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SR 230 DUAL PROJECTOR EXPANDER

MADE IN U.S.A.

DUAL STEREO PREAMPS WITH SOLID STATE CHANGEOVER AND REMOTE MANUAL OR AUTOMATION OPERATION

FEATURES

Dual Low Noise Preamps
Stand Alone Applications
Remote Changeover
Exciter or Electronic Changeover
Automation Capability
Silent Operation
Quality Engineered

The Smart SR 230 is a companion unit to the SR 130 Optical Stereo Decoder. This unit allows the decoder to accept two projectors into the system. Solid state switching between projectors is totally silent because of a delayed quick fade between machines. An internal switch permits either exciter lamp or electronic changeover. Remote L.E.D. outputs indicate which machine is activated.

The SR 230 has four low noise solar cell preamps. Each pair of preamps accepts a stereo solar cell input with individual trim controls for perfect balance between cells. The preamps are switched as pairs through the changeover circuits. Internal high-low switches select either 2 volt RMS outputs or 10 MV outputs for each preamp pair. The 2 volt outputs will drive a power amplifier or drive-in FM multiplex amplifier directly without additional gain stages. The SR 230 can therefore be used as a two projector direct, stand alone unit for left and right stereo applications. The 10 MV output position allows the output of the SR 230 to be compatible with the input requirements of the SR 130 Optical Stereo Decoder for two projector requirements.

The very low noise of the SR 230 is due to its fully regulated well filtered power supply, and the use of ultra low noise preamp integrated circuits. The unique design of the unit allows it to be used as a simple left-right stereo, a drive-in stereo preamp, a dual projector expander, or head-end preamps with stereo solar cells for theatres with future system expansion plans.

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P.O. BOX 80361, ATLANTA, GEORGIA 30341 404/422-1082

SR230

PERFORMANCE SPECIFICATIONS

Frequency Response:	20 to 20,000 kHz ± .5 dB
Input Sensitivity:	10 MV for 2 Volt RMS Output High Level Position 10 MV for 10 MV RMS Output Low Level Position
Projector Trim Range:	10 dB each Channel
Maximum Gain:	48 dB per Channel
Maximum Output Before Clipping:	6 Volts RMS
Distortion:	.25% THD Full Output
Signal to Noise Ratio:	Greater than 70 dB
Power Consumption:	2 Watts 117V 50/60 Hz
Weight:	4.5 Lbs.
Dimensions:	1¾" X 6" X 19" Rack Mount
Color:	Theatre Black

ENGINEERS SPECIFICATIONS

The Smart SR 230 is a four channel solar cell preamplifier with electronic changeover between pairs of preamps. The unit contains its own power supply, solid state logic and electronic switching. Front panel L.E.D.'s indicate which projector is on. Switching is totally silent and controlled by remotely actuated manual switching or automation equipment. Remote L.E.D.'s indicate projector in operation. A high-low internal switch allows a unity output or 2 volt RMS output to drive power amplifiers directly. Color coded terminals make hookup easy. Special low noise integrated circuits in the preamp provide exceptionally quiet performance. A heavily filtered regulated power supply provides low ripple voltage to all circuits. The SR 230 is intended to be used as a companion to the Smart SR 130 Optical Stereo Decoder.

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SR 230 DUAL PROJECTOR EXPANDER

The SR 230 is a multi-purpose product that has several possible uses in walk in and drive-in theatres. Its primary function is a dual projector expander for the SR 130 Optical Stereo Decoder. Here are some suggestions:

1. DUAL PROJECTOR STEREO EXPANDER. Four identical preamps handle two projector stereo solar cells with all changeover switching, changeover logic, precision trim adjustments and power supply self contained.

2. LEFT AND RIGHT STEREO for drive-in wireless systems that employ an FM multiplex transmitter. The high level outputs will drive the transmitter exciter directly without additional amplification.

3. INEXPENSIVE INDOOR STAGE STEREO. The left and right stereo capability can be used to supplement an existing center channel mono installation for three channel stage stereo sound. No surround channel is available using this economy scheme.

ABOUT THE CIRCUITRY.....

The SR 230 contains four independent wide band, low noise solar cell preamplifiers that are grouped in two pairs. Each pair handles the left and right sections of a split solar cell for one projector. All inputs utilize RF suppression components to minimize extraneous pickup of strong local RF signals. Switching between preamp pairs is accomplished by a quad solid state switch that is controlled by a positive solid state logic circuit. Front panel L.E.D's indicate which stereo preamp is being used. Remote L.E.D.'s can be added so that indicators located next to each projector will identify which projector soundhead is active. Internal trim pots allow the installing engineer to accurately balance each preamp for the same output level. The trim pots also permit extra gain to be added to the front end of the system for higher drive levels when required. Up to 10 dB of usable gain can be added. The solid state changeover switch selects the desired pair of preamps and sends the stereo signal to the line amplifiers. The switch has a special characteristic that quickly fades out one signal and quickly fades in the other. This produces a perfectly quiet changeover without pops, clicks, or "waveform chopping". The stereo line amplifiers pass through an output resistive pad circuit. Internal selector switches permit a high level output of 2 volts RMS per channel or a low output of 10 MV per channel. The line amplifiers have an output impedance of 100 Ohms that will drive any normal amplifier input. A dual capacitor Pl network and integrated circuit regulator provide low ripple DC to all the circuits. Moderate AC line variations will not affect the performance of the SR 230.

INSTALLATION

NOTE: When making connections to the barrier strip of the back of the SR 230 chassis, be sure to leave enough slack in the cables to allow the unit to be pulled forward from the rack. It will be necessary to remove the top cover in order to make adjustments.

Determine which projector will be projector number ONE. The solid state logic will always select projector ONE input when the SR 230 is turned on each day. Run a three conductor shielded audio cable from each of the projector solar cells. DO NOT ground the shield at the solar cell end of the cable. It will be grounded at the SR 130 input terminal. Stereo solar cells have color coded wires. RED is RIGHT, GREEN is LEFT, and BLACK is common. The barrier strip input terminals are also color coded with the same scheme for each projector input. Make connections to the proper solar cell input of the SR 230 and ground the shield along with the COMMON lead from each source. This completes the audio input wiring.

CHANGEOVER WIRING

Before you proceed, you must determine what type of changeover method is best for your particular installation. The SR 230 is capable of being wired for three different schemes. Use the handy reference below, then go to the appropriate section in this manual for wiring instructions.

ELECTRONIC CHANGEOVER (both exciter lamps on all the time)	OR	EXCITER LAMP CHANGEOVER (both projectors audio on all the time)
MANUAL CHANGEOVER	OR	AUTOMATION CHANGEOVER
CONTINUOUS COMMAND	OR	MOMENTARY CHANGEOVER COMMAND

ELECTRONIC CHANGEOVER

An electronic switch selects projector ONE or projector TWO audio upon command from the logic circuit. If projector ONE is ON, projector TWO is OFF and vice versa. This positive action takes place when BOTH internal mini-switches on the lower right (near front panel) of the printed circuit card have been moved to the EL (electronic) position. The exciter lamps of both projectors must always be on.

EXCITER LAMP CHANGEOVER

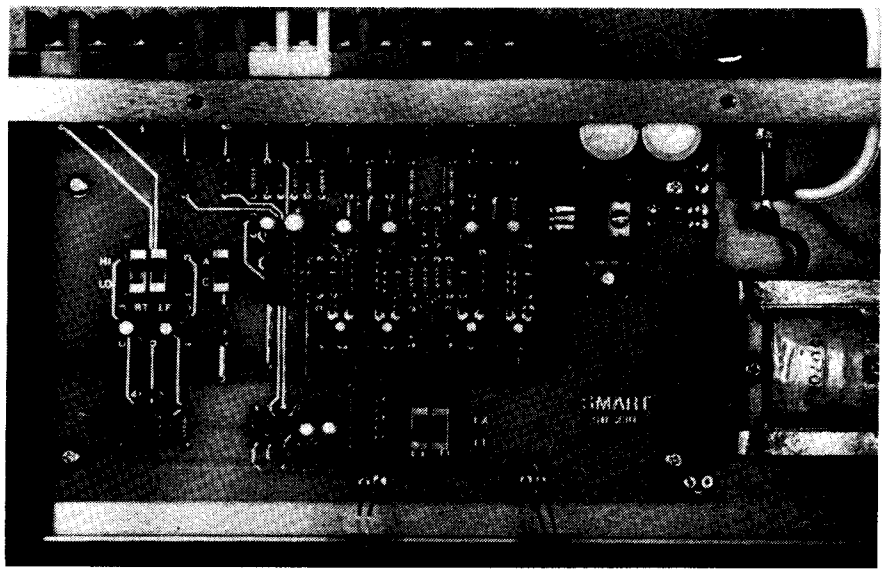
Some dual projector systems rely on switching of the exciter lamps in order to effect a sound changeover. In this arrangement, both solar cell sets are active and the respective exciter lamps are switched alternately. The internal mini switches mentioned in the previous section must BOTH be placed in the EX (exciter) position. The sound engineer may still wish to use the external and front panel L.E.D.'s to follow the action in order to have an indication of which projector is active. A dry set of contacts on the switch that is handling the exciter lamp switching is necessary. These extra contacts can actuate the X-over (changeover) functions of the SR 230 electronic logic. Of course, the exciter lamps are making the actual changeover, and the logic is just switching the L.E.D. indicators in this mode.

MANUAL CHANGEOVER

Two terminals on the rear barrier strip are used to alternate audio from the projectors. They are labeled X-Over 1 and X-Over 2. These terminals are color coded YELLOW. Any momentary contact to the ground terminal (Black) will force the logic and electronic switches to the desired pair of preamps. A SPST momentary contact switch on each terminal is all that is necessary to alternate between two preamps. You CANNOT ground both terminals at the same time. This is a non permissable state for the logic circuit. Place the internal mini-switch in the "A" (alternate) position. Each remote switch can be installed in a small metal box and secured to the wall near each projector in a place that is convenient to the operator. An L.E.D. can also be included in each box to indicate which projector is active.

AUTOMATION CHANGEOVER

Electronic changeover can be executed by automation equipment. The wiring procedure is the same as outlined in the MANUAL CHANGEOVER section of this book. The only difference is that the automation is making alternate contact with the X-Over terminals. Make sure the automation equipment has no voltage on its switch contacts before hooking to the SR 230 X-Over terminals. Although a momentary contact is all that is necessary to execute a changeover, the switch that grounds the X-Over terminal may remain closed for the duration that each projector is on. BE SURE THAT BOTH OF THE ALTERNATE SWITCHES ARE NOT CLOSED AT THE SAME TIME. A better way to handle automation changeover is discussed in the next section of this manual.



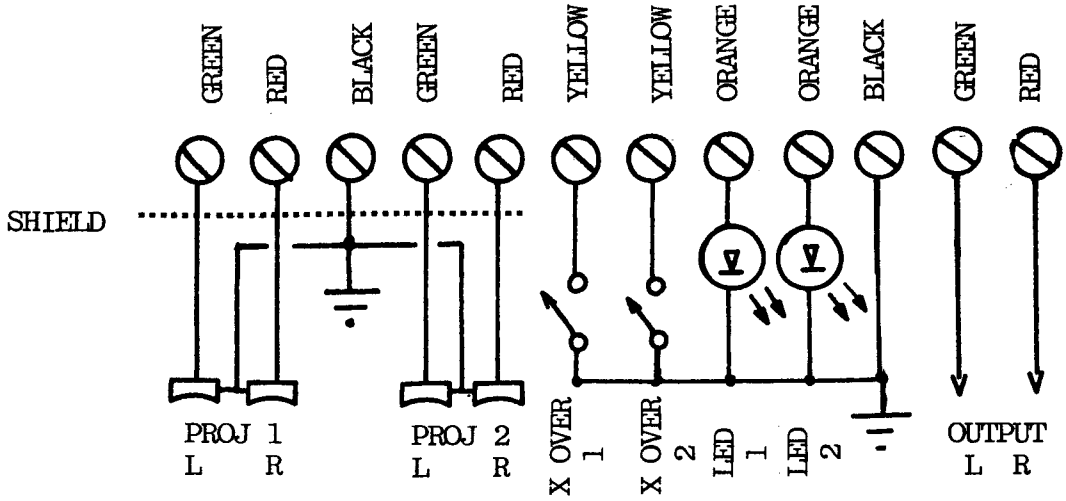
HI-LO OUTPUT SWITCH PAIR IS TO THE FAR LEFT OF THE P.C. CARD AS YOU FACE THE FRONT PANEL OF THE SR 230. TO THE IMMEDIATE RIGHT OF THESE SWITCHES IS THE A-C LOGIC SWITCH. THE EX-EL SELECTOR PAIR IS IN THE CENTER-FRONT OF THE CARD. ALL SWITCHES AND PROJECTOR TRIM POTS ARE LABELED.

CONTINUOUS SINGLE WIRE COMMAND

By placing the single internal mini-switch (labeled A-C) in the "C" (continuous) position, changeover between two projectors can be accomplished with ONE wire to ground. Connect a twisted pair of wires to the X-Over 2 terminal (ORANGE) and ground (BLACK). Run the other end of the pair to the automation equipment. When the wires are shorted by the automation sound relay, projector TWO is active. When the pair is OPEN projector ONE is On. When using the continuous single wire command option, X-OVER 1 terminal is not connected.

SOUND LEVEL BALANCE

Individual level trim controls are associated with each of the four preamps of the SR 230. It is important to balance the levels of each section of the stereo solar cells so that a changeover between projectors is unnoticed by the audience. Also stereo sound balance must be preserved between soundheads. Each trim pot is labeled on the P.C. card. Make sure all pots are in their fully counter clockwise position before beginning the adjustment phase. With a pure tone test loop running on each projector, changeover between machines while monitoring the SR 230 output with a meter or scope. Adjust one channel at a time until all channels give the same reading. We suggest that you add as little gain as possible (clockwise rotation of trim pots) if the SR 230 is feeding the Smart SR 130 Optical Stereo Decoder to avoid overdrive of the SR 130 front end. 10 dB of additional gain is available in each preamp. This extra gain is usable when the SR 230 is feeding devices other than the SR 130. NOTE: It will be helpful to place BOTH output drive switches in the HI position to aid in monitoring the trim adjustments. Do NOT feed this high output level into the SR 130 Optical Stereo Decoder.



EXTERNAL CONNECTIONS ARE MADE TO COLOR CODED BARRIER TERMINALS ON THE REAR OF THE CHASSIS

CHANGEOVER L.E.D. INDICATORS

Terminals are provided on the rear barrier strip (color coded ORANGE) for remote indicating changeover lights. Any standard L.E.D. may be used. Power to light the L.E.D.'s is supplied by the SR 230, and no external power supply is necessary. The positive pin of each L.E.D. is connected to the appropriate (ORANGE) terminal via a two conductor cable, and the L.E.D. cathode is returned to a GROUND (Black) terminal. Front panel L.E.D.'s also indicate projector status.

HIGH-LOW OUTPUT SWITCHES

Two internal mini-switches select the output level of the SR 230. In the HI position each channel will develop a 2 volt RMS level from 10 MV drive of the stereo solar cells. In the LO position, unity gain is achieved. The LO position must be used if the unit is to feed the single input of the SR 130. BOTH switches must be placed in the same position. The HI output drive is intended to drive stereo transmitters or other equipment. No output fader is available in the SR 230.

CONNECTIONS TO THE SR 130

The output channels of the SR 230 Expander are wired directly to the inputs of the SR 130 Optical Stereo Decoder. The SR 230 should be placed above the SR 130 when rack mounting the two units. Barrier strips for both units will be physically aligned with the output terminals of the SR 230 directly above the input terminals of the SR 130. Color coded terminals identify the left and right channels.

SOUND MUTING

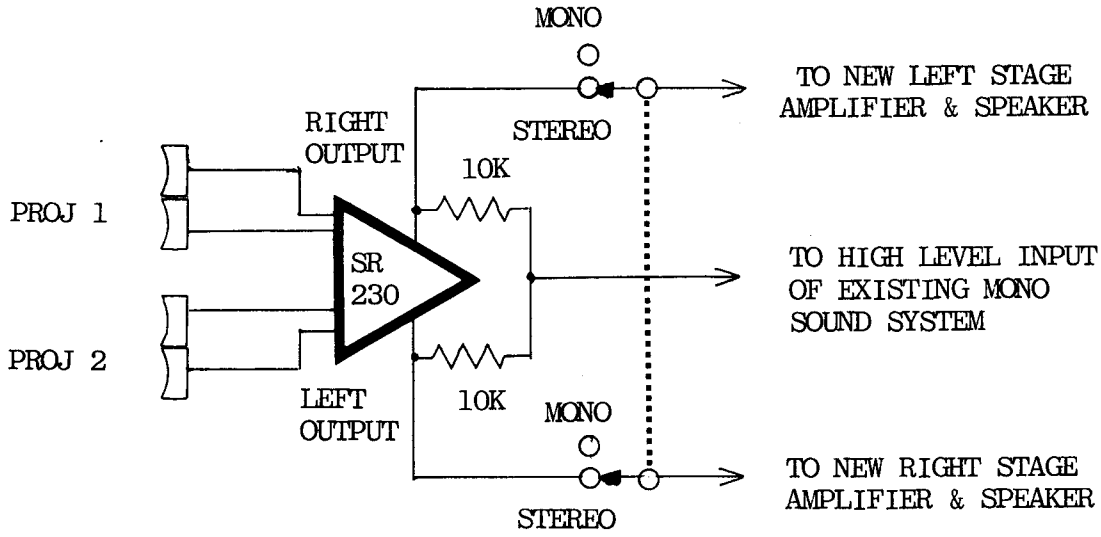
Some automation systems mute projector audio during xenon strikes to keep the radiated RF from the ignitor from getting into the sound. The SR 230 has RF suppresion circuits. However, we suggest you make a test in the booth before wiring a muting line. If you can hear the ignitor in the audio, muting can be accomplished by shorting the audio output of each channel to ground. An internal build-out network will allow a dead short without harm to the SR 230. Remember that BOTH channels must be muted simultaneously.

STAND ALONE USES

The SR 230 can be ideal as a head end for an FM multiplex stereo transmitter for drive-in wireless systems. The HI output position should be selected when the unit is used with transmitters.

INEXPENSIVE INDOOR STEREO

Extra dimension can be added to the theatre's sound if a left and right channel is added to the house when playing SVA prints. This scheme is limited to the stage system and contains no surround capability. Also because there is no special noise treatment, dirty prints can be distracting and unusable. The HI output position should be selected when feeding extra stage amplifiers.



ECONOMY THREE CHANNEL OPTICAL STEREO

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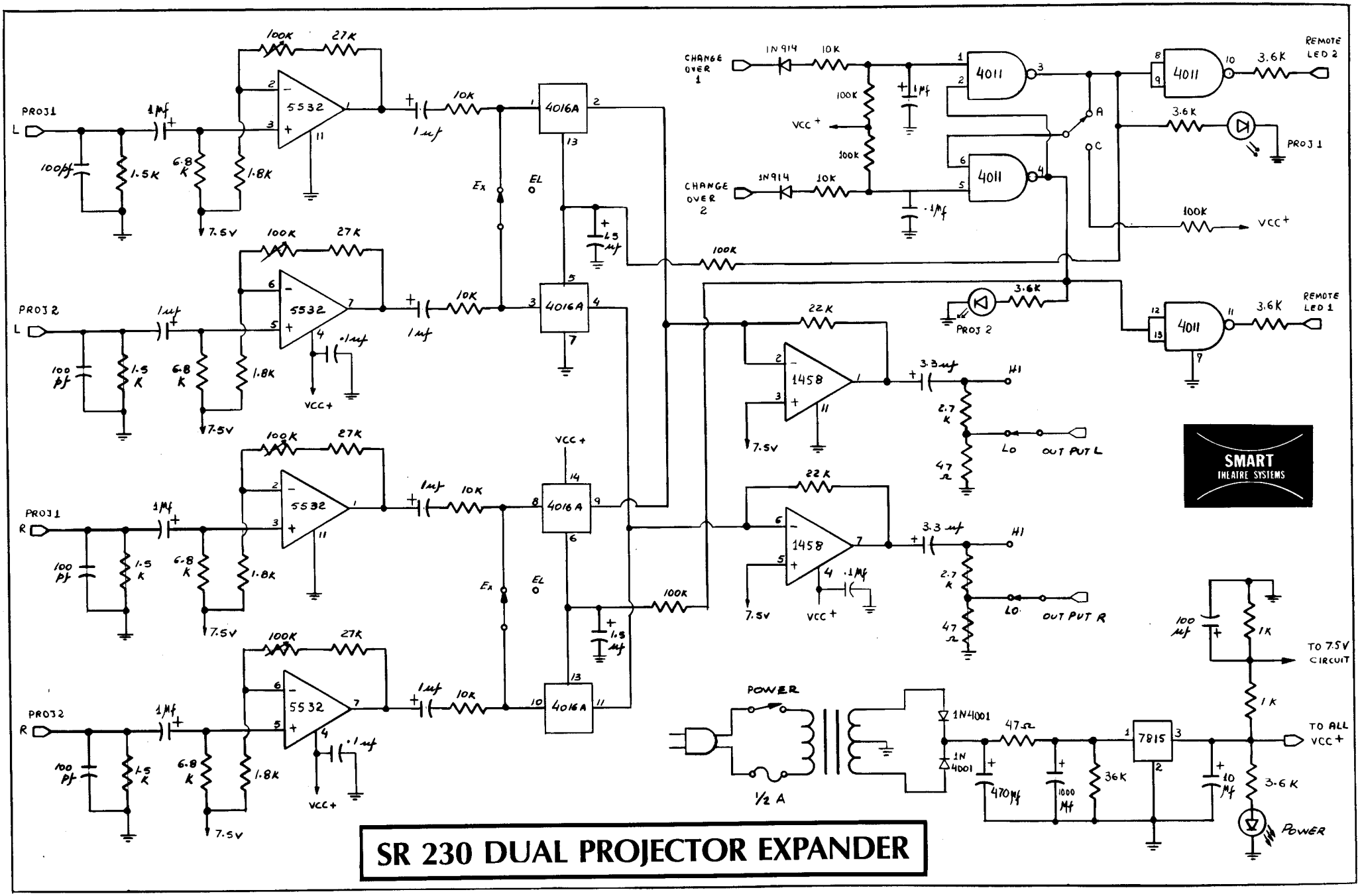

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