Russound

PR-4Zi

4-Zone, 6-Source Audio/Video Preamplifier

INSTRUCTION MANUAL



Important Safeguards



WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER - SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

POWER CORD NOTICE FOR INTERNATIONAL OPERATION For 230V, 50Hz operation please select the power cord for your area. Select the plug for your area at one end and a IEC320 connector at the other. It is not necessary to make any other changes. If you have any questions please call Russound Inc. at 1-800-638-8055 or 603-659-5170

Safety Instructions:

- 1. Read Instructions All the safety and operating instructions should be read before the appliance is operated.
- Retain Instructions The safety and operating instructions should be retained for future reference.
- 3. Heed Warnings All warnings on the appliance in the operating instructions should be adhered to.
- 4. Follow Instructions All operating and user instructions should be followed.
- Water and Moisture The appliance should not be used near water; for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool.



- 6. Carts and Stands The appliance should be used only with a cart or stand that is recommended by the manufacturer. An appliance and cart combination should be moved with care. Quick stops, excessive force and uneven surfaces may cause the appliance and cart combination to overturn.
- Wall or ceiling Mounting The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
- 8. Ventilation The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings, or placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

- Heat The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.
- 10. Power Sources The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
- 11. Grounding or Polarization Precaution should be taken so that the grounding or polarization means of an appliance is not defeated.
- 12. Power Cord Protection Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, receptacles, and the point where they exit from the appliance.
- 13. Cleaning The appliance should be cleaned only as recommended by the manufacturer.
- 14. Non-use Periods The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
- 15. Object and Liquid Entry Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through the openings.
- Damage Requiring Service The appliance should be serviced by qualified service personnel when:
 - A. The power supply cord or the plug has been damaged; or
 - B. Objects have fallen, liquid has been spilled into the appliance; or
 - C. The appliance has been exposed to rain; or
 - D. The appliance does not appear to operate normally; or
 - E. The appliance has been dropped or the enclosure is damaged.
- 17. Servicing The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

Precautions:

- 1. Power WARNING: BEFORE TURNING ON THE POWER FOR THE FIRST TIME, READ THE FOLLOWING SECTION CAREFULLY. All models are designed for use with either AC120V, 60Hz or AC240, 50Hz voltages. The unit will autoswitch to either of these voltages
- Do Not Touch The PR-4Zi With Wet Hands Do not handle the PR-4Zi or power cord when your hands are wet or damp. If water or any other liquid enters the PR-4Zi cabinet, take the PR-4Zi to a qualified service person for inspection.
- 3. Location of PR-4Zi Place the PR-4Zi in a well ventilated location. Take special care to provide plenty of ventilation on all sides of the PR-4Zi especially when it is placed in an audio rack. If ventilation is blocked, the PR-4Zi may overheat and malfunction. Do not expose the PR-4Zi to direct sun light or heating units as the PR-4Zi internal components temperature may rise and shorten the life of the components. Avoid damp and dusty places.
- 4. Care From time to time you should wipe off the front and side panels of the cabinet with a soft cloth. Do not use rough material, thinners, alcohol or other chemical solvents or cloths since this may damage the finish or remove the panel lettering.

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Product Overview

The PR-4Zi is a four-zone, six-source A/V preamplifier that offers independent control of source, volume, and tone for each zone. In addition to standard preamplifier controls, the PR-4Zi allows zone settings to be stored and recalled. SYS-TEM ON and SYSTEM OFF functions provide single-button, system-wide on/off control. Two PARTY modes link all zones for synchronous operation. Interface connections are provided for cascading as many as four PR-4Zis. An RS-232 port allows the PR-4Zi to be controlled by touch panels or other automation devices that have an RS-232 interface. Optional Russound PCK or PCK-IR Keypads provide easy remote operation of the PR-4Zi. The optional Russound PRC-1 Learning Remote allows users to operate source equipment from remote locations. Optional Russound SPG and PTM-1 Paging Modules add whole-house paging capabilities.

Wiring Instructions

AUDIO/VIDEO SOURCES

Make line level and composite video connections from source equipment to the PR-4Zi as shown in Figure 1. Use high quality cables that are as short as possible to keep signal integrity intact.

Figure 1 – A/V source connections





CONNECTING AMPLIFIERS

Connect the Zone Output of each PR-4Zi zone to one line input of a multichannel amp. Figure 2 shows a connection to the Russound DPA-6.12 Twelve Channel Audio Amplifier. (Figure 2 also shows a trigger connection, discussed on p. 6.)

If using multiple two-channel amplifiers, such as the Russound DPA-1.2, connect as shown in Figure 3 (see p. 6). Use good quality audio cables that are as short as possible to keep signal integrity intact.

Figure 2 – Multichannel amplifier connections, with tirgger connection shown to one channel



Wiring Instructions

Figure 3 – Two-channel amplifier connections



COMMON AND ZONE TRIGGER OUTPUTS

The PR-4Zi provides four Zone-Specific and one Common +12VDC trigger outputs (Figure 4). The Zone-Specific triggers are turned on when the corresponding zone is on. The Common trigger is turned on when any zone is on. All trigger outputs are turned on during a page. Figure 2 (p. 5) shows a Zone trigger connection to the Russound DPA-6.12 amplifier. Figure 4 – Common and Zone trigger outputs





CONNECTING VIDEO MONITORS

Each PR-4Zi zone has a composite video output to allow viewing video from any of six A/V sources. Connect monitors as shown in Figure 5 using RG6U cable with RCA type connectors. If more than two monitors are being used in a zone, a composite video distribution amplifier is recommended. The PR-4Zi video outputs are buffered and are good for up to 100' of RG6U.

Figure 5 – Video Output connections



Figure 6 – Source Loop outputs

SOURCE LOOP OUTPUTS

The PR-4Zi has six buffered, fixed-level audio/video outputs (Figure 6). When set to SOURCE LOOP OUT, these output signals from the corresponding input source. This source loop configuration allows the PR-4Zi to pass source signals to another component, such as a home theater controller, or to another PR-4Zi for sharing sources in a multiple controller system.



Wiring Instructions

FIXED ZONE LINE OUT: CREATING SUBZONES

The PR-4Zi has six buffered, fixed-level audio/video outputs as shown previously in Figure 1 (p. 4). When set to FIXED ZONE LINE OUT (Figure 7), the last four outputs can be used to create subzones of each main zone. A subzone gets the same source selected for the main zone, and therefore needs only on/off and volume control.

The lower portion of Figure 7 shows four amplified Russound A-KP2 keypads added to Zone 1. All subzones get the same Zone 1 source, but will have independent on/off and volume control via the A-KP keypad. Main zone control can be acheived by repeating IR commands in a sub-zone into the main zones keypad input. D1 will accept IR signal for zone control.





Wiring Instructions

PAGING TRIGGER OUTPUT

The PR-4Zi is equipped with a +12V paging trigger output (Figure 8) that switches on during a page. This output can be used to trigger an external amplifier, muting device, or other peripheral associated with paging. (Paging peripherals are discussed on page 14.)

MUTE INPUT

The PR-4Zi system mutes when a +12VDC signal is applied to the mute input (Figure 8). This allows connection of external paging or muting devices.





Control Functions

Figure 9 – PR-4Zi control functions



Control Functions

Refer to Figure 9 at left for the following procedures.

MEMORY PROCEDURE

MEMORY allows for permanent storage of zone settings. Source, volume level, bass level, treble level, loudness, paging volume, and "SYSTEM ON disable" settings can be stored. Once stored, these settings can be accessed by pressing PRESET.

To set MEMORY for a single zone:

- 1. Select a zone using the ZONE SELECT.
- 2. Adjust zone as desired.
- 3. Press MEMORY. The MEMORY indicator will light.
- To store VOLUME, BASS, and TREBLE levels, press the ▲ (up) button for the corresponding function.
- 5. To store current input source, press <u>any</u> source button.
- 6. To store loudness setting, press LOUDNESS.
- 7. To prevent the zone from turning on when All On is activated, press SYSTEM ON.
- To preset paging volume, press VOLUME ▼ (down)
- 9. To exit, press MEMORY again. The MEMORY indicator should no longer be illuminated.

To clear MEMORY for a single zone:

- 1. Select a zone using ZONE SELECT.
- 2. Press MEMORY followed by PRESET.
- 3. Press MEMORY again to exit.

To clear MEMORY for <u>all</u> zones:

1. Press MEMORY followed by SYSTEM OFF.

PRESET PROCEDURE

PRESET recalls settings for the current zone previously stored in memory. A preset can be recalled at the PR-4Zi front panel, on a PCK(IR) keypad, or via the PRC-1 remote control.

- 1. Select a zone using ZONE SELECT.
- 2. Press PRESET.

Pressing PRESET on a PCK keypad or PRC-1 remote control will recall the settings for that local zone.

PARTY MODE

Two PARTY modes allow synchronous operation of all zones.

Source Link mode. Activated upon pressing PARTY once. Source settings are linked for all zones. Any changes to source selection at the PR-4Zi front panel will be made simultaneously in all zones. However, zone volumes can be adjusted independently.

Source Link mode procedure:

- 1. Set Zone 1 volume and source as desired for the entire system. Turn on each zone you want to include for PARTY mode.
- 2. Press PARTY <u>once</u>. The SOURCE LINK indicator will light and the settings made for Zone 1 will be reflected in all other zones currently turned on.

Source/Volume Link mode. Activated upon pressing PARTY twice. Source and volume settings are linked for all zones. Any changes to source selection or volume in one zone will be made simultaneously in all others.

Source/Volume Link mode procedure:

- 1. Repeat Step 1 above.
- 2. Press PARTY <u>twice</u>. The SOURCE/VOL LINK indicator will light and the settings made for Zone 1 will be reflected in all other zones currently turned on.

PCK(IR) KEYPADS

Each of the PR-4Zi's zones can be remotely operated by a keypad or IR device. There are four keypad ports on the rear panel. Each port accommodates as many as four Russound PCK(IR) keypads (4 per zone). Wire the PCK(IR) keypads to the PR-4Zi keypad input as shown below in Figure 10 using 22-24 AWG shielded 2 twisted pair wire.

IR DEVICES

The keypad ports are also compatible with infrared devices such as Russound 858, 1257, 1258, and 844 IR receivers.

Wire IR devices as shown in Figure 11 using 22-24 AWG 1 pair twisted wire with shield.

Figure 10 – PCK(IR) wiring

PR-4Zi BACK



<u>Figure 11 – IR device wiring</u>

PR-4Zi BACK



PCK(IR) KEYPAD CONTROL FUNCTIONS

- 1 Infrared Receiver Receives IR commands from Russound PRC-1 remote or a source component's remote. (PCK IR only)
- 2 SYSTEM ON Turns all zones on. NOTE: The system on button will also flash to confirm IR reception.
- **3** SYSTEM OFF Turns all zones off.
- 4 ZONE ON/OFF Turns zone on/off.
- **5** PRESET Recalls stored zone settings.

6 LOUD – Selects and indicates loudness on/off.

- 7 Source Select Selects and shows input source.
- 8 SELECT Selects function (bass, treble, volume) to be adjusted with ▼/▲ buttons.
- 9 BASS / TREBLE / VOLUME Indicators Shows function selected for adjustment.
- **10** $\checkmark/\blacktriangle$ Buttons Adjusts bass, treble, and volume.

Figure 12 – PCK(IR) zone control functions



DSC/DAN KEYPADS

Once the PCK(IR) keypads have been wired, connect the DSC keypad's 16-pin header to the 16pin receptacle on the side of the main keypad (see Figure 1a and 1b). Be sure to keep the correct pin alignment. If you are using a DAN keypad with the system, connect it to the input receptacle on the side of the DSC keypad.

Figure 13 – DSC and DAN docking



OPERATING THE DSC/DAN KEYPADS

- 1 Select the source that you wish to control on the main keypad (this will also select the source for listening).
- **2** Press the command key(s) on the DSC or DAN which have been programmed with the commands that you wish to execute.
- **3** The Program indicator will flash as the command is outputted. If the Program indicator does not flash when the command key is pressed, the command was not stored properly.

IKP-1 INFRARED KEYPAD PROGRAMMER

The IKP-1 is a programmer used to simplify and speed up the IR programming for the DAN and DSC IR learning keypads. Learning keypads that can be used with the programmer have a plug located at the front left. Refer to IKP-1 Instruction Manual for complete instructions.

Figure 14 – Multiple Progamming with IKP-1



PAGING

The PR-4Zi has five paging inputs. The four Zone-Specific PAGE INPUTS allow for paging to all zones except the zone where the page originates. The PAGE ALL input will allow paging to all zones. A page turns on all zones to their respective preset paging volume (see Memory Procedure, p. 11). All devices triggered by any of the trigger outputs will also be turned on. Russound offers many paging options to suit most applications. See the Tech and FAQ sections at <u>www.russound.com</u> or call Russound for additional information.

SPG PAGING MODULE

The Russound SPG provides "push-to-talk" operation. Use 22-24 AWG twisted pair shielded wire to connect the SPG to the PR-4Zi page input as shown in Figure 15.

PTM-1 PAGING MODULE

The Russound PTM-1 is a signal-sensing paging adapter for the PR-4Zi that accepts the page output or other line-level audio output from telephone paging systems, paging preamplifiers, switch-triggered voice/sound recording devices, etc. Use 22-24 AWG twisted pair shielded wire to connect the PTM-1 to the PR-4Zi page input as shown in Figure 16.



IR EMITTERS

The PR-4Zi has seven IR outputs: Source 1–6 and Common. Source 1–6 outputs are source-specific and provide IR signals only to the selected source; the Common output provides IR signals to <u>all</u> sources.

Source-specific IR outputs (Figure 17) are useful when a system has two or more of the same model source component, allowing you to target the IR commands to each individual component.

To connect multiple emitters to the Common IR output, use the Russound 857 connecting block and a 1/8-inch (3.5mm), 2-conductor (mono) phone plug as shown in Figure 18. Connect common (COM) IR output to "IR INPUT" on the 857 connecting block.

Figure 17 – Source-specific infrared outputs



PRC -1 REMOTE CONTROL

The Russound PRC-1 remote control is preprogrammed to operate more than 1,000 audio and video components, including the PR-4Zi. Set it up by simply punching in a three-digit code that matches your equipment. The PRC-1 also has the ability to learn new functions, allowing you to customize it and update it as you add new equipment. The PRC-1 operates up to eight different audio and video components in a home entertainment system.

The PRC-1 controls only the local zone you are in.

USING THE PRC -1 WITH THE PR-4Zi

To activate the PRC-1 for use with the PR-4Zi:

- 1. Turn on the PR-4Zi using its front-panel switch.
- 2. On the PRC-1, press the AUX and MUTE buttons simultaneously, then release.
- 3. Point the PRC-1 toward the PR-4Zi and press the three-digit code 0-8-1.
- 4. On the PRC-1, press the AUX button again to store the code.
- 5. Henceforth, pressing the AUX button on the PRC-1 accesses all the preprogrammed codes for the PR-4Zi.

All the functions available on the PCK keypad are also available on the PRC-1. NOTE: The PRC-1 can turn on the local zone by pressing the POWER button, and turn off that zone by pressing the MUTE button.

Figure 19 – PRC-1 Preprogrammed & Learning Remote Control



Multiple Controllers

INSTALLING MULTIPLE PR-4Zi CONTROLLERS

As many as four PR-4Zis can be cascaded via DB-25 connectors. Cascading links multizone functions such as SYSTEM ON, SYSTEM OFF, PAGING, and PARTY mode so that these functions can be used system-wide. (In order to share <u>sources</u> among linked PR-4Zis you must connect the Source Loop outputs of the parent controller to the A/V inputs of controller #2, and so on.)

The DB-25 cable needs to be a straight passthrough or RS232C rated with a male connector at both ends.

ie. Radio Shack Part # 26-233

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DB-25 MALE / MALE CONNECTOR

Figure 20 – Interface cable connections for multiple PR-4Zi's

Using the RS-232 Communications Port

The PR-4Zi is equipped with one DB-9 connector for RS-232 communication with AMX[™], Crestron[™], and similar automation systems. All PR-4Zi control functions (except for paging) can be accessed through the RS-232 port. The PR-4Zi will also send confirmation data to the controlling system. These updates will be performed when any change has been executed or when the "SEND ZONE STATUS INFORMATION" request is sent to the PR-4Zi.





CONTROLLER ADDRESS SWITCH SETTINGS

Up to 16 zones can be controlled from a single RS-232 port by setting the Controller Address Switch located left of the DB-9 connector (Figure 21).

Controller #1 (Zones 1-4)

Controller #2 (Zones 5-8)

Controller #3 (Zones 9-12)

Controller #4 (Zones 13-16)



RS-232 COMMAND PROTOCOLS

Commands are sent from RS-232 controlling device to the PR-4Zi as 8 ASCII bytes. The first two ASCII bytes "RU" establish that the command is a Russound command for zone commands only. The next 3 bytes "ZO1" establish the zone to be controlled. The last 3 bytes "ZON" comprise the command sent to that zone. Commands are sent as ASCII values, asynchronous, 4800 bps, 8 data bits, 1 start bit, 1 stop bit, no parity.

PR-4Zi FEEDBACK BYTES TO CONTROLLING DEVICE

Feedback bytes will be sent immediately after a command is given to the PR-4Zi. The first decimal byte "101" (Zone 1) establishes which zone the update is for. The second decimal byte "40" (min. volume has been set) is the update data. Each update starts with the zone number update value (101 - 116) and is followed by a control update value (see list on next page). Commands are sent as decimal values, asynchronous, 4800 bps, 8 data bits, 1 start bit, 1 stop bit, no parity.

RS-232 Commands & Update Values

MULTI-ZONE COMMANDS

RUALZOZN system on RUALZOZF system off RUSORCLC party mode (source link) RUSORCLN party mode (source/volume link)

ZONE COMMANDS

Zone number (XX) can be between 01 and 16. Use the addressing switch (Figure 19) to set zone numbers (01-04), (05-08), (09-12), (13-16)

RUZXXZON	zone on	RUZXXSR2 source input 2
RUZXXZOF	zone off	RUZXXSR3 source input 3
RUZXXVLU	volume up	RUZXXSR4 source input 4
RUZXXVLD	volume down	RUZXXSR5 source input 5
RUZXXBSU	bass up	RUZXXSR6 source input 6
RUZXXBSD	bass down	RUZXXPST preset
RUZXXTBU	treble up	RUZXXBSF bass level flat
RUZXXTBD	treble down	RUZXXTBF treble level flat
RUZXXSR1	source input 1	RUZXXLOD loudness toggle on/off

RUZXXVLP volume level set followed by decimal value 40 (min) <-> 0 (max) RUZXXBSP bass level set followed by decimal value 0 (min) <-> 12 (max) RUZXXTBP trebel level set followed by decimal value 0 (min) <-> 12 (max) RUZXXSRD send zone status information

ZONE NUMBER UPDATE VALUES

update to be sent for zone 1 101 102 update to be sent for zone 2 103 update to be sent for zone 3 104 update to be sent for zone 4 105 update to be sent for zone 5 106 update to be sent for zone 6 107 update to be sent for zone 7 108 update to be sent for zone 8 109 update to be sent for zone 9 110 update to be sent for zone 10 111 update to be sent for zone 11 112 update to be sent for zone 12 113 update to be sent for zone 13 114 update to be sent for zone 14 update to be sent for zone 15 115 116 update to be sent for zone 16 200 update to be sent to all zones

UPDATE VALUES

- 0 thru 40 update volume position 40 (min) <-> 0 (min) 41 source 1 selected 42 source 2 selected 43 source 3 selected 44 source 4 selected 45 source 5 selected 46 source 6 selected 50 thru 62 update treble position 0 (min) $\langle -\rangle$ 12 (max) 70 thru 82 update bass position 0 (min) <-> 12 (max) 90 zone is on 91 zone is off 92 loudness contour is on 93 loudness contour is off 94
- source lock party mode selected
- 95 source link party mode selected
- 96 party mode is off

ALL OTHER UPDATE VALUES (0 <-> 255) OTHER THAN SHOWN ABOVE ARE RESERVED FOR FUTURE USE.

Technical Specifications

Frequency Response:	20 - 20kHz + 0.1 dB max.	
Total Harmonic Distortion:	0.06% max.	
Signal-to-Noise Ratio:	95 dB min, "A" weighted	
Maximum input voltage:	4.6 VRMS, 6 Volts peak	
Maximum output voltage:	8.5 VRMS, 12 Volts peak	
Volume Control:	0 dB to -80 dB (40 steps)	
Bass and Treble Controls:	+/- 12 dB (12 steps)	
Standard Features:	6 Audio / Video source inputs	
	4 stereo audio/video outputs	
	4 keypad / Infrared ports	
	4 Paging unit ports	
	5 +12V Trigger outputs (4 zone specific, 1 common)	
	5 Infrared transport outputs (6 source specific, 1 common)	
	Built-in IR receiver for zone #1	
	RS-232 Interface for control of up to 4 PR-4Zi from an external control system	
	Unit Interface allows cascading of up to four PR-4Zi (16 zones)	
Optional Features:	Full function PCK keypad	
	Full function PCK-IR keypad w/ built-in IR receiver	
	DSC direct source control IR learning keypad	
	DAN direct access numeric IR learning keypad	
	In-wall SPG paging module	
	PTM-1 telephone paging interface module	
	PRC-1 programmable remote control	
Power requirements:	AC 110 – 240 volts, 50 - 60Hz, 1 AMP.	
Dimensions:	19" W x 12" D x 3.6" H.	
Weight:	12 lbs.	

The PR-4Zi complies with the requirements of the standards for Audio Video Products and Accessories (UL 1492, 1st Edition) and Radio, Television, and Electronic Apparatus (CSA C22.2 No. 1-M94).

Warranty & Repair

The Russound PR-4Zi is fully guaranteed against all defects in materials and workmanship for two (2) years from the date of purchase. During this period, Russound will replace any defective parts and correct any defect in workmanship without charge for either parts or labor. For this warranty to apply, the unit must be installed and used according to its written instructions. If service is necessary, it must be performed by Russound. The unit must be returned to Russound at the owner's expense and with prior written permission. Accidental damage and shipping damage are not considered defects under the terms of the warranty. Russound assumes no responsibility for defects resulting from abuse or servicing performed by an agency or person not specifically authorized in writing by Russound. Damage to or destruction of components due to improper use voids the warranty. In these cases, the repair will be made at the owner's expense. To return for repairs, the unit must be shipped to Russound at the owner's expense, along with a note explaining the nature of the service required. Be sure to pack the unit in a corrugated container with at least 3 inches of resilient material to protect the unit from damage in transit.

Before returning a unit for repair, call Russound at **(603) 659-5170** for a Return Authorization number. Write this number on the shipping label and ship to:

Russound 5 Forbes Road Newmarket, NH 03857 Attn: Service

Russound

Russound 5 Forbes Road, Newmarket, NH 03857 tel 603.659.5170 • fax 603.659.5388 e-mail: tech@russound.com www.russound.com fax-on-demand: 603.659.5590