

tangent

Model 2402a
 Model 1602a
 Model 1202a
 Model 802a

Tangent Stereo Mixing Consoles

For professional sound reinforcement and recording / Model 2402a, 1602a, 1202a, and 802a.

Tangent's stereo mixing consoles are designed to provide the highest quality sound available in the world today. And that's no idle claim.

Modern Recording, reviewing the predecessor to this series, discovered "astonishingly quiet" performance and "superlative square wave response."*

Modern Recording's engineers also found distortion measurements so low they were "typically masked by the residual noise level."

These *verified* noise and distortion measurements totally obliterate the *unverified* performance claimed by other mixer manufacturers. But the best is yet to come.

This "a" series of Tangent consoles has even *lower* distortion and *better* noise performance than the model reviewed by *Modern Recording!*

What this means to the sound engineer is total transparency and clarity of sound. And features like Solo, submaster grouping, and three independent Monitor/Reverb/Effects busses give complete professional control.

Finally, and surprisingly, the price is moderate. Live-performance features, reasonable cost, and absolute quality combine to make Tangent *the* professional choice in mixing consoles.

INPUT MODULE

Peak input LED flashes as the signal peaks pass +15dB. The Peak LED monitors the signal *after* it has been equalized; otherwise a frequency-band boost could crunch a section following the equalizer without the engineer knowing. Internal headroom is an excellent +20dB.

GAIN control works in conjunction with the Peak LED to prevent input overload. Rather than relying on a pad, which degrades noise performance, the Gain control actually varies the gain of the microphone pre-amp. This method assures the lowest possible noise and distortion. The range is 40dB, from +16 to +56dB of gain.

HI range equalization is the shelving type with 15dB of either boost or cut. The shelf begins at 10,000Hz.

MID range equalization is of the peak and dip variety, giving 10dB of boost or cut at 1,500Hz. The bandwidth curve, or "Q" is moderate and musical, rather than "peaky". This control is used primarily to accentuate a singer's voice, or to help remove an edge from a voice. A midrange boost tends to brighten the sound.

LO range equalization gives 15dB of boost or cut to the lower frequencies in a shelving manner. The shelving effect begins at 100Hz. As noted in *Modern Recording*, "The equalizer is very similar to that found in top-grade stereo preamplifiers or receivers." Additionally, the EQ controls have a center detent in their flat position, giving a positive physical feel when the equalizer is not affecting the signal.

PHANTOM POWER

CAL ● ●

+3 - ●
0 - ●
-2 - ●
-4 - ●
-7 - ●
-10 - ●
-20 - ●

5
0 10
SEND 5
0 10
RETURN 5
L PAN R

5
0 10
AUX L 10
LO-CUT

LEFT SUBMASTER

0 -
5 -
10 -
20 -
30 -
40 -
50 -
60 -
70 -
80 -

POWER ● ●

CAL ● ●

+3 - ●
0 - ●
-2 - ●
-4 - ●
-7 - ●
-10 - ●
-20 - ●

5
0 10
SEND 5
0 10
RETURN 5
L PAN R

5
0 10
AUX R 10
LO-CUT

RIGHT SUBMASTER

0 -
5 -
10 -
20 -
30 -
40 -
50 -
60 -
70 -
80 -

SOLO ● ●



PHONES

EFF

RVB

MON

MONO

MAIN

PHONES/METER

5
0 10
PHONES 5
0 10
SOLO 5
0 10
MONO 5

5
0 10
MONITOR 10
LO-CUT

MONITOR

*from the "Hands-On Report," MODERN RECORDING, October, 1977.

EFFECTS Send control determines how much signal from that channel goes onto the Effects Buss and then out to an external flanger, tape-echo unit, or other effects device. The Effects Buss, acting as an independent mixer-within-a-mixer, may be used as a second Monitor mix if desired. The signal is sent to the Effects Buss after the equalizer (Post-EQ) but independent of that channels slide Volume control (Pre-Fader). The Effects Send on each channel may be changed to Post-Fader by switching one jumper wire on the printed circuit board. The modification may be performed at any Authorized Tangent Service Center, usually the same people who sold you the unit.

REVERB Send knob controls how much signal from that channel goes onto the Reverb Buss. The Reverb Buss then drives either an external reverberation unit or the optional internal reverb. The optional internal reverb features a three-spring Accutronics Type 9 Chamber, and utilizes a compressor in the drive circuitry to minimize the "boing" sound usually associated with spring reverb. The signal is sent Post-EQ and Post-Fader to follow both the signal contour and channel Volume. The Reverb Send may be changed to Pre-Fader by a simple modification that may be performed at any Authorized Tangent Service Center.

MONITOR Send controls are used to determine what the musicians hear on stage. The Monitor mix allows the performers to stay in-time and on-key, regardless of what the audience hears. All Monitor controls are "pre-everything," unaffected by equalizer settings or the channel's Volume slide control.

SOLO cuts off the normal signal feed to the headphones and feeds only the input module whose Solo switch is engaged. More than one channel may be soloed at the same time. The sound engineer can easily check the audio quality and EQ on a channel or group of channels without affecting what the audience or performers are hearing. The Solo system uses DC-controlled FET switching, so engaging only one Solo switch activates the function. The signals are soloed Post-EQ.

VOLUME control determines the gain of the channel sent to the Left and Right Busses. The slider has a 100 millimeter travel, nearly double most mixing consoles in this price range.

LEFT OUTPUT MODULE

PHANTOM POWER LED indicates that the Accessory P-24 has been plugged into the mixer and is sending 24 volts of direct current to all the microphones. The Phantom Power input will accept any voltage from 12 to 48 VDC. Phantom Power eliminates the need for replacing batteries in condenser microphones. Batteries tend to die at the wrong times (in the middle of performances), and the cost of replacement batteries adds up. The peace of mind you get from knowing your condenser mics will never die during a performance is reason enough to add this low-cost accessory.

LEFT metering gives a color-coded reading of the Left master output. Calibration controls are provided on the front panel for easy access. LED metering provides instant indication of overload peaks that standard VU meters cannot indicate mechanically. LEDs are also much easier to read in low light levels, and the color-coding allows the engineer to be alert only to red for peaking.

EFFECT SEND master control determines the output of the Effects Buss to external equipment.

EFFECTS RETURN determines the level of the returning effects signal that is added to the Left and Right Busses.

EFFECTS PAN places the returning effects signal within the stereo field. This control can be especially useful in moving certain effects around.

AUX determines the level from an auxiliary outboard source. The AUX input is especially useful for performances requiring pre-taped effects, without using up an input channel. This input is also handy for playing music during the breaks.

LO-CUT switches a 100Hz, 12dB/octave Butterworth filter into the signal path. By attenuating frequencies below 100Hz an engineer can attenuate the "rumble" problems sometimes encountered from in-studio and on-stage acoustic feedback from high-energy low frequencies.

LEFT volume control acts as a master for the Left Output, or acts as a submaster control when the Mono Output is used.

RIGHT OUTPUT MODULE

POWER LED indicates that the unit is on and that the engineer has a better chance of bringing signal out of the console than if the indicator LED is not lit.

RIGHT metering gives an instant readout of the Right Output. Both Left and Right Metering Arrays follow the switching for the Headphone Source Select. If the headphones are switched to "Monitor," both meters will follow the Monitor Output.

REVERB SEND master control determines the output of the Reverb Buss to an external reverberation unit or the optional internal reverb.

REVERB RETURN determines the level of the returning reverb signal that is added to the Left and Right Busses.

REVERB PAN places the returning reverb signal within the stereo field. This control can be used in conjunction with the Effects Buss to achieve stereo reverb.

AUX determines the level from an auxiliary outboard source.

LO-CUT switches a 12dB/octave Butterworth filter into the signal path at 100Hz.

RIGHT volume control acts as a master for the Right Output, or acts as a submaster control when the Mono Output is used.

MONITOR MODULE

SOLO LED indicator glows when one or more Solo switches are engaged on input modules. Basically it's a convenience indicator to remind an engineer why he's only hearing one or two channels.

HEADPHONE jack is a stereo termination for the output of the Headphone Amplifier.

HEADPHONE SELECT switches determine whether the engineer is listening to the Effects, Reverb, Monitor, Mono or stereo Main busses.

HEADPHONE LEVEL determines the level of the four-watt headphone power amplifier, a gutsy amp for driving headphones of any impedance.

SOLO LEVEL controls the volume of the Solo Buss being fed into the Headphone Amplifier.

MONO LEVEL is the master control for Mono Output.

MONITOR LEVEL determines the final gain of the Monitor Output.

LO-CUT switches a 100Hz, 12dB/octave Butterworth filter into the signal path.

MODEL 2402a

Twenty-four-channel stereo mixing console.

MODEL 1602a

Sixteen-channel stereo mixing console.

MODEL 1202a

Twelve-channel stereo mixing console.

MODEL 802a

Eight-channel stereo mixing console.

REVERB OPTION

Three-spring Accutronics type-9 chamber, with drive circuitry compression.

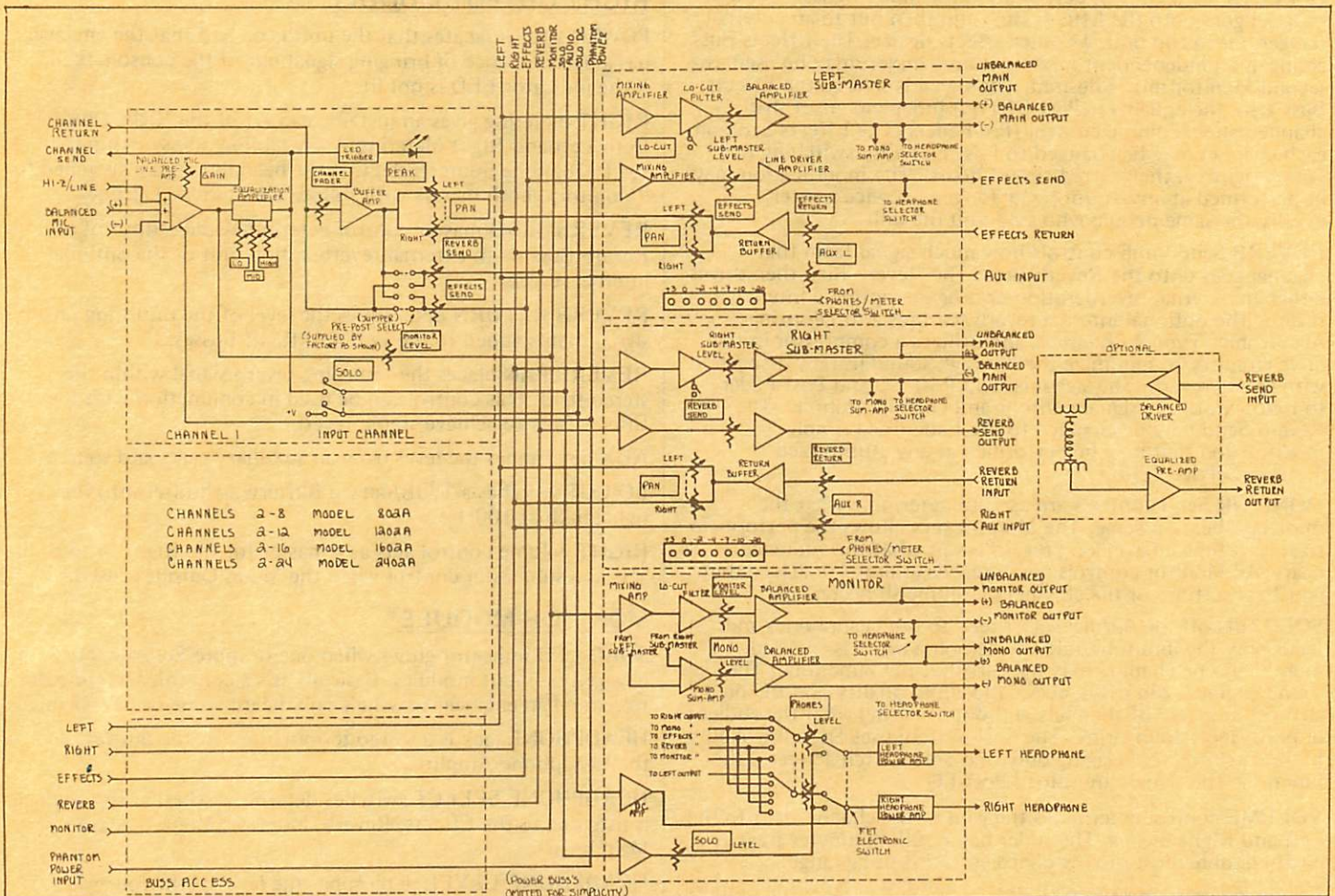
PHANTOM POWER ACCESSORY

Eliminates need for batteries in condenser microphones. External add-on Accessory P-24.

MODEL 103a

One-in/three-out accessory item. Available in extra-large, large, medium, and small.





Specifications

Frequency Response*	10Hz-65Hz ± 1dB
Total Harmonic Distortion*	.004% at 1kHz, + 20 dB output
Intermodulation Distortion*	.004% at + 20 db output
Equivalent Input Noise*	-128 dBm
Maximum Output at 1 kHz:	+26 dBv (5Dohm load) +18 dBm (600 ohm load)
MAXIMUM GAIN	
Balanced Lo-Z microphone	82dB
Hi-Z line or microphone	64dB
Buss-in	20dB
Gain Control Range	40dB
Peak Indicator Threshold	+15dB
Crosstalk	60dB @ 1 kHz
Input Channel Equalization	
Treble	± 15dB @ 10kHz shelving
Midrange	± 10dB @ 1.5kHz peak/dip
Bass	± 15dB @ 100Hz shelving
Meter Calibration	0dB = +4dBm (600 ohm) +4dBv (5Kohm)

*from the "Hands - On Report," MODERN RECORDING, October 1977.

Specifications listed are typical.