RANE

CP 52
COMMERCIAL PROCESSOR

CP 52
COMMERCIAL PROCESSOR

POWER

ZONE

LIMIT

LIMIT THRESHOLD
+8 +16
−3 +20
−20

LEVEL
4 · 6
2 · 8
0 · 10

RMT SIG OL

PROGRAM SELECT
L1 L2 L3 P

DUCKER DEPTH
OFF · ON

PROGRAM INPUT LEVELS

LINE 1
4 · 6
2 · 8
0 10

LINE 2
4 · 6
2 · 8
0 10

LINE 3
4 · 6
2 · 8
0 10

PRIORITY
4 · 6
2 · 8
0 10

PAGING

LIMIT

LIMIT THRESHOLD
+8 +16
−3 +20
−20

LEVEL
4 · 6
2 · 8
0 · 10

ACTIVE

DETECT THRESHOLD
∞

OL

INPUT TRIM
+30 +60
MIC · LINE

RANE

CONTENTS *(in order of appearance)*

14652

IMPORTANT SAFETY INSTRUCTIONS

For the continued safety of yourself and others we recommend that you read the following safety and installation instructions. Keep this document in a safe location for future reference. Please heed all warnings and follow all instructions.

Do ***not*** use this equipment in a location where it might become wet. Clean only with a damp cloth.

This equipment may be installed in an industry standard equipment rack. We recommend that all mounting holes be used, providing the best physical support. The equipment may be used as a table top device, although stacking of the equipment is dangerous and not recommended.

Do not directly block any of the ventilation openings. If rackmounting, please provide adequate ventilation. Equipment may be located directly above or below this unit, but note that some equipment (like large power amplifiers) may cause an unacceptable amount of hum or may generate too much heat and degrade the performance of this equipment.

Protect the power cord and plug from damage caused by being walked on or pinched. Protect the line cord, where it exits the unit, from excessive strain. Only use attachments and accessories specified by Rane.

Unplug this equipment during lightning storms or when unused for long periods of time.

Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug damage, spilled liquid, fallen objects into an opened chassis, exposure to rain or moisture, a dropped unit, or abnormal operation.
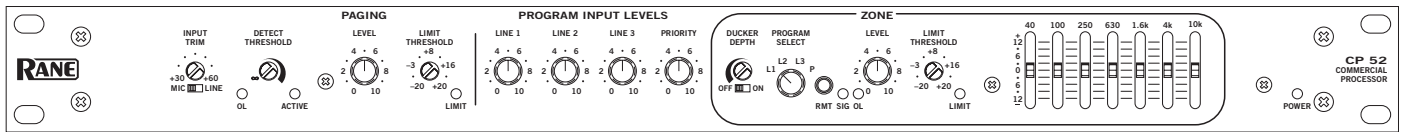
Quick Start

If you were the type that cheated on school book reports by just skimming through the reading assignments, then this section is for you! It gives you not quite enough information to *really* know what you're doing. But, if you follow the recommended set up procedure, you should get at least a "B."

Keep the amplifiers and the CP 52 turned *off* until all connections are made.

PAGE INPUT

Connect the **PAGING INPUT** to the Euroblock on the rear panel. On the front, select the appropriate **MIC** or **LINE** switch position. Then set the gain with the **INPUT TRIM** control, then set the **PAGING DETECT THRESHOLD** and finally the **PAGING LEVEL**. **MIC PHANTOM POWER**, **HIGH/LOW CUT FILTER** and **PAGE LEVEL TRACKS ZONE LEVEL** switches are located on the rear panel.

PROGRAM INPUTS

Connect line level program sources to the RCA **PROGRAM INPUT** jacks (**LINE L1**, **L2**, **L3** & **PRIORITY**). If you have a priority program, like a jukebox, connect it to the **PRIORITY** Input. The rear panel **PRIORITY** switch turns priority override **ON** or **OFF**. The Priority program is automatically selected when signal is detected at its Input. Set the rear panel **PROGRAM DETECT THRESHOLD** and **RELEASE TIME** as desired.

EXPAND OUTPUT

Wire the **EXPAND OUTPUT** Euroblock as required to a mono feed delivering **PAGE**-only, **PROGRAM**-only or **ZONE** (both) signal depending on the switch setting. This Output uses a cross-coupled line driver and may be used balanced or unbalanced. Adjust the **EXPAND OUTPUT LEVEL** trim as desired.

ZONE OUTPUT

The **ZONE OUTPUT** uses a cross-coupled line driver and may be used balanced or unbalanced. Set the front panel **LIMIT THRESHOLD** as required. Depress the rear panel **MONO** switch for a mono Zone.

ZR 1 REMOTE

You may use one **ZR 1** Remote (sold separately) with the CP 52. Wire it to the **ZONE REMOTE** Euroblock as indicated. If a ZR 1 remote is not used, any simple switch closure to ground will work for the **D0** and **D1** pins. These pins are TTL compatible (0 to 5 VDC). The logic is inverse Gray Code. Any ground referenced 5 volt DC control may be used as the input to **Vc**. Do *not* ground the **Vr** pin.

READ ME

The CP 52 is *very* versatile. While this makes a large number of system applications possible, it also results in complexity. For this reason, it is *important to use an organized approach for setup and calibration*. A highly recommended setup procedure appears on page Manual-5. Please follow it to encounter fewer problems and reduce the need to increase our collective phone bills.
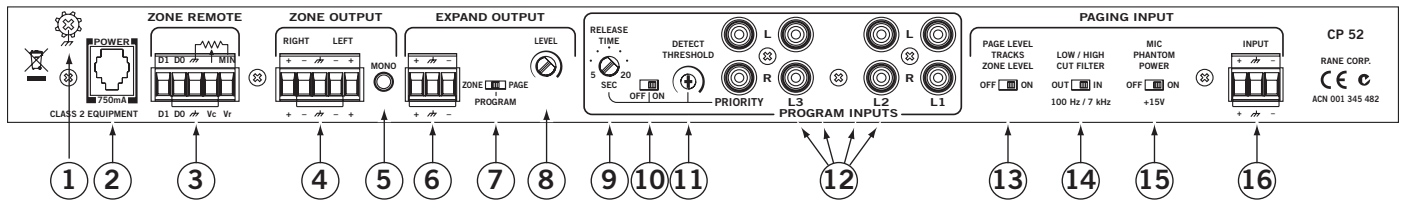
CAUTION: Never connect anything except an approved Rane Power supply to the thing that looks like a red telephone jack on the rear of the CP 52. This is an 18 VAC center tapped power input. Consult the Rane factory for a replacement or substitution.

WEAR PARTS: This product contains no wear parts.

Front Panel Description
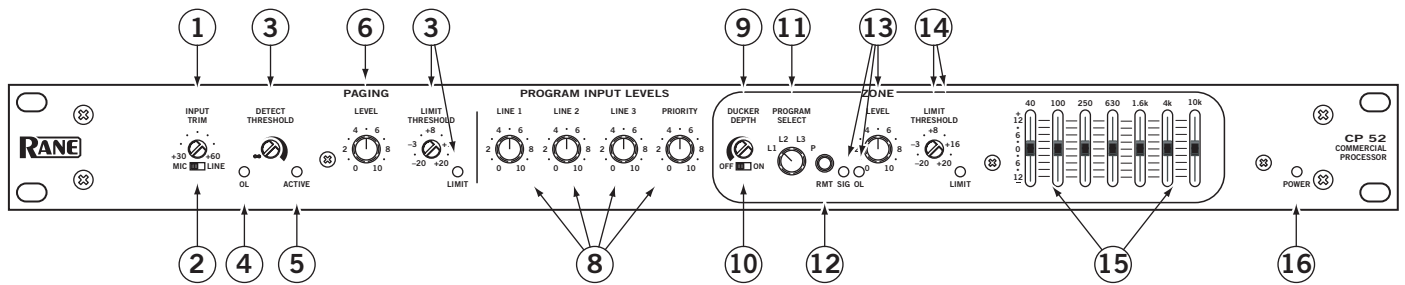
① **PAGING INPUT TRIM** control adjusts the Page Input preamplifier gain to match the microphone / source in use. The range is 30 dB to 60 dB.

② **PAGING INPUT MIC / LINE** switch selects a 30 dB Input pad when set to LINE. *Phantom Power is disabled when LINE is selected.*

③ **PAGING DETECT THRESHOLD** sets the Page signal level required to gate a Page *on* and illuminate the ACTIVE indicator (see ⑤). The range is -∞ (on) to +4 dBu.

④ **PAGING OL (Overload)** indicator lights when the Page Input preamplifier comes within 3 dB of clipping.

⑤ **ACTIVE** indicator lights when the Page signal level reaches the PAGING DETECT THRESHOLD. *A Page is always Active when the PAGING DETECT THRESHOLD is set to minimum* (ccw).

⑥ **PAGING LEVEL** control adjusts the Paging Level in the Zone.

⑦ **PAGING LIMIT THRESHOLD** control sets the maximum output level for a Page. This is a true voltage Limiter circuit with a ratio of 15:1. The Threshold range is -20 dBu to +20 dBu. The **LIMIT** indicator lights during limiting.

⑧ **PROGRAM INPUT LEVEL** controls allow independent adjustment of level for each Program Input.

⑨ **ZONE DUCKER DEPTH** control sets the Ducker Depth (the amount of Program attenuation during a Page) from 50 dB (ccw) to 6 dB (cw). The Ducker release is ramped.

⑩ **ZONE DUCKER OFF / ON** switch turns the Ducker ON or OFF.

⑪ **ZONE PROGRAM SELECT** switch assigns one of four Program Inputs to the Zone Output.

⑫ **ZONE RMT** switch, when pushed *in*, turns control of Zone Level and Zone Program Selection over to the Zone Remote Port. Front panel ZONE LEVEL and ZONE PROGRAM SELECT controls are *inactive* when RMT is selected. An optional wired ZR 1 remote may be connected to the Zone Remote Port. *An object smaller in diameter than the switch button is required to engage the RMT switch.*

⑬ **ZONE LEVEL** control adjusts the overall Level for the Zone Output. If the rear panel PAGE LEVEL TRACKS ZONE LEVEL switch is ON, this control also effects the Paging Level. **ZONE SIG and OL** indicators assist in setting the LEVEL control, illuminating with Signal present at -20 dBu and Overload at +16 dBu (4 dB before clipping) respectively.

⑭ **ZONE LIMIT THRESHOLD** control sets the maximum level for the Zone Output. This is a true voltage Limiter circuit with a ratio of 15:1. The Threshold range is -20 dBu to +20 dBu. The **LIMIT** indicator lights during Limiting.

⑮ **Graphic Equalizer** controls are "stereo," with each slider controlling the response of both Left and Right channels. These controls allow ±12 dB adjustment of seven ISO center frequencies on $1^1/_3$-octave centers.

⑯ **POWER** indicator illuminates when the CP 52 is connected to a powered RS 1 power supply.

ZONE REMOTE   ZONE OUTPUT   EXPAND OUTPUT   PAGING INPUT   CP 52

RELEASE TIME   DETECT THRESHOLD   PRIORITY   PROGRAM INPUTS   PAGE LEVEL TRACKS ZONE LEVEL   LOW / HIGH CUT FILTER   MIC PHANTOM POWER   INPUT

① **Chassis Ground Screw** provides a convenient earth (technical) ground connection point. The CP 52 does *not* ground the chassis through the power cord. *It is important that the unit be grounded.*

② **POWER** jack accepts the cable from a Rane RS 1 remote power supply (included). This is *not* a telephone jack. Use of a supply not approved by Rane may damage the unit and void the warranty. *Be sure the power to the CP 52 is OFF until all connections are made.*

③ **ZONE REMOTE** Port provides the wiring interface for the optional ZR 1 wired remote. The ZR 1 remote provides remote control of Zone Level and Zone Program Select functions. *Refer to page Manual-4 for details.*

④ **ZONE OUTPUT** Port features a balanced line driver with a Euroblock connector. These Left and Right Outputs may be wired balanced or unbalanced.

⑤ **MONO** switch, when pressed *in*, sums the left and right signals to provide a mono Zone signal available at both Left and Right Outputs.

⑥ **EXPAND OUTPUT** features a balanced line driver with a Euroblock connector. This mono Output may be wired balanced or unbalanced.

⑦ **EXPAND switch** assigns PAGE-only, PROGRAM-only or full ZONE (both) as the source for the Expand Output.

⑧ **EXPAND LEVEL** trim adjusts the signal level delivered to the ZONE EXPAND OUTPUT.

⑨ **PRIORITY RELEASE TIME** control sets the delay time from last detected signal to release of automatic priority override. The range of control is 5 seconds (ccw) to 20 seconds (cw).

⑩ **PRIORITY OFF/ON** switch allows disabling the automatic priority override function when in the OFF position.

⑪ **PRIORITY DETECT THRESHOLD** control allows adjusting the threshold from -∞ (signal on) to -35 dBu (typ). The factory setting is -50 dBu.

⑫ Four **PROGRAM INPUTS** are provided. Three are non-priority Inputs — the fourth is a Program PRIORITY Input. When signal is detected at this Input, it is *automatically* selected as the Program Input source regardless of the front panel PROGRAM SELECT setting.

⑬ **PAGE LEVEL TRACKS ZONE LEVEL** switch, when ON, forces the Paging level to track the Zone level. When OFF, Paging level and Zone level are independent.

⑭ **LOW / HIGH CUT FILTER** switch, when IN, limits the bandwidth of the Paging Input from 100 Hz to 7 kHz, improving intelligibility in some installations. The Paging detector is always bandlimited to 100 Hz to 7 kHz.

⑮ **MIC PHANTOM POWER** switch, when ON, enables +15 volt Phantom Power to the PAGING INPUT connector. If the front panel LINE switch is selected, Phantom Power is defeated.

⑯ **PAGING INPUT** Euroblock connector may be wired balanced or unbalanced.

CP 52 Audio Connections

All Input and Output connections are made with Euroblock connectors except for the RCA Program Inputs. When wiring to Euroblocks, a minimum wire gauge of 22 is preferred for reliability. If the ground or shield wire is left shorter, it acts as a strain relief for the other wires. Cable with a flexible jacket is easier to use and less likely to damage the connections. Avoid stripping excess insulation. Inspect wires for nicks that may lead to wire breakage. Fully insert each wire in the appropriate socket and tighten the screw.

The Page Input is a true instrumentation amplifier and operates balanced or unbalanced. Expand and Zone Outputs are driven by high quality cross-coupled line drivers and operate balanced or unbalanced. Wiring is usually the same for both Inputs and Outputs. Balanced operation is recommended. Balanced wiring is logical, (+) to (+), (–) to (–) and shield to shield.

For unbalanced operation, we recommend using *two conductor cable with shield*. The cable is wired to the CP 52 the same as for balanced operation. At the *other* end of the cable, connect the (+) wire to signal "hot," and both the (–) *and* shield wires to ground *(important)*.

If you use *single conductor cable with shield*, connect the shield/gnd wire to both the (–) and shield pins at the CP 52. At the *other* end of the cable connect the (+) wire to the signal "hot" and the shield/gnd wire to ground. When unbalanced wiring is used, it is very important for the CP 52 and any other unit in the system to have good earth or technical grounds. If a unit is located far from the CP 52 or is of a type that might create grounding problems, use isolation transformers.

When connecting any CP 52 Output as unbalanced, use (+) and ground — leave (–) floating.

Refer to the included RaneNote, "*Sound System Interconnection*" for more information on proper wiring procedures.

ZR 1 Remote Installation

The CP 52 supports a wired remote for *Zone Level* and *Zone Source* selection. Wire lengths of up to 1000 feet (300 meters) are possible. A brief list of suitable wire types is provided here in the Wire Types section.

The **ZR 1** remote provides Zone Level and Source Selection, allowing local control from inside the Zone. If only one of the two controls is used, you may wish to remove the unused knob and cover the hole with one of the plugs provided in the kit. If you require one ZR 1 remote to control more than one unit, simply wire the ports in parallel. This may be done with the Selector only, Level only or both.

Be sure Power to the CP 52 is *off* while all remote connections are made. It is important to ensure that the CP 52 Remote Port is not subjected to sustained voltages outside the range of 0 to 5 volts DC or high levels of static. Inputs are protected—however, caution is the better part of... you know. It is a good idea to install the wiring, connect it to the remote assemblies and then make the final connections at the CP 52. Do *not* short the Vr pin to ground. Although the pin is

current limited, excess heat will be generated in the 5 volt supply if a short occurs. *Never subject the Vr pin to voltages above 5V.*

If a ZR 1 remote is not used, any simple switch closure to GND will work for the D0 and D1 pins. These pins are TTL compatible (0 to 5 VDC). The logic is inverse Gray Code. Any ground referenced 5 volt DC control may be used as the input to Vc. Do *not* ground the Vr pin.

| Remote Selector	Remote Volume
11=LINE 1	2 kΩ pot, reverse-log taper
10=LINE 2	*Or* any GND referenced 0-5 VDC.
00=LINE 3	Attenuation=64 mV/dB.
01=PRIORITY	Range 0V to +5V (0 to -87 dB).

ZR 1 REMOTE MOUNTING

The ZR 1 remote assembly mounts in a standard U.S. electrical box with a minimum depth of 2.25". Be sure to note the wire color of each input in order to facilitate correct wiring to the CP 52. Connect each wire to the 5-pin connector by fully inserting it in the correct socket and tightening the screw. Make sure the cable jacket is stripped back sufficiently to allow it to lie in the electrical box with the remote assembly inserted. Use the flat head #6 screws supplied with the kit to mount the remote assembly and silk-screened front panel to the electrical box (see diagram, next page). Note the "UP" arrow screened on the printed circuit board of the remote (mount it pointing *up*).

The silkscreened front panel metal is painted on both sides. This allows you to custom silk-screen the panel or add your own custom decals. Simply install the modified front panel with your art facing out.

Install each knob so that the line on the knob is properly aligned with the silk-screening on the front panel of the remote assembly. Install any Decora plate of your choice. For a secured installation, you may wish to leave the knobs off and use a blank Decora plate to cover the remote after adjustment.

WIRE TYPES

Variations in wire type do not greatly affect the performance of the remote controls. However, 22-gauge stranded wire with a flexible jacket is recommended. You may use 5-conductor unshielded remote control signal cable for shorter runs (less than 200 feet [60 meters]) or 4-conductor (2 pair) shielded remote control signal cable (use the shield as the ground return) for longer runs (200 to 1000 feet [60 to 300 meters]). The type of wire required is influenced by your installation and local electrical codes.
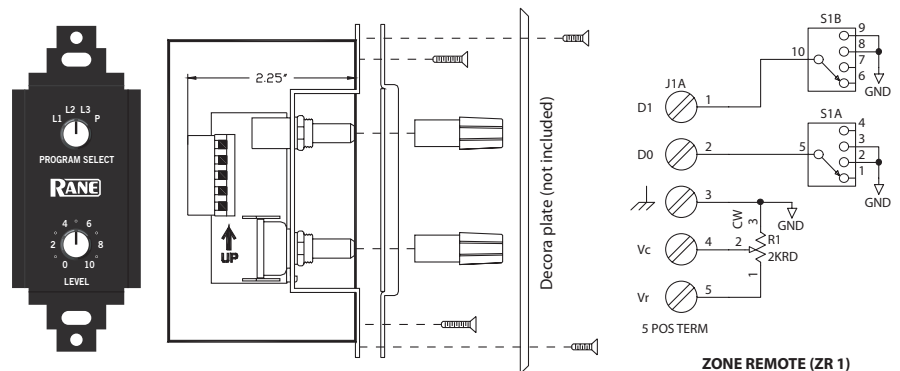
ZONE REMOTE (ZR 1)

Recommended Calibration Procedure

The CP 52 is a very versatile instrument. While this allows it to conform to the requirements of a large number of system applications, it also results in complexity. For this reason, it is very important to use an organized approach to system calibration. Once the system is connected and the internal switches set for your specific application, it is important to take the time for proper calibration. The following is an ordered list of system adjustments that makes calibration easy and results in optimum performance.

This procedure assumes that a microphone is used for the Page. The procedure (except for the exact wording) is the same for other Page sources.

Make sure the POWER is off!

PREFLIGHT CONTROL SETTINGS

PAGING SETTINGS:
- MIC/LINE Pad   As required   (front panel)
- INPUT TRIM   12:00 (center)   (front panel)
- DETECT THRESHOLD   Min (ccw, Active)   (front panel)
- Paging LEVEL   Min   (front panel)
- LIMIT THRESHOLD   +20 dBu   (front panel)
- MIC PHANTOM POWER   As required   (rear panel)
- LOW / HIGH CUT FILTER   As required   (rear panel)
- PAGE LEVEL TRACKS ZONE LEVEL OFF   (rear panel)

PROGRAM INPUT SETTINGS:
- Input Levels   Min   (front panel)
- PRIORITY DETECT THRESHOLD   Set to -50 dBu at factory (range -∞ to -35 dBu; rear panel)
- PRIORITY RELEASE TIME   Set to 12 sec. at factory (range 5 to 20 sec; rear panel)
- PRIORITY OFF / ON   OFF   (rear panel)

ZONE SETTINGS:
- DUCKER DEPTH   2:00 (about 15 dB)   (front panel)
- DUCKER OFF / ON   OFF   (front panel)
- PROGRAM SELECT   LINE 1, 2, 3 or P   (Any active Input; front panel)
- RMT (Remote)   Out (local control)   (front panel)
- Zone LEVEL   Max   (front panel)
- LIMIT THRESHOLD   +20 dBu   (front panel)
- Equalizer   Flat   (front panel)
- Zone Output MONO   As required   (rear panel)
- Expand ZONE/PROGRAM/PAGE   As required   (rear panel)

SYSTEM CONNECTIONS
- Connect page microphone or line level paging source
- Connect Program sources
- Connect Output to amps
- Connect ZR 1 Remote control (if required)

...You are now ready to calibrate the CP 52 (*continued on next page...*)

CALIBRATION

1. Connect the power supply and verify the POWER indicator lights.

2. Verify the Zone LEVEL control is set to maximum and that an active source is playing for each of the Program Inputs intended for use. Select each Program Input and adjust its Input Level control to be the very loudest you would ever desire.

3. Adjust the Zone LIMIT THRESHOLD so that it just starts to audibly reduce the output level. This ensures that the level will never be louder than the maximum level just set.

4. Turn the Zone LEVEL control down to a comfortable listening level.

5. Note that with the Paging LEVEL set to minimum, the following Page will not be heard. Speak very loudly (bark) into the Paging mic. Adjust the INPUT TRIM control so that the Paging Overload indicator just lights. It is important to set the gain of the pre-amp *before* setting the Paging Detect Threshold.

6. Speak into the Paging mic in a normal voice and adjust the Paging DETECT THRESHOLD so the ACTIVE indicator lights only during speech. If the Paging Detect Threshold is set too low, the Pager may gate on due to background sound.

7. With an active Program source playing, speak into the Paging mic. Adjust the Paging LEVEL control to provide the correct Page-to-Program mix. If the Paging Detect Threshold is set too high, there may be a delay before speech is heard. To correct this, lower the Paging Detect Threshold setting.

8. Set the Paging LIMIT THRESHOLD to limit the maximum Page level to the loudest desired volume.

9. Set the DUCKER switch to ON. With an active Program source playing, speak into the Page mic and adjust the DUCKER DEPTH to the desired level of Program during a Page.

10. Set the rear panel Program PRIORITY OFF / ON switch as required. If an automatic Program Priority override is not required, set this switch to OFF. The front panel PROGRAM SELECT switch will select the "P" Program Input just like any other non-priority Input.

11. If using a ZR 1 Remote, press the RMT switch *in* and verify that the remote functions correctly (see page Manual-4).

12. Adjust the Equalizer as desired.

SECURITY

Rane offers a few options to protect the settings you just made.

To protect the setting of any rotary control, remove the knob and replace with one of the **hole plugs** included with the unit.

To protect the equalizer section only, use a Rane **SCP 1** security cover.

To protect the entire front panel and allow use only with the ZR 1 Remote, use a Rane **SC 1.7**.

You're all set. Enjoy.