned to Crossfire. All returned products must be accompanied by a dated purchase invoice or the product may be subject to costs of parts and labor. Return the unit, prepaid postage, in the original protective carton or a carton with ample protection. Please include a brief description of the problem and send your repair to:

**CROSSFIRE**  
1222 Bell Ranch Drive  
Santa Fe Springs, CA 90670



12222 Bel Ranch Dr., Santa Fe Springs, CA 90670 ● Phone: 562-906-0800, Facsimile: 562-941-2284