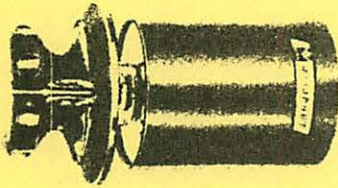


Langevin

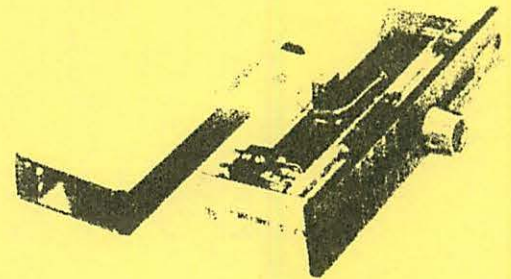
1801 EAST CARNEGIE AVENUE • SANTA ANA, CALIFORNIA • PHONE (714) 546-8830



Rotary & Straight Line Mixers & Attenuators

GENERAL

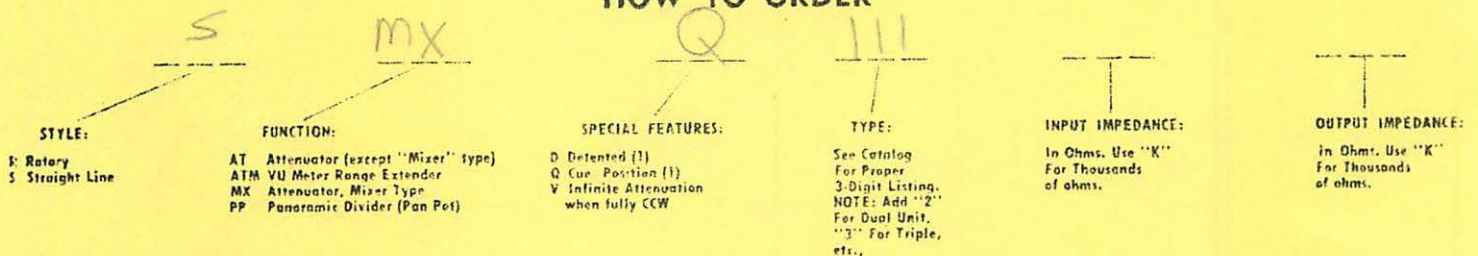
- **Solid Silver Brush Contacts**
Contact noise virtually eliminated
Extended life
- **Printed Contact Boards Heavily Plated with Silver**
Smooth operation
Low drag
- **Rotary Units**
Permanently lubricated within dust-proof enclosure
Stainless steel shafts
Long life, non-seizing
Low friction
- **Straight Line Units**
2-5/16 inches deep behind panel
6-5/8 inches long
Integral female connector
(male connector supplied as an accessory)
Removable slip cover for inspection and cleaning
Adjustable for amount of force required to move slider
(slide wire types only)
Carriage moves on precision ground chrome plated shaft



DESIGNATION CODE

D.....Detent	<u>RMX</u>Rotary Mixer Attenuator (formerly MX)
E.....Escutcheon	RPP.....Rotary Panoramic Divider (Pan Pot)
Q.....Cue Position	<u>SMN</u>Straight Line Mixer Attenuator
RAT.....Rotary Attenuator (except "Mixer" types)	SPP.....Straight Line Panoramic Divider (Pan Pot) (formerly SLPP)
RATM.....Meter Range Extender (formerly ATN)	V.....Last Step Infinity

HOW TO ORDER



EXAMPLES OF ORDERING:



GENERAL NOTE:

(1) A CONTROL MAY BE DETENTED (CODE "D") OR IT MAY HAVE A CUE POSITION (CODE "Q"), BUT THE TWO ARE MUTUALLY EXCLUSIVE. THERE CAN BE NO "QD" CONTROL WHICH IS BOTH DETENTED AND WITH CUE.

UNBALANCED LADDER NETWORKS

RMX TYPE CONTROLS are generally tapered to infinity and do not provide detented positions. "Q" positions may usually be provided by adding the letter "Q" to the type code (RMXQ). Resistor Tolerance: $\pm 5\%$

If a detented control is required, add letter "D" to the type code (RMXD). The "Q" and "D" configurations are mutually exclusive. A detented control can not be provided with a "Q".

RAT TYPE CONTROLS have linear attenuation and detented positions. Normally, these controls do not have an infinity position. However, this step can be provided in most attenuators by adding the letter "V" to the type code (RATV). Resistor Tolerance: $\pm 1\%$

MULTI-GANG UNITS - Most attenuators can be fabricated with more than one control section coupled to the same shaft. Check tabulation below for availability.

Length of Controls: 1 Gang - 1 5/8" 3 Gang - 4"
 2 Gang - 2 7/8" 4 Gang - 4"

Description	RMX TYPE			GANG			DB/Step	RAT TYPE			GANG		
	Cat.No.	Max.DB	Q	2	3	4		Cat.No.	Max.DB	V	2	3	4
20 Steps 15°/Step 300°Rota. 1 1/2" dia.							1.5	RAT-618	30	●	●	●	●
	RMX-201	∞	●	●	●	●	2.0	RAT-631	40	●	●	●	●
30 Steps 11 1/4°/Step 337 1/2°Rota. 1 1/2" dia.	RMX-206	∞		●	●	●	1.5	RAT-634	45		●	●	●
	RMX-207	∞		●	●	●	2.0	RAT-635	60		●	●	●
32 Steps 10°/Step 320°Rota. 1 1/2" dia.	RMX-203	∞	●	●	●	●	1.5						
44 Steps 7 1/2°/Step 352 1/2°Rota. 2 1/4" dia.	RMX-215	∞	●	●	●	●	1.0						
45 Steps 7 1/2°/Step 337 1/2°Rota. 2 1/4" dia.	RMX-205	∞		●	●	●	1.0	RAT-624	45		●	●	●

IMPEDANCE - The following terminal impedances are available as standard:
 150/150 ohms 300/300 ohms 600/600 ohms 600/1200 ohms
 Most other impedances are available upon request without additional charge.

BRIDGED "T" NETWORKS

RMX TYPE CONTROLS are generally tapered to infinity and do not provide detented positions. "Q" positions may usually be provided by adding the letter "Q" to the type code (RMXQ). Resistor Tolerance: $\pm 5\%$

If a detented control is required, add letter "D" to the type code (RMXD). The "Q" and "D" configurations are mutually exclusive. A detented control can not be provided with a "Q".

RAT TYPE CONTROLS have linear attenuation and detented positions. Normally, these controls do not have an infinity position. However, this step can be provided in most attenuators by adding the letter "V" to the type code (RATV). Resistor Tolerance: $\pm 1\%$

MULTI-GANG UNITS - Most attenuators can be fabricated with more than one control section coupled to the same shaft.

Check tabulation on following page for availability.

BRIDGED T NETWORKS

Description	RMX TYPE			GANG			DB/Step	RAT TYPE			GANG			
	Cat. No.	Max. DB	Q	2	3	4		Cat. No.	Max. DB	V	2	3	4	
10 Steps 15°/Step 150° Rota. 1½" dia.							0.1	RAT-500	1.0		●	●	●	*
							0.1	RAT-612	1.0		●	●	●	
							0.5	RAT-613	5.0		●	●	●	
							0.5	RAT-654	5-0-5		●			
							1.0	RAT-505	10.0		●	●	●	*
							1.0	RAT-606	10.0		●	●	●	
							1.5	RAT-652	15.0		●	●	●	
							2.0	RAT-600	20.0		●	●	●	
							2.0	RAT-619	18/∞	●	●	●	●	
						10.0	RAT-510	100.0		●	●	●	*	
20 Steps 15°/Step 300° Rota. 2¼" dia.							0.1	RAT-614	2.0		●	●	●	
							0.5	RAT-629	10.0		●	●	●	
							1.0	RAT-607	20.0		●	●	●	
							1.0	RAT-630	19/∞		●	●	●	
							1.5	RAT-641	30.0		●	●	●	
		RMX-601	∞	●	●	●	2.0	RAT-601	40.0		●	●	●	
							2.0	RAT-626	38/∞	●	●	●	●	
							3.0	RAT-642	60.0		●	●	●	
30 Steps 10°/Step 300° Rota. 2¼" dia. ----- 11¼°/Step 337½° Rota. 2¼" dia.							0.1	RAT-615	3.0		●	●	●	
							0.5	RAT-623	15.0		●	●	●	
							1.0	RAT-608	30.0		●	●	●	
							1.5	RAT-645	45.0		●	●	●	
							2.0	RAT-602	60.0		●	●	●	
		RMX-600	∞		●	●	1.5							
	RMX-603	∞		●	●	2.0	RAT-628	58/∞	●	●	●	●		
32 Steps 10°/Step 320° Rota. 2¼" dia.	RMX-602	∞		●	●	1.5								
45 Steps 7½°/Step 337½° Rota. 2¼" dia.	RMX-606	∞		●		0.5	RAT-636	22.5		●			**	
	RMX-625	∞		●		1.0	RAT-637	45.0		●			**	

IMPEDANCE - The following terminal impedances are available as standard:

150/150 ohms 300/300 ohms 600/600 ohms

Most other impedances are available upon request without additional charge.

*Type RAT 500 control are precision decade attenuators with a resistor tolerance of ±½%.

**Single-gang control are 2 7/8" long; 2-gang controls are 4" long.

Length of Controls: 1 Gang - 1 5/8" 3 Gang - 4"
 2 Gang - 2 7/8" 4 Gang - 4"

" H " NETWORKS

RMX TYPE CONTROLS are generally tapered to infinity and do not provide detented position. "Q" positions may usually be provided by adding the letter "Q" to the type code (RMXQ) Resistor Tolerance: $\pm 5\%$

If a detented control is required, add letter "D" to the type code (RMXD). The "Q" and "D" configurations are mutually exclusive. A detented control can not be provided with a "Q".

RAT TYPE CONTROLS have linear attenuation and detented positions. Normally, these controls do not have an infinity position. However, this step can be provided in most attenuators by adding the letter "V" to the type code (RATV). Resistor Tolerance: $\pm 1\%$

MULTI-GANG UNITS - Most attenuators can be fabricated with more than one control section coupled to the same shaft.

Check tabulation on following page for availability.

V U - M E T E R R A N G E E X T E N D E R S
(RATM)

VU Meters are adjusted to 3900 ohms. Rotary range extenders should be of the "T" configuration and 3900 ohms impedance. In order properly to read ± 4 VU a 3600 ohm series resistor is required. Most LANGEVIN Bridge "T" attenuators for such applications provide two fixed resistors in series, one of 3300 ohms and the other of 300 ohms, the terminals of which appear on the back plate of the VU Range Extender Attenuator. This permits the use of a Variable Wire-Wound Resistor for stereo balance or calibration by selecting the appropriate solder terminal.

All units are shipped complete with engraved dial and LANGEVIN Model K-108 RCA Type Knob.
Resistor Accuracy $\pm 1\%$

Length - 1 Gang - 1 5/8" 3 Gang - 4"
 2 Gang - 2 7/8"

Description	Cat. No.	Range	DB/Step	Impedance	Gang		Note
					2	3	
10 Steps 15°/Step 150° Rota. 1 1/2" Dia.	RATM 300	$\pm 4/\pm 14$	1	7.5K/3.9K	●	●	1
	RATM 301	$\pm 4/\pm 24$	2	7.5K/3.9K	●	●	1
12 Steps 15°/Step 180° Rota. 2 1/4" Dia.	RATM 309	1 MW/ $\pm 4/\pm 24$ /OFF	2	7.1K/3.9K	●	●	2
	RATM 310	1 MW/ $\pm 4/\pm 24$ /OFF	2	7.5K/3.9K	●	●	1
	RATM 311	$\pm 4/\pm 26$ /OFF	2	3.9K/3.9K	●	●	3
	RATM 312	$\pm 4/\pm 26$ /OFF	2	7.1K/3.9K	●	●	2
	RATM 320	$\pm 4/\pm 26$ /OFF	2	7.5K/3.9K	●	●	1
15 Steps 15°/Step 225° Rota. 2 1/4" Dia.	RATM 305	$\pm 4/\pm 34$	2	7.5K/3.9K	●	●	1
20 Steps 15°/Step 300° Rota. 2 1/4" Dia.	RATM 302	$\pm 4/\pm 24$	1	7.5K/3.9K	●	●	1
	RATM 303	$\pm 4/\pm 44$	2	7.5K/3.9K	●	●	1
	RATM 314	1 MW/ $\pm 4/\pm 10$ /OFF	2	7.1K/3.9K	●	●	2
	RATM 315	1 MW/ $\pm 4/\pm 10$ /OFF	2	7.5K/3.9K	●	●	1
	RATM 316	1 MW/ $\pm 4/\pm 10$ /OFF	2	6.9K/3.9K	●	●	2
	RATM 317	$\pm 4/\pm 12$ /OFF	2	7.1K/3.9K	●	●	3
	RATM 318	$\pm 4/\pm 12$ /OFF	2	3.9K/3.9K	●	●	3
	RATM 319	$\pm 4/\pm 12$ /OFF	2	7.5K/3.9K	●	●	1
30 Steps 10°/Step 300° Rota. 2 1/4" Dia.	RATM 304	$\pm 4/\pm 34$	1	7.5K/3.9K	●	●	1

- NOTE:
1. No zero adjust rheostat required.
 2. Zero adjust rheostat required.
 3. External 3600 ohm resistor required.

P O T E N T I O M E T E R S

RMX TYPE CONTROLS are generally tapered to infinity and do not provide detented positions.

"Q" positions on these controls are available, but the diameter of $1\frac{1}{2}$ " controls will increase to $2\frac{1}{4}$ ". Controls with a basic diameter of $2\frac{1}{4}$ " (RMX 641) will increase in length from $1\frac{5}{8}$ " for the single-gang control to $2\frac{7}{8}$ " if a "Q" position is provided. This increase in size is dictated by the potentiometer circuitry, which does not allow an integral "Q" position.

If a detented control is required, add letter "D" to the type code (RMXD). The "Q" and "D" configurations are mutually exclusive. A detented control can not be provided with a "Q". Resistor Tolerance: $\pm 5\%$

RAT TYPE CONTROLS have linear attenuation and detented positions. Normally, these controls do not have an infinity position. However, this step can be provided in most attenuators by adding the letter "V" to the type code (RATV). Resistor Tolerance: $\pm 1\%$

DUAL OR BALANCED CIRCUITS are not provided as standard units. Any standard 2-gang unit may be wired to obtain a balanced or dual potentiometer. This wiring should be done externally on the control terminal plate. The only precaution is to consider the desired terminal impedance for balanced potentiometers. For this application, order a 2-gang unit with $\frac{1}{2}$ the desired terminal impedance. If a 50K ohm balanced potentiometer is required, order a 2-gang; 25K ohm control and connect all common terminals to center/ground.

All 10° and 15° RAT Potentiometers can be supplied with 2-gangs on one deck. This affords considerable space saving behind the front panel of the console since a 2-gang control will be only $1\frac{5}{8}$ " deep. The diameter of these controls will increase from $1\frac{1}{2}$ " to $2\frac{1}{4}$ ". Please specify on your order "Short Form", otherwise standard length will be supplied. There is no extra charge for this configuration.

CHECK TABULATION ON FOLLOWING PAGE FOR AVAILABILITY.

All grind controls Type "CG" are discontinued. Please use "RAT" or "RMX" controls, depending on whether a close tolerance linear control or a tapered mixer control is desired. The catalog page on potentiometers will identify the control characteristics of these devices.

The following is a tabulation of all CG-controls and their substitutes:

<u>Cat. No.</u>	<u>Steps</u>	<u>DB/Step</u>	<u>Remarks</u>
CG 300	32	1.5	Use RMX 618
CG 301	20	2	Use RAT 672
CG 302	20	2	" "
CG 303	20	2	" "
CG 304	20	2	" "
CG 305	32	1.5	NO DIRECT SUBSTITUTE (Similar to RMX 618)
CG 315	10	5(Dual)	Use RAT 6702
CG 319	15	5(Dual)	NO DIRECT SUBSTITUTE
CG 333	10	5	Use RAT 670
CG 334	15	5	NO DIRECT SUBSTITUTE
CG 335	20	2	Use RAT 672
CG 337	30	1	Use RAT 675
CG 338	30	2	Use RAT 677
CG 339	45	1	Use RAT 678
CG 347	30	2	Use RATV 677
CG 348	20	2 3	Use RATV 672
CG 349	20	1.5	Use RAT 671
CG 351	20	1.5(Dual)	Use RAT 6712
CG 355	20	2(Dual)	Use RAT 6722
CG 357	20	3	Use RAT 673
CG 359	20	3(Dual)	Use RAT 6732
CG 361	20	5	Use RAT 674
CG 363	20	5(Dual)	Use RAT 6742
CG 367	30	1(Dual)	Use RAT 6752
CG 369	30	1	Use RAT 675
CG 371	30	1(Dual)	Use RAT 6752
CG 373	30	1.5	Use RAT 676
CG 375	30	1.5(Dual)	Use RAT 6762
CG 377	30	1.5	Use RAT 676
CG 379	30	1.5(Dual)	Use RAT 6762
CG 383	30	2(Dual)	Use RAT 6772
CG 385	30	2	Use RAT 677
CG 387	30	2(Dual)	Use RAT 6772
CG 391	45	1(Dual)	Use RAT 6782

PANORAMIC ATTENUATORS

ROTARY PAN POT - RPP 701
(With K-108 Knob and special Dial)

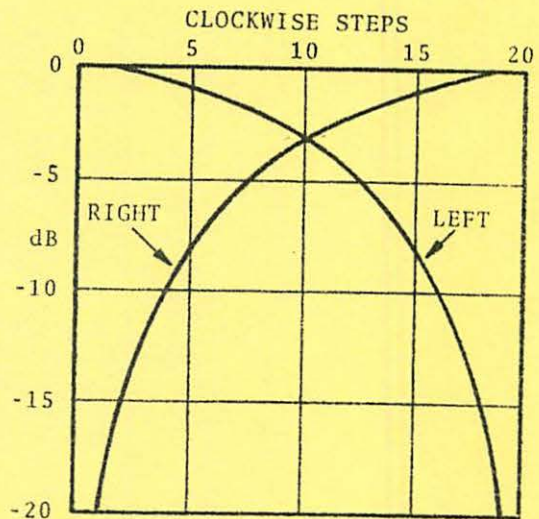
STRAIGHT LINE PAN POT - SPP 701
(With Knob but less Escutcheon)

These controls are designed to move a monophonic signal across a stereophonic field.

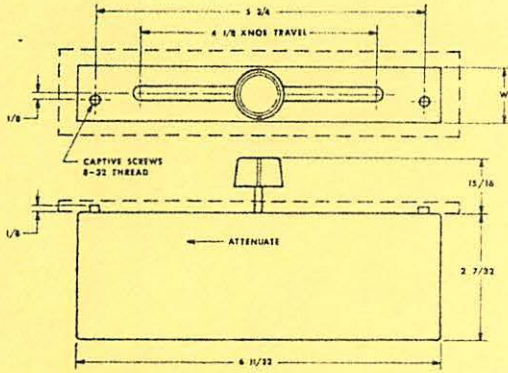
The combined power output of all channels remains constant as the control knob is moved.

SPECIFICATIONS:

Circuit:	Bridged "T"
Insertion Loss:	6 db per channel. At center position each output channel is down an additional 3 db (eff. insertion loss 9 db)
Impedance:	600 ohms "in" or "out"
Input Channel:	1
Output Channel:	2
Number of Steps:	20
Degrees per Step:	15°
Dial Marking:	L - C - R
Physical Size:	RPP 701 - 2 1/4" dia./ 2 7/8" long SPP 701 - 6 11/32 x 1 11/16 x 2 7/32



Langevin Straight Line Units



WIDTHS: SINGLE: $1\frac{5}{16}$ "
 2 GANG: $1\frac{11}{16}$ "
 3 GANG: $2\frac{1}{2}$ "
 4 GANG: $3\frac{1}{4}$ "
 6 GANG: $4\frac{5}{8}$ "

STRAIGHT LINE ATTENUATORS (With Last Step Infinity)

RESISTOR ACCURACY: 5% Single Units
 2% Multiple Units

CAT. NO.	CIRCUIT	STEPS	DB/STEP	MAX. ATTEN.
SMX 113	Unbalanced	32	0.5	∞
SMX 114	Bridged "T"	32	1.5	∞
SMX 115	Potentiometer	20	2.0	∞
SMX 120	Potentiometer	32	1.5	∞

STRAIGHT LINE LINEAR ATTENUATORS

CAT. NO.	CIRCUIT	STEPS	DB/STEP	MAX. ATTEN.
SAT 110	Bridged "T"	30	0.5	15 DB

STRAIGHT LINE SLIDE WIRE MIXER ATTENUATORS

CAT. NO.	CIRCUIT	DB/STEP	IMPEDANCE
SMX 111	Unbalanced Ladder	App. 0.1 DB	150 ohms or 600 ohms *

*Available with "Q" position

All Straight Line Attenuators are available in 2-gang; 3-gang; 4-gang; and 6-gang assemblies.

In controls with "Q" position the maximum is a 4-gang unit.

ESCUTCHEONS

SUFFIX	WIDTH
ES Narrow Single	$1\frac{1}{4}$ "
EW Wide Single	$1\frac{1}{2}$ "
E2 2 Gang	$1\frac{3}{4}$ "
E3 3 Gang	$2\frac{5}{8}$ "
E4 4 Gang	$3\frac{1}{4}$ "
E6 6 Gang	$4\frac{3}{4}$ "

