CENTRAL STATION

STUDIO CONTROL CENTER

USER'S MANUAL

version 1.1

W A R R A N T Y

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1 Overview

2 Controls & Connections

3 Operation

4 Technical

1.1 INTRODUCTION

Thank you for purchasing the PreSonus CENTRAL STATION. PreSonus Audio Electronics has designed the CENTRAL STATION utilizing high-grade components to insure optimum performance for many years. We believe the CENTRAL STATION to be an exceptional sounding unit and an exceptional value. We encourage you to contact us at 1-800-750-0323 with any questions or comments you may have regarding your PreSonus equipment. PreSonus Audio Electronics is committed to constant product improvement, and we value your suggestions highly. We believe the best way to achieve our goal of constant product improvement is by listening to the real *experts*, our valued customers. We appreciate the support you have shown us through the purchase of this product.

Please pay close attention to how you connect your CENTRAL STATION to your system. Improper grounding is the most common cause of noise problems found in studio or recording environments. We would like to suggest that you use this manual to familiarize yourself with the features, applications and correct connection procedure for your CENTRAL STATION before trying to hook it up to your system. Thank you, once again, for buying our product and may we wish you Good Luck and enjoy your CENTRAL STATION!

1.2 FEATURES

The CENTRAL STATION is the ultimate studio-monitoring interface for the modern digital studio featuring three sets of stereo analog inputs to accommodate DAW/Mixer or Tape/CD players. Two stereo analog inputs feature TRS balanced and the third stereo input features RCA inputs with trim control for matching signals at different levels. In addition, the CENTRAL STATION will accommodate two digital inputs via S/PDIF or TOSLINK providing D/A conversion up to 24Bit/192kHz. This allows the user to monitor DAW and CD/DAT outputs through the same converter for the most accurate A/B comparison. The digital to analog converter offers the highest possible audio quality with over 115dB dynamic range and ultra high quality analog circuitry. The CENTRAL STATION features three sets of monitor outputs, each with their own set of passive trim pots. The monitoring section also provides MUTE, DIM and MONO controls. In addition, the CENTRAL STATION includes a set of CUE outputs that can feed headphone amplifiers and a separate stereo MAIN line level output.

PURELY PASSIVE SIGNAL PATH

The CENTRAL STATION features a PURELY PASSIVE SIGNAL PATH for ultimate sonic performance. The main audio path of the CENTRAL STATION uses no amplifier stages including op amps or active IC's (integrated circuits) that add noise, color, distortion, and give that "pinched" sound. Distortion produced by op amps and IC's also gives added ear fatigue.

Signal routing in the CENTRAL STATION is achieved utilizing 34 sealed mechanical relays (instead of active IC's) maintaining a minimal signal path design wherein extraneous electronics are hard-wire bypassed. Using

relays ensures the most transparent signal path maximizing dynamic range, frequency range, and headroom, while minimizing noise and coloration. The CENTRAL STATION uses the highest quality passive components including military grade 1% tolerance metal film resistors, multi-element potentiometers and ultra-durable connectors to deliver the highest sonic performance.

METERING

The CENTRAL STATION has dual fast-acting 30-segment peak/hold LED's for accurate metering. The front panel of the CENTRAL STATION includes both dBu and dBfs scale as well as peak/hold clear switch and meter alignment switch for additional metering options.

TALKBACK

The CENTRAL STATION has an onboard omni directional condenser TALKBACK microphone which is routed through the CUE outputs for communication between artist and engineer. The CENTRAL STATION also includes a microphone XLR input on the rear panel for use with an external microphone. When TALKBACK is used the CUE mix is automatically "dimmed" for added ease of communication.

REMOTE CONTROL (optional)

An additional DB15 connector on the rear of the CENTRAL STATION to allow for a wired remote which controls VOLUME, TALKBACK, MUTE, input source switching and speaker output switching functions.

SUMMARY OF FEATURES

? Five stereo inputs (2 digital and 3 analog)

? 24-Bit DAC for Digital Inputs (>115dB dynamic range)

? Passive Audio Path - no op amps or IC's in main audio path

? Three sets of monitor outputs; each with passive volume trims

? Talkback microphone with volume to feed CUE outputs

? Accurate dual 30-segment LED for metering

? Two front panel headphone jacks with separate volume control

? MAIN and CUE stereo output have independent input source

? Optional console remote control

2.1 FRONT PANEL LAYOUT

The front panel of the CENTRAL STATION is divided into four sections – Talkback/Headphones, Cue/Main Select, Meter, Passive Speaker Control

2.2 TALKBACK / PHONES

? TB -Talkback 'On' Button: When pressed, this button activates the Talkback microphone. This is a momentary type switch – the microphone is 'ON' only while the button is pressed. An external foot pedal connected to the PEDAL input on the rear of the chassis can also be used to activate the TALKBACK microphone.

? Mic Level: Adjusts the talkback microphone sensitivity.

? Phones Level (2): Dual function. When turned, the knob adjusts the headphone volume level. When pressed in, switches between MAIN and CUE audio input paths.

2.3 CUE / MAIN SELECT

The CENTRAL STATION is loaded with separate CUE and MAIN signal paths. The CUE signal path includes the TALKBACK microphone signal and is intended for sending this signal to the recording artist via external headphone amp, or the two on board headphone amp. The MAIN signal path is intended for the "control room" and does not include the TALKBACK signal. (See application diagram for recording on page.)

? OUTPUT LEVEL control knob – adjusts the overall output level of the CUE audio path (headphone/CUE outputs on rear of chassis).

? INPUT SELECT – for CUE and MAIN

   o TRS 1 – Selects analog TRS 1 input (1/4" TRS connector on rear of chassis)

   o TRS 2 – Selects analog TRS 2 input (1/4" TRS connector on rear of chassis)

   o DIGITAL – Selects digital input signal path(TOSLINK of SPDIF)

   o AUX – Selects analog AUX input (RCA TS connector on rear of chassis)

? DIGITAL INPUT – Selects between S/PDIF and TOSLINK (connections on rear of chassis) inputs. Note that the DIGITAL button also must be selected in the CUE or MAIN section in order to route the digital signal to the CUE or MAIN.

? AUX INPUT control knob – adjusts the overall input level of the AUX input.

2.4 METER

The CENTRAL STATION is loaded with dual independent tri colored 30 segment LED's for metering of the audio signal. The scale is represented in both dBfs and dBu for use with both analog outboard equipment as well as digital audio workstations, sound cards and other digital processors.

? CLEAR PEAK –The meters on the CENTRAL STATION have a PEAK hold feature in which the RED clip LED will remain on until the CLEAR PEAK button is pressed.

? CALIBRATE – You can calibrate the meters on your CENTRAL STATION to match the metering on your other equipment. In some cases, audio software metering can vary depending on your DAW. It may be desirable to calibrate the meters on your CENTRAL STATION to match the metering in your audio software. For detailed instructions on calibrating the meters on your CENTRAL STATION please refer to section 3.3 Meter Calibration Procedure on page 14.

2.5 PASSIVE SPEAKER CONTROL

? SPEAKER SELECT A, B C – Activates stereo speaker line level output A, B or C (balanced TRS on rear of unit) in the main audio signal path. SPEAKER SELECT A & B cannot be on at the same time. However SPEAKER SELECT C can be on while A or B are on. Typical use for SPEAKER C is for a Subwoofer.

? SPEAKER TRIM L/R (A, B, C) – Recessed potentiometer for adjusting each speaker output separately. Use a small flat head screwdriver to adjust this control.

? MAIN LEVEL – Multi-element potentiometer to adjust the overall volume level of the MAIN audio path.

? MUTE – Mutes the MAIN audio output

? DIM – Attenuates the main audio output by approximately -20dB.

? MONO – Combines the stereo signal to all for checking phase cancellation.

2.6 BACK PANEL LAYOUT

The back panel of the CENTRAL STATION is divided into six sections: DIGITAL INPUTS, SPEAKER OUTPUTS, LINE OUTPUTS, ANALONG INPUTS, CONSOLE REMOTE CONTROL and TALKBACK.

<u>DIGITAL INPUTS</u> - 24 bit/192k digital inputs. Automatically reads and locks to sample rate of incoming digital stream. Can receive and lock to sample rates of 44.1, 48, 96, and 192k.

? TOSLINK – optical stereo digital format. NOT THE SAME AS ADAT FORMAT.

? SPDIF INPUT - Stereo digital input format via digital RCA TS connector.

<u>SPEAKER OUTPUTS</u> L/R (A, B, C) – Left (L) and Right (R) stereo balanced line level 1/4" TRS outputs to connect to powered monitors or speaker power amps.

<u>LINE OUTPUTS</u>

? MAIN (L/R) – Left and Right stereo balanced line level 1/4" TRS outputs to connect to recording device. There is no attenuator (volume control) on this output.

? CUE (L/R) - Left and Right stereo balanced line level 1/4" TRS outputs to connect to headphone distribution amplifier. Front panel CUE OUTPUT LEVEL adjustment controls volume level.

<u>ANALOG INPUTS</u>

? TRS 1 (L/R) – Left and Right stereo balanced line level 1/4" TRS inputs.

? TRS 2 (L/R) – Left and Right stereo balanced line level 1/4" TRS inputs.

? AUX (L/R) – Left and Right stereo unbalanced line level RCA TS inputs.

<u>CONSOLE REMOTE CONTROL</u>

? ACTIVATE – Activates CSR-1 optional remote control. ***When ACTIVATE is pressed, MAIN LEVEL control on CENTRAL STATION IS BYPASSED. (All other controls function.)***

? CONSOLE – DB9 9-pin connector for connection to optional CSR-1 CENTRAL STATION remote control.

<u>TALKBACK</u>

? <u>PEDAL</u> – Unbalanced 1/4" TS cable for connecting momentary normal open type footswitch.

? <u>ACTIVATE</u> – Activates external dynamic microphone to be the TALKBACK . Onboard CENTRAL STATION MIC is bypassed when ACTIVATE is pressed.

? <u>MIC</u> – Connect dynamic microphone for external TALKBACK microphone via balanced XLR connector.

2.7 CONNECTORS

All analog Input and Output connectors use the following standards:

Analog 1/4" TRS and XLR	Sleeve = GRND = Pin 1 XLR Tip = Hot (+) = Pin 2 XLR Ring = Cold (-) = Pin 3 XLR
Analog RCA	Sleeve = GRND Tip = Hot (+)
Analog 1/4" TS (pedal)	Sleeve = GRND TIP = Hot (+)
Digital TOSLINK	Optical SPDIF stereo (not ADAT)
Digital S/PDIF	RCA, coaxial Sleeve = GRND TIP = Hot (+)

2.8 POWER SUPPLY

The external power supply included with your unit corresponds to the AC power requirements of the country in which it was sold. Do not use your power supply if the AC Voltage on the power supply does not match the power requirements of your country.

The CENTRAL STATION does not have a power ON/OFF switch. To power on your CENTRAL STATION connect the locking round connector on the power supply to the CENTRAL STATION then connect the AC connector on the power supply to your power source. You can connect your CENTRAL STATION power supply to a power strip and use the switch on the power strip to turn your unit on and off.

NOTE! Make sure you always turn off power amp and powered monitors before changing any cable connections or turning your CENTRAL STATION on or off. Loud pops can clicks can occur when making cable connections or powering up or down your CENTRAL STATION.

3.1 QUICK START UP

The following are step-by-step instructions on getting your CENTRAL STATION set up quickly.

MAIN VOLUME TRS1 AND AUX INPUT SWITCHING

1. Turn off powered monitors or power amp while making any cable connections.

2. Connect your DAW (digital audio workstation) main analog output to TRS 1 ANALOG INPUT on the CENTRAL STATION.

3. Connect your powered control room monitors (or power amp) to SPEAKER OUTPUT A.

4. Connect external CD player analog RCA output to the RCA AUX ANALOG INPUT on the CENTRAL STATION.

5. Turn the following controls completely counterclockwise: TALKBACK MIC LEVEL, HEADPHONE LEVEL (2), OUTPUT LEVEL, AUX IN LEVEL, and MAIN LEVEL.

6. Using a flat screwdriver turn all PASSIVE SPEAKER OUTPUTS completely clockwise.

7. Power up your CENTRAL STATION by connecting power supply to rear of CENTRAL STATION and into electrical outlet power source or power strip, then power up your power amp or powered monitors.

8. Press PASSIVE SPEAKER OUTPUT A button.

9. Press TRS 1 button in MAIN INPUT SELECT section.

10. Play stereo signal from DAW and slowly turn MAIN LEVEL control clockwise until you hear signal in monitors. Adjust to comfortable listening level.

11. Press AUX button in MAIN INPUT SELECT section.

12. Play CD from CD player and slowly turn AUX INPUT clockwise until you hear CD in monitors.

13. While computer is playing into TRS1 and CD player is playing into AUX INPUT simultaneously press TRS1 and AUX buttons to switch between computer output and CD player.

HEADPHONE AND TALKBACK – QUICK START UP

14. Double check that PHONES LEVEL and MIC LEVEL are turned completely counterclockwise.

15. *PRESS* PHONE LEVEL control knob so that the CUE light is illuminated (not MAIN).

16. Press INPUT SELECT TRS1 in CUE section.

17. Connect headphones to one of the PHONES 1/4" input.

18. Play stereo signal from computer connected to input TRS 1.

19. Slowly turn phones level clockwise while wearing headphones until level is comfortable.

20. Press TB button and talk into mic input grill on front panel while slowly turning MIC INPUT LEVEL clockwise until talkback microphone is at a comfortable level.
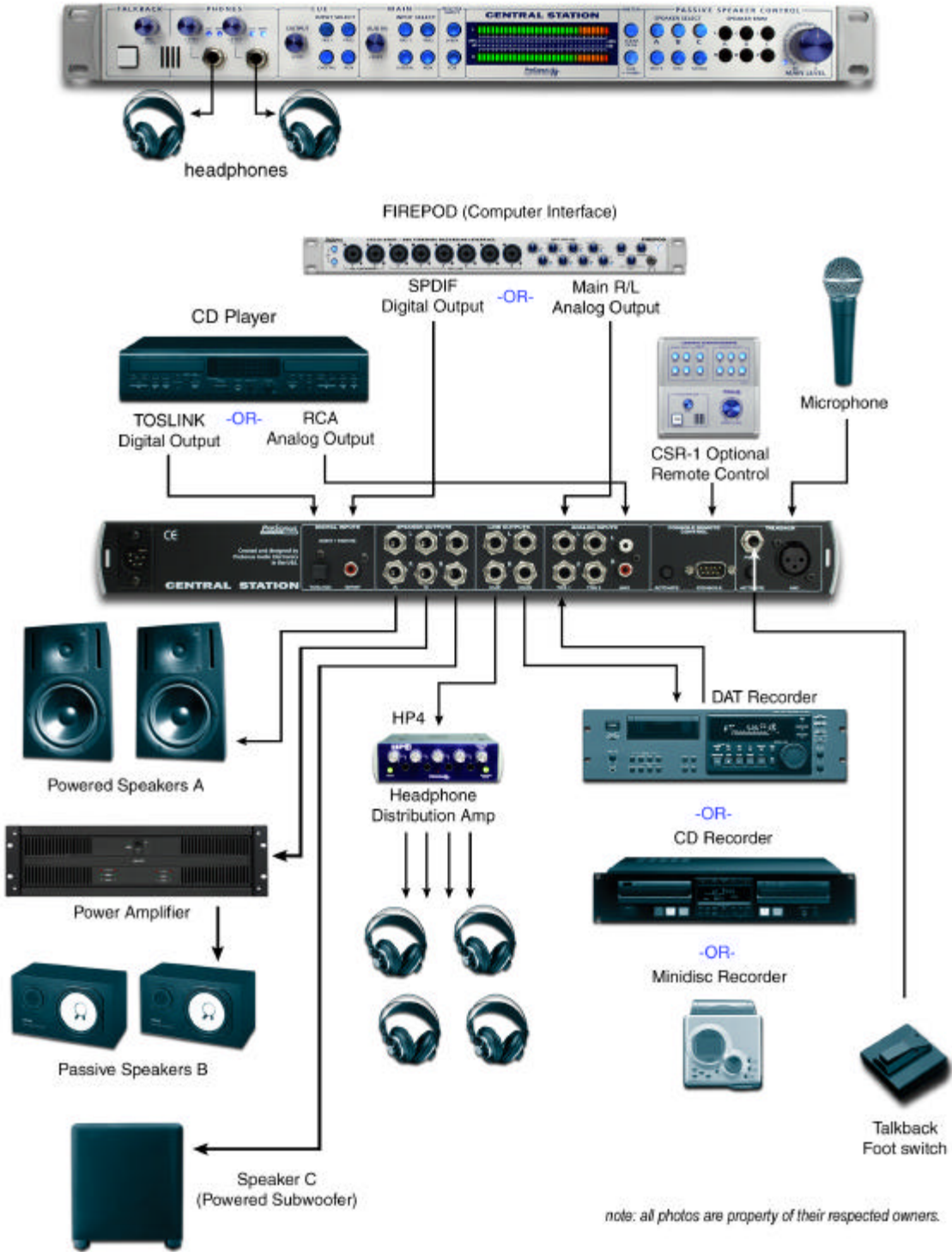
ADJUST SPEAKER OUTPUT VOLUME

21. Make sure all six PASSIVE SPEAKER OUTPUT trim controls are turned completely clockwise.

22. Connect one set of speakers to SPEAKER OUTPUT A, a second set of speakers to SPEAKER OUTPUT B, and a subwoofer to SPEAKER OUTPUT C.

23. Set the power amps on your powered monitors or speaker amps to their mid level position.

24. Play audio into the TRS 1 input of the CENTRAL STATION and select TRS 1 in the MAIN INPUT SELECT section.

25. Press SPEAKER A button to select speaker A and use MAIN LEVEL control to adjust to desired volume level.

26. Press SPEAKER B. You can now either adjust the power amp of your monitors or by using a flat screwdriver adjust the speaker trim of the loudest speaker to match the quieter speaker. Turn the trim potentiometer counter-clockwise to attenuate the output of the louder speaker and toggle back and forth while adjusting the level in order to get the levels to match.

USING DIGITAL INPUT

27. Using a digital SPDIF cable, connect the SPDIF output from DAW , CD player or other digital device to the SPDIF input on the CENTRAL STATION.

28. Press the DIGITAL button on the front panel MAIN INPUT SELECT section on your CENTRAL STATION. Press the SPDIF button in the DIGITAL INPUT section of the front panel of the CENTRAL STATION. Press SPEAKER OUTPUT of choice.

29. Play stereo audio from SPDIF source. CENTRAL STATION will automatically detect and lock to the sampling rate of the source device.

30. Adjust MAIN LEVEL to desired level.

31. For TOSLINK following the same instructions. Note that TOSLINK format is a specific stereo digital format found on many consumer audio devices. It is not the same format as ADAT light pipe format.

3.2 HOOK UP DIAGRAM

headphones

FIREPOD (Computer Interface)

SPDIF
Digital Output   -OR-   Main R/L
Analog Output

CD Player

TOSLINK   -OR-   RCA
Digital Output   Analog Output

Microphone

CSR-1 Optional
Remote Control

Powered Speakers A

DAT Recorder

HP4

Headphone
Distribution Amp

Power Amplifier

-OR-
CD Recorder

-OR-
Minidisc Recorder

Passive Speakers B

Talkback
Foot switch

Speaker C
(Powered Subwoofer)

note: all photos are property of their respected owners.

3.3 METER CALIBRATION

The meters of your CENTRAL STATION can be calibrated to match the meters in your DAW or other audio device. Note that the main audio path does not go through the meters of your CENTRAL STATION and the calibration procedure will not affect the sound of your unit.

To calibrate the meters on your CENTRAL STATION to an external DAW or audio device:

1. Input a 1kHz 0dBu sine wave test tone to ANY input on your CENTRAL STATION. Select the input you are using in the MAIN INPUT SELECT section on the front panel. In a computer based recording system, this can be accomplished by creating an audio channel and assign a test tone to it by either a tone generator, plug-in or wav file.

2. Decrease the volume of the test tone channel until the meter on your DAW master section reads (-18dB).

3. Press and hold the calibration button on the front panel of the CENTRAL STATION for two seconds. The meter will recalibrate to read -18dBfs / 0dB.

4. Then raise the level of the test tone until the meter on your DAW's master section reads 0dB and check if the CENTRAL STATION reports a clipped (RED) signal.

5. For more accurate calibration raise or lower the test tone level plus or minus 0.10 dB and repeat steps 2 thru 4.

6. Note that the range of the calibration of the CENTRAL STATION is approximately +/-12dB.

PreSonus has provided a 1 kHz 0dBu sine wave test tone file on the CENTRAL STATION webpage for download. Go to: http://www.presonus.com/html/centralstation.com for information.

3.4 APPLICATION DIAGRAMS

The CENTRAL STATION is an extremely flexible tool and can be used in all stages of the recording and music production process. Note that there are many ways to use and set up your CENTRAL STATION. Here are a few typical application set ups that can be used with your CENTRAL STATION. Feel free to experiment and set up your CENTRAL STATION to suit your needs.

RECORDING SET UP

Separate Control Room and Recording Room – Below is a typical recording set up where the band or artist is in another (sound proof) room while the recording engineer (and producer) is in the control room listening to the recording on speakers.
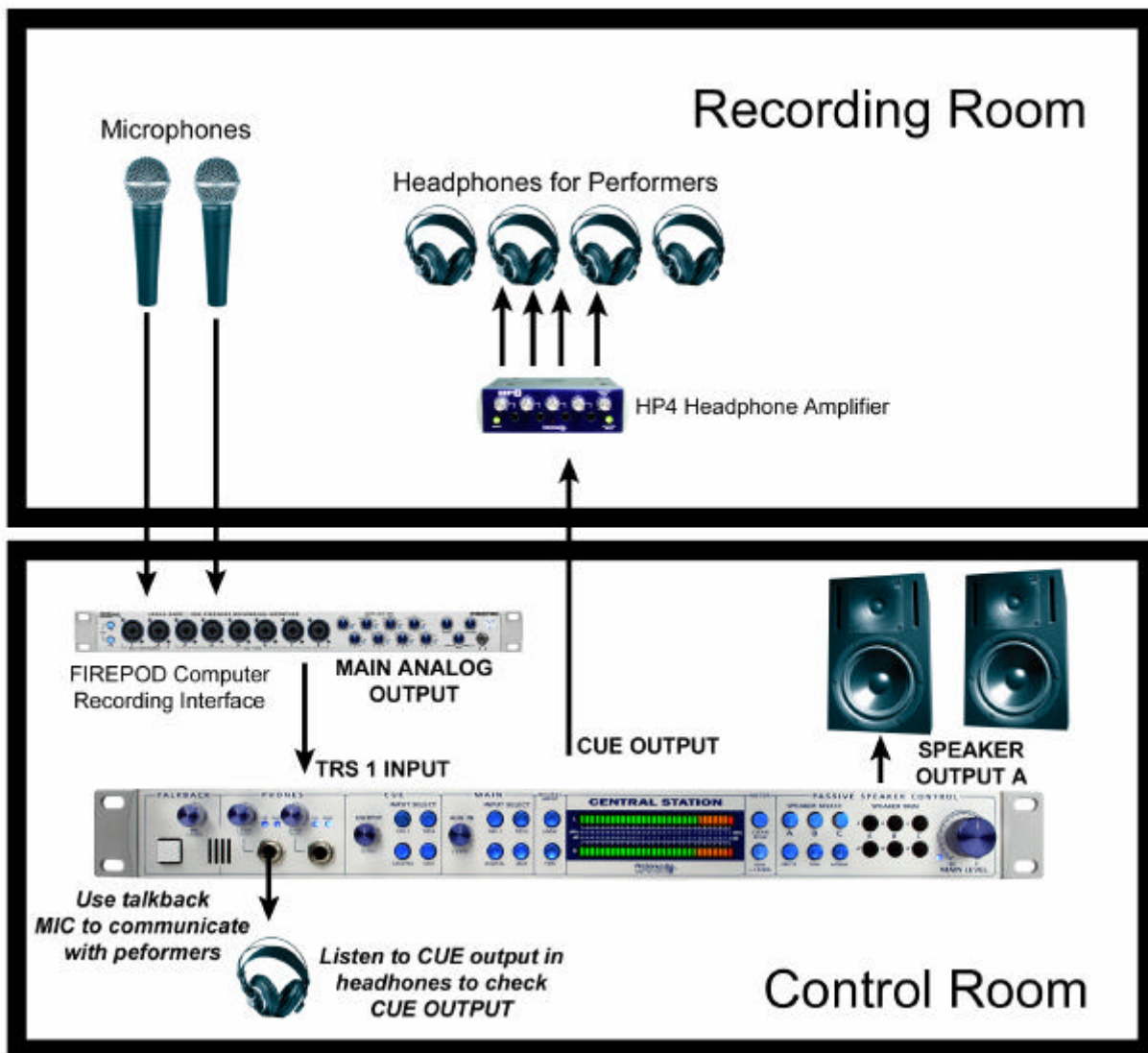
MIXDOWN / MASTERING SET UP

Using the CENTRAL STATION digital to analog converter – Below is a typical mix down or mastering set up where the CENTRAL STATION's 24 bit / 192k digital to analog converter is being used to compare the music being created (mixed or mastered) with a commercial CD.
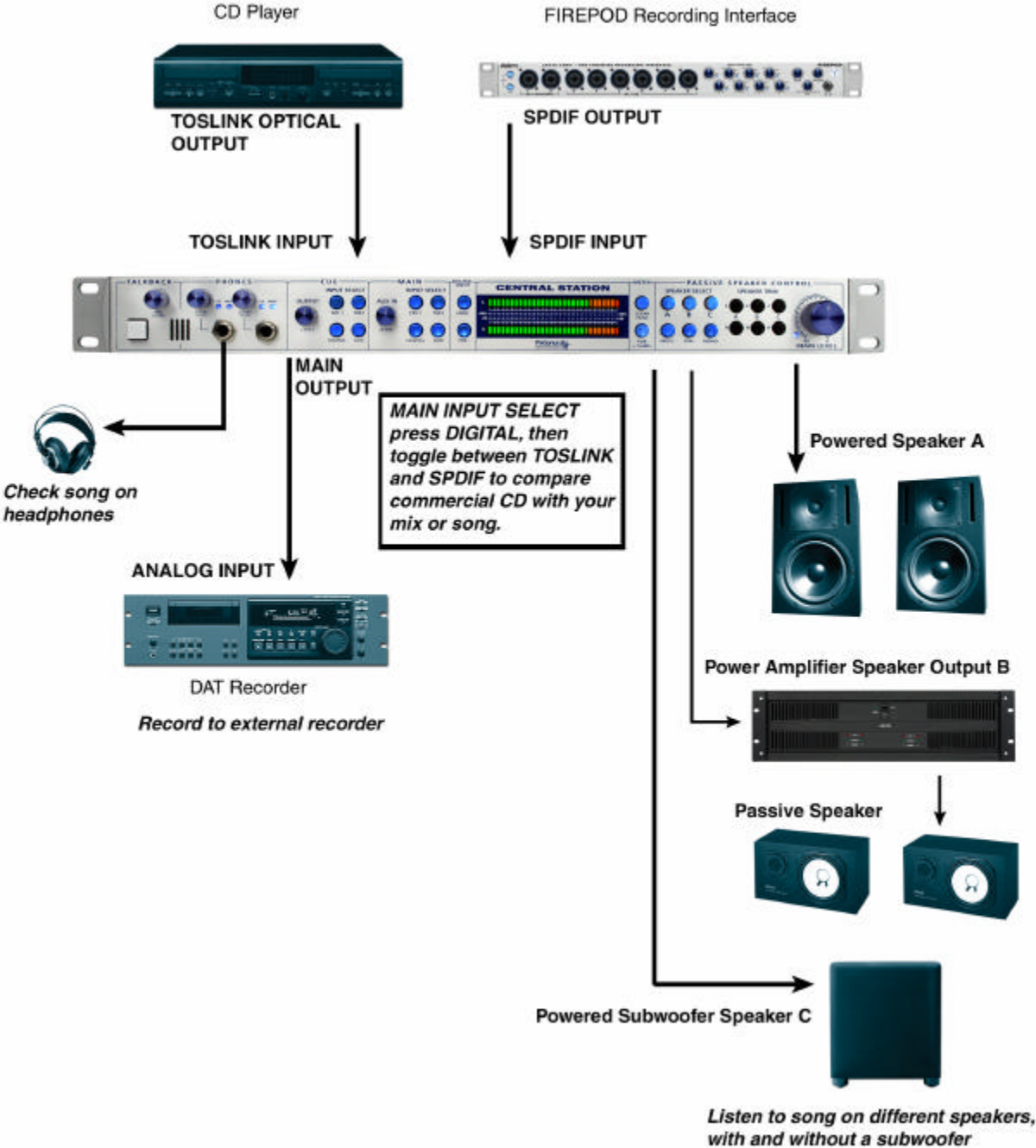
4.1 SPECIFICATIONS

Audio Inputs

TRS1&2

Type	¼" TRS Passive-Balanced
Input Impedance	2K-5K Ohm (Speaker load and Trim level dependent)
S/N Ratio	Greater than 140dB
THD+N	Less than .0005% (1KHz @ 0dBu)
Frequency Response	Greater than 1MHz

AUX

Type	RCA Active-Unbalanced
Input Impedance	8Kohm
S/N Ratio	Greater than 115dB (1KHz @ 0dBu, Unity gain)
THD+N	Less than .002% (1KHz @ 0dBu, Unity gain)
Frequency Response	10Hz-50KHz, -.5dB
Gain Range	-90dB to +20dB

S/PDIF

Types	RCA 75Ohm-coax and Toslink optical
Dynamic Range	117dB
THD+N	.0025% (1KHz @ -1dBfs)
Maximum output	+18dBu (Active-Balanced)
Sample Rates	44.1K, 48K, 88.2K, 96K, 176.4K, 192K

Note: All Input specifications (except Input Impedance) measured at Speaker A output, Trim and Main Level set to maximum.

Audio Outputs

Speakers

Type	¼" TRS Passive-Balanced
Type-Mono Activated	¼" TRS Active-Impedance Balanced
Trim Range	-90dB to 0dB
Main Level Range	-90dB to 0dB
Dim Attenuation	30dB

Main

Type	¼" TRS Active-Balanced
Output Impedance	51Ohm
THD+N	Less than .0025%
Frequency Response	10Hz-50KHz, -.5dB

Cue

Type	¼" TRS Active-Impedance Balanced
Output Impedance	51Ohm
THD+N	Less than .003% (1KHz @ 0dBu)
Frequency Response	10Hz-50KHz, -.5dB
Gain Range	-90dB to 0dB
Dim Attenuation	30dB (Talkback activated)

Headphones

Type	¼" TRS Active Stereo
Maximum Output	150mW/channel @ 60 Ohm load
THD+N	.015% (150mW/channel @ 60 Ohm load)
Frequency Response	10Hz-50KHz, +1dB

<u>Talkback</u>
Dynamic Microphone Input
      Type   XLR Female Balanced
      Input Impedance   2400 Ohm
Internal Microphone
      Type   Electret Condenser
      Sensitivity   -42dB
Mic Preamp
Gain Range   15-55dB

<u>Input Meters</u>
      Type   30 segment LED w/ Peak Hold
      Range   -48dB to +18dB (-66dBfs to 0dBfs)
      Accuracy   Better than .25dB
      Frequency Range   10Hz-22KHz
      Calibrate Range   +/- 18dB

<u>Power Supply</u>
      Type   External A.C. Transformer/Internal Linear
      Power Consumption 40VA

<u>Physical</u>
Main Chassis
      Package Type   1U
      Dimensions   19(W) X 1.75(H) X 5.50(D) inches
      Weight   5.0lbs
External Power Supply
      Package Type   Molded Plastic
      Dimensions   2.5(W) X 2.3(H) X 4.0(D) inches
      Weight   2.5lbs

4.2 BLOCK DIAGRAM