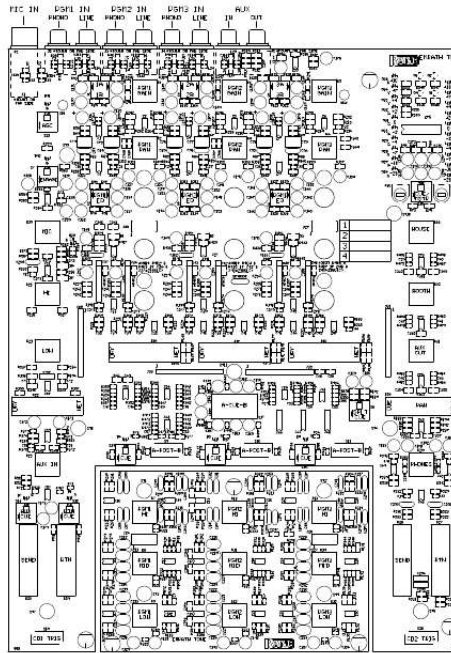




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User manual RANE EMPATH
User guide RANE EMPATH
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Manual abstract:

02K C85 5 6 3 MC33078 R89 20K 1 UP TONE J26E 5 GND R315 10K R316 R99 20K MC33078 6 5 GND R102 R273 20K C3 150PF R101 5.36K Z12B 7 10K GND J25E 5 7 R7A 20KB 2 GND C199 0.001 C200 0.001 1A PHONO 1 LEFT C86 J2C 4-STA GND R297 S1B 2P2T 1.91K 5 L1 Z10B 0.01 0.01 R261 4.02K HIGH 5 BOT L BEAD R38 47.5K C1 150PF C16 47PF 6 Z1B 7 C130 4580 4.7/50V GND GND 4 5 6 GND GND PGM 1 LEFT C104 R58 R64 R83 SOURCE 100/10V 162 + GND 90.

9K C74 7.5K C83 1B LINE 1 LEFT C19 1.91K CW 0.033 0.01 6 R298 6 5 6 3 MC33078 1 10K GND 5 R8A 20KB 2 GND R317 10K R318 6 Z15B 7 3 J26C 0.1 MC33078 GND Z11B GND C214 0.1 7 5.36K 6 3 4.7/50V MC33078 1 R9A 20KB 2 GND Z13B 7 C128 J25A 1 1 R275 5 R276 0.1 R274 5.36K Z14B 7 MC33078 7 C212 5 C211 R309 L14 20K L15 J2D 4-STA C131 BOT R BEAD BEAD C110 220PF 4.7/50V R93 20K R91 20K R241 5.11K C18 GND C126 R149 3 30.1K 2 5 J26A GND MC33078 GND GND 5.36K C213 0.1 Z3B 6 150K R150 47PF R200 3 2 5 R242 5.11K 1 CCW MID GND 6 Z2B MC33078 4.7/50V 30.1K R2A 20KB 7 R201 100K 47PF 19.1K C235 0.

022 GND GND J25C 3 C132 4.7/50V UP J33A 1 R96 20K C133 GND C134 S2B 2P2T J34-1 SH. 12 R1A 20KB 1 R202 100K GND 4 5 6 PGM1_L 22/25V 4.7/50V SH. 4 & 9 R95 20K PGM 1 GAIN TRIM +/- 12 dB LOW R319 10K R320 10K GND R262 4.02K C87 C88 8 3 2 4 -15 MC33078 Z10A 1 +15 C135 0.01 TONE HIGH 6 5 4 R321 10K R322 R7B 20KB GND MC33078 3 C201 GND 0.001 C202 0.001 8 R277 5.36K C4 10K R100 20K 8 2 +15 Z12A 4 1 J26F 6 GND J25F 6 GND 1A PHONO 1 RIGHT 0.

01 R263 4.02K GND UP 8 1 L2 3 +15 J2A 4-STA R90 20K GND S1A 2P2T R299 1.91K 2 TOP L 2 Z1A 1 4.7/50V GND R39 47.5K BEAD C2 150PF C17 47PF 4 -15 4580 GND 1 2 3 GND GND PGM 1 RIGHT C105 R59 R65 R84 SOURCE 100/10V 162 + GND 90.

9K C75 7.5K C84 -15 R104 20K 150PF R103 20K +15 1B LINE 1 RIGHT R300 2 3 GND C218 0.1 8 J25B 2 2 J26B R279 5.36K R280 3 2 GND 5.36K C217 0.

1 +15 1.91K 47PF C21 +15 1 4 4.7/50V 4 30.1K 5 2 3 4 GND -15 MC33078 Z3A 1 8 -15 MC33078 6 CW 0.033 +15 0.01 4 BEAD C111 220PF C20 R243 5.11K 6 8 GND 5 C127 R151 150K +15 R152 3 R244 5.11K R204 100K GND 30.1K R2B 20KB Z2A 2 47PF R205 CW R94 20K R203 100K R92 20K Z14A 4 6 GND -15 MC33078 4 GND GND R1B 20KB 4 19.1K C236 0.

022 0.1 -15 MC33078 2 Z11A 0.1 R278 5.36K 1 MID 5 4 R323 10K R324 R8B 20KB GND 10K 2 3 GND 8 TOP R 4.7/50V 1 C216 C215 8 3 J2B 4-STA R310 3 L16 L17 C136 BEAD +15 Z15A 4 1 4 J26D MC33078 -15 J25D 4 C137 4.7/50V UP J33C 3 R98 20K C138 GND C129 Z13A 4 -15 MC33078 1 4.7/50V C139 S2A 2P2T J34-3 SH. 12 GND GND 1 2 3 PGM1_R 22/25V 4.7/50V SH. 4 & 9 LOW 6 R9B 20KB GND 4 5 R325 10K R326 10K R97 20K GND GND INPUT 2 106774-2.

SCH INPUT 3 106774-3.SCH VCA 106774-4.SCH VCA 2 106774-5.SCH VCA 3 106774-6.SCH MIC 106774-7.

SCH ACTION: TOP C134 & C139 WERE 4.7/25V, 4.7/50V WERE 4.7/25V, WAS DOC 105695 SKH 29AUG02 DRAWN BY: SUM 106774-8.SCH CUE 106774-9.

SCH METER 10677410.SCH OUTPUT 10677411.SCH INPUT 1 EMPATH RJ CHECKED BY: H:\TTM55E~\N106774-1.SCH 13-Feb-2003 10802 47th Avenue West Mukilteo WA 98275-5098 SHEET: 1 of 13 106774 R264 4.02K C91 5 6 3 MC33078 R10A 20KB 2 10K MC33078 6 5 GND R118 R281 20K C7 150PF R117 Z20B MC33078 GND C222 GND 1 GND 0.1 MC33078 R283 5 6 3 4.7/50V R12A 20KB 2 GND 1 Z19B 7 C142 5.36K R284 10K MC33078 R11A 20KB 2 5 GND 6 3 R329 10K R330 6 Z21B 7 8 J26H MC33078 0.1 Z17B 7 0.1 R282 5.

36K 7 C220 5 C219 5.36K C25 1.91K R245 5.11K C24 GND C140 3 4.7/50V MC33078 R4A 20KB 2 5 GND GND MC33078 5.36K C221 0.1 Z6B 7 6 J25J 10 J26J 10 CCW 2A PHONO 2 LEFT C92 Z16B R327 10K R328 R115 20K 7 TONE HIGH J3C 4-STA R105 20K UP 5 L3 0.01 0.01 R265 4.02K GND R301 GND C203 Z18B 0.

001 C204 0.001 7 S3B 2P2T 1.91K 1 6 5 BOT L Z4B 7 C144 R40 47.5K BEAD C5 150PF 5 4580 6 C22 47PF 4.7/50V GND GND 4 5 6 GND GND PGM 2 LEFT C106 R60 R66 R85 SOURCE 100/10V 162 + GND 90.

9K C76 7.5K C89 2B LINE 2 LEFT R302 R311 20K 0.033 0.01 J3D 4-STA 6 L18 L19 C145 BOT R BEAD BEAD C112 220PF 4.7/50V R109 R107 20K 20K MID 3 GND 2 5 150K R246 5.

11K 1 R208 100K GND Z5B 7 6 R153 30.1K R154 30.1K 47PF R206 GND CW GND R207 100K 47PF 19.1K C237 0.022 J25H C146 8 UP J33L 12 4.7/50V R112 20K C147GND C148 S4B 2P2T J34-12 SH. 12 R3A 20KB 1 4 5 6 PGM2_L 22/25V 4.7/50V R111 20K SH. 4 & 9 PGM 2 GAIN TRIM +/- 12 dB LOW R331 10K R332 10K GND GND R266 4.02K C93 C94 8 3 2 4 -15 MC33078 Z16A 1 +15 0.

01 TONE HIGH 6 5 4 R333 10K R334 R10B 20KB GND C205 GND 0.001 C206 0.001 8 R285 5.36K +15 Z20A 3 4 8 1 C224 0.1 C223 8 3 2 +15 6 Z17A 1 C8 10K R116 20K 2 3 2A PHONO 2 RIGHT 0.01 R267 4.02K GND UP 8 1 L4 3 +15 J3A 4-STA 2 TOP L R106 20K GND 1.91K S3A 2P2T R303 2 Z4A 1 C149 4.7/50V -15 4580 MC33078 +15 8 Z18A 4 1 GND R41 47.5K BEAD C6 150PF C23 47PF GND 1 2 3 GND GND PGM 2 RIGHT C107 R61 R67 4 R86 SOURCE 100/10V 162 + GND 90.

9K C77 7.5K C90 -15 R120 20K 150PF R119 20K 2B LINE 2 RIGHT C26 1.91K 47PF C27 +15 1 4 4.7/50V 4 5 2 3 4 GND MC33078 GND -15 Z6A 1 8 J25I 9 J26I 9 -15 MC33078 R4B 20KB 6 CW 0.033 0.

01 3 R304 2 R312 L20 L21 J3B 4-STA 19.1K C238 0.022 C150 4 TOP R R247 5.11K 6 8 GND 5 3 150K +15 R248 5.11K R210 100K GND Z5A 2 R155 C141 30.

1K R156 30.1K 47PF R211 R209 100K BEAD GND BEAD C113 220PF GND 4.7/50V R110 20K R108 20K MID -15 MC33078 C226 0.1 8 0.1 R286 5.36K GND 4 5 4 R335 10K R336 -15 MC33078 R11B 20KB GND 10K 2 3 GND +15 Z21A 4 1 7 J25G C151 7 J26G -15 MC33078 UP J33J 10 J34-10 SH. 12 GND GND CW GND R3B 20KB 4 4.7/50V R114 20K S4A 2P2T C152 GND R287 5.36K R288 3 2 5.36K C225 0.

1 +15 6 Z19A 4 -15 MC33078 1 C143 4.7/50V 1 C153 2 3 22/25V PGM2_R SH. 4 & 9 LOW R12B 20KB GND 4 5 R337 10K R338 10K 4.7/50V R113 20K GND GND TOP ACTION: C148 & C153 WERE 4.7/25V, 4.7/50V WERE 4.7/25V, WAS DOC 105695 SKH 29AUG02 DRAWN BY: INPUT 2 EMPATH RJ CHECKED BY: H:\TTM55E~\N106774-2.SCH 13-Feb-2003 10802 47th Avenue West Mukilteo WA 98275-5098 SHEET: 2 of 13 106774 R268 4.02K 9 5 J27E GND C97 5 6 3 MC33078 C306 2 10K 6 5 GND GND R134 20K R289 C31 1.91K R249 5.

11K C30 MC33078 GND C230 GND 1 GND 0.1 7 5.36K 6 3 4.7/50V MC33078 1 R15A 20KB 2 GND Z26B 7 C156 J27A 1 R291 5 R292 J28A 1 10K 5 GND MC33078 R14A 20KB 2 6 Z30B 7 MC33078 3 J28C GND C154 3 4.7/50V MC33078 R6A 20KB 2 5 GND GND MC33078 5.

36K C229 0.1 Z9B 6 CCW TONE HIGH GND R131 20K MC33078 Z25B 7 C346 -15 0.1 C345 GND C207 0.1 GND 0.1 0.

001 C208 0.001 C11 150PF R133 7 3 R341 10K R342 1 0.1 C347 R13A 20KB R339 10K R340 J28E 5 J28G 7 +15 J28I 9 -15 7 J27G +15 J27I -15 3A



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91K 5 L5 0.01 0.01 R269 4.02K 7 BOT L BEAD Z7B 7 C158 R42 47.5K C9 150PF 5 4580 6 C28 47PF 4.7/50V GND GND S5B 2P2T 4 5 6 GND GND PGM
3 LEFT SOURCE C108 R62 R68 R87 100/10V 162 + GND 90.9K C78 7.

5K C95 3B LINE 3 LEFT R306 6 5 0.1 6 Z24B 0.1 R290 5.36K Z28B 7 C228 5 C227 R313 5.36K 20K 0.033 0.01 J4D 4-STA 6 L22 L23 C159 BOT R BEAD
BEAD C114 220PF 4.7/50V R125 R123 20K 20K MID 3 GND 2 5 150K R250 5.11K 1 R214 100K GND Z8B 7 6 R157 30.1K R158 30.
1K 47PF R212 R213 100K 47PF 19.1K C239 0.022 GND GND CW J27C 3 C160 4.7/50V UP J35I 9 C162 J36-9 SH. 12 R5A 20KB 1 4 5 6 PGM3_L 22/25V
4.
7/50V R127 20K SH. 4 & 9 PGM 3 GAIN TRIM +/- 12 dB LOW R343 10K R344 10K R128 20K S6B 2P2T C161 GND GND GND R270 4.02K C99 C100 8 3
2 4 C247 +15 0.1 C249 0.1 C209 GND -15 0.

1 C250 0.1 GND -15 MC33078 Z23A 1 C248 +15 0.01 TONE HIGH 6 5 4 R345 10K R346 R13B 20KB GND 10K R132 8 10 J28F 6 GND 20K MC33078 8 2
3 GND +15 Z25A 4 1 3A PHONO 3 RIGHT 0.01 R271 4.02K GND UP J28H 8 +15 J28J 10 -15 J27H +15 J27J -15 6 J27F GND 8 1 L6 3 +15 J4A 4-STA
R122 20K R307 1.91K GND S5A 2P2T 2 TOP L 2 Z7A 1 C163 4.7/50V GND R43 47.5K BEAD C10 150PF C29 47PF 4 -15 4580 GND 1 2 3 GND GND
PGM 3 RIGHT SOURCE 0.001 C210 0.001 8 R308 2 3 GND C234 0.

1 8 J27B 2 J28B 2 R295 5.36K -15 R296 3 2 GND 5.36K C233 0.1 +15 1.91K 47PF C33 +15 1 4 4.7/50V 4 5 2 3 4 GND MC33078 Z9A 1 8 -15 MC33078
R6B 20KB 6 CW C109 R63 R69 R88 100/10V 162 + GND 90.9K C79 7.5K C96 -15 R136 R293 5.36K C12 20K 150PF R135 3B LINE 3 RIGHT R314 C32
0.033 0.
01 +15 Z28A 4 4 8 Z24A 0.1 -15 MC33078 2 0.1 R294 5.36K GND 4 1 2 6 5 4 R347 10K R348 -15 MC33078 R14B 20KB GND 10K 3 GND TOP R R251
5.11K 6 8 GND 5 3 150K +15 R252 5.
11K R216 100K GND Z8A 2 R159 C155 30.1K R160 30.1K 47PF R217 R215 100K 19.1K C240 0.022 GND CW BEAD C115 220PF 4.
7/50V R126 R124 20K 20K 1 C232 C231 8 J4B 4-STA 3 L24 L25 C164 20K 3 +15 BEAD MID +15 Z30A 4 14 J28D -15 MC33078 J27D C165 4 4.7/50V UP
J35G 7 R130 20K C166 GND C157 Z26A 4 1 -15 MC33078 4.7/50V J36-7 SH. 12 GND GND GND R5B 20KB 4 S6A 2P2T 1 C167 2 3 22/25V 4.7/50V
PGM3_R SH. 4 & 9 LOW 6 R15B 20KB GND 4 5 R349 10K R350 10K R129 20K GND GND TOP ACTION: C162 & C167 WERE 4.7/25V, 4.7/50V WERE
4.7/25V, WAS DOC 105695 SKH 29AUG02 DRAWN BY: INPUT 3 EMPATH RJ CHECKED BY: H:\TTM55E~\N106774-3.SCH 13-Feb-2003 10802 47th
Avenue West Mukilteo WA 98275-5098 SHEET: 3 of 13 106774 +15 C274 R138 22PF 20K C34 8 +15 1 30.

1K 4 2 2 GND 4 -15 GND C35 47PF R221 100K MC33078 6 5 +15 C275 GND R140 20K C36 7 30.1K MC33078 6 R16B 20KB 4 5 30.1K 2 GND LEFT
LEFT C261 3 7 GND C251 PGM1_L 5 SH. 1 & 9 2180LC 3 30.1K 8 100K MC33078 +15 Z34A 1 PGM1_L_DRY SH. 8 2 6 4 22/25V 20K Z33A R163 R162
47PF R220 R137 1 Z36 8 2 0.1 -15 R253 5.11K GND MC33078 C260 3 0.1 -15 R165 30.1K 30.
1K R164 1 R16A 20KB 3 *R402 51.1 (*OMIT R402 IF Z36=2180LC) GND PWM OFFSET = 77 HEX (119 DEC) FOR UNITY GAIN +12 dB OFFSET
(71.5mv) D1 LS4148 R427 R424 1.10M R434 C262 22PF 3 C101 0.01 GND 100K 5 MC33078 GND 0.
1 -15 R169 1 30.1K R168 30.1K 6 5 GND Z35B 7 C263 *R403 Z22B R254 5.11K GND 7 2 6 PWM1 6 5 R218 SH. @@8 -15 R222 J34-7 SH.
@@8 1 PGM1_R_DRY SH. @@2 & 9 2180LC 3 30.1K 8 100K MC33078 +15 Z40A 1 PGM2_L_DRY SH. @@2 & 9 22/25V 4 2180LC 5 20K Z39B R143 1
Z43 8 6 C254 7 GND 0.1 12.4K R430 402K J33I 9 PWM2 GND GND C169 4.7/50V 402K Z40B 7 RANGE = 103 dB (-91, +12 dB) PGM2_L_WET SH. 8 -15
R226 J34-9 SH. 12 100K MC33078 +15 8 Z41A 4 -15 GND C41 1 PGM2_R_DRY SH. 8 PGM2_R_WET TOP ACTION: 4.

7/50V WAS 4.7/25V, WRONG Z #'S WERE ON OMIT NOTE, WAS DOC 105695 SKH 29AUG02 DRAWN BY: VCA 2 EMPATH RJ CHECKED BY:
H:\TTM55E~\N106774-5.SCH 13-Feb-2003 10802 47th Avenue West Mukilteo WA 98275-5098 SHEET: 5 of 13 106774 +15 C278 R146 20K C42 8 +15 1
30.1K 4 -15 3 2 2 GND 4 -15 GND C43 47PF 100K MC33078 6 5 +15 C279 GND R148 20K C44 7 30.1K MC33078 6 R18B 20KB 5 LEFT LEFT C269 22PF
3 7 GND C255 PFF_R J29K 11 SH. 4 SH. 5 SH. 6 GND TOP ACTION: 4.7/50V WERE 4.7/25V, WAS DOC 105695 SKH 29AUG02 DRAWN BY: SUM
EMPATH RJ CHECKED BY: H:\TTM55E~\N106774-8.

SCH 13-Feb-2003 10802 47th Avenue West Mukilteo WA 98275-5098 SHEET: 8 of 13 106774 Z66A ADG212 2 R446 11 9 47PF 6 10K 10K 8 2 3 4 4.7/50V
-15 MC33078 R457 10K GND R381 10K 6 5 GND 7 Z61B MC33078 Z61A 1 C189 CUE_B_LEFT +15 8 3 10K 1 R458 GND C56 10K 47PF 3 10K 1 14 10K
16 R460 R459 R456 R455 R380 10K 47PF SH. 9 PGM1_B Z68D 7 ADG212 SH. 9 PGM2_B Z68A 2 ADG212 SH. 9 PGM3_B Z67D 7 ADG212 1 Z67A 2
ADG212 8 6 C185 CUE_A_LEFT R449 10K GND R379 2 3 LEFT S17A LEVER 2P3T 10K MC33078 Z59B 4.
7/50V R453 10K GND J32-6 SH. 13 J31I 9 3 GND R523 2 3.01K R27A 3 20KB 1 R524 HIGH 3.01K C292 0.0047 C181 LEFT CUE 30.
1K 1 2 R26A 20KB 6 5 GND Z62B 7 3 R190 30.1K GND RIGHT GND +5 SH. 11 MASTER LEFT 30.1K R191 TL072 30.1K 100K R189 R188 R236 R529
6.81K 5 8 2 +5 3 4.7/50V 4 -15 MC33078 R444 10K GND GND Z60A CUE_LEFT 1 C187 +15 4.7/50V R442 10K 2 3 GND R530 6.81K CUE_L SH. 10 6
R28B 20KB C295 0.

047 6 4 R531 6.81K LOW C13 1 GND 8 Z63A 4 -15 TL072 1 150PF +15 J31F 6 +5 C183 7 CUE_A_RIGHT C186 4 6 5 GND Z68B 15 ADG212 4.7/50V 4
-15 8 LEFT R447 10K R448 2 3 Z59A 1 10K R450 GND C54 10K 47PF R451 10K R452 10K 10K MC33078 +15 8 6 7 S17B LEVER 2P3T R378 5 C53 C55 3
Z68C ADG212 10 R454 10K SH. 9 PGM1_A 1 Z67C 10 ADG212 11 SH. 9 PGM2_A Z67B ADG212 15 9 14 16 SH. 9 PGM3_A Z66B 15 ADG212 14 Z66C
ADG212 10 16 11 Z66D ADG212 7 9 6 C190 CUE_B_RIGHT 4.7/50V R461 10K 8 GND R543 4.7/50V 4.75K GND R44 C298 10K 22PF 8 +15 Z64A 4
4.7/50V -15 R383 10K GND 6 5 Z64B 7 1 PHONES L J32-9 SH.
13 R469 10K 47PF R377 12.4K R468 10K D7 G R72 1K R439 10K D6 G R70 1K R440 10K D5 G R57 +5 -15 +15 +5 GND C57 47PF +5 6 5 4.7/50V
MC33078 GND S9B LEFT 2P3P A5 6 7 R462 10K GND R472 10K 1 2 3 S9A 4 GND 1 2 3 S10A 4 GND 1 2 3 +5 POST R445 10K PGM 1 XFADER ASSIGN
GND R470 10K Z60B 7 CUE_RIGHT C188 12.4K J33D 4 R382 SH. 11 MASTER RIGHT R195 30.
1K 13 V+ +15 V+ +15 V+ 13 13 4.7/50V R443 10K 30.1K S8B 2P2T 5 6 GND 4 V-15 V-15 VRIGHT CUE 4 4 C182 R193 4 5 6 +5 12 VL +5 VL +5 VL 12
12 1K R441 10K D4 G R56 1K R474 10K D8 G R71 1K R473 10K GND GND GND Z66E ADG212 5 GND SPLIT CUE Z67E ADG212 5 GND Z68E ADG212
5 GND C52 SH. 8 EFF_L R49 OUT MC33078 R29A 2 20KB C191 2 3 R538 100 SH. 8 AUX_L 2K S12B 2P2T R50 6 5 4 GND 2K S13A 2P2T 3 2 1 GND
R539 100 MC33078 J31K 11 J32-11 SH.
13 SH. 1 & 4 PGM1_L R35 2K S14A 2P2T 3 2 1 S8A 2P2T 3 2 1 GND C184 R544 4.7/50V 4.75K GND 6 R525 3.01K R27B 6 20KB 4 5 R526 HIGH C14 4
3.01K C293 0.0047 6 150PF GND 5 4.7/50V R384 10K Z65B R45 C299 10K 22PF R29B 20KB C192 5 7 MC33078 PHONES R SH.

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