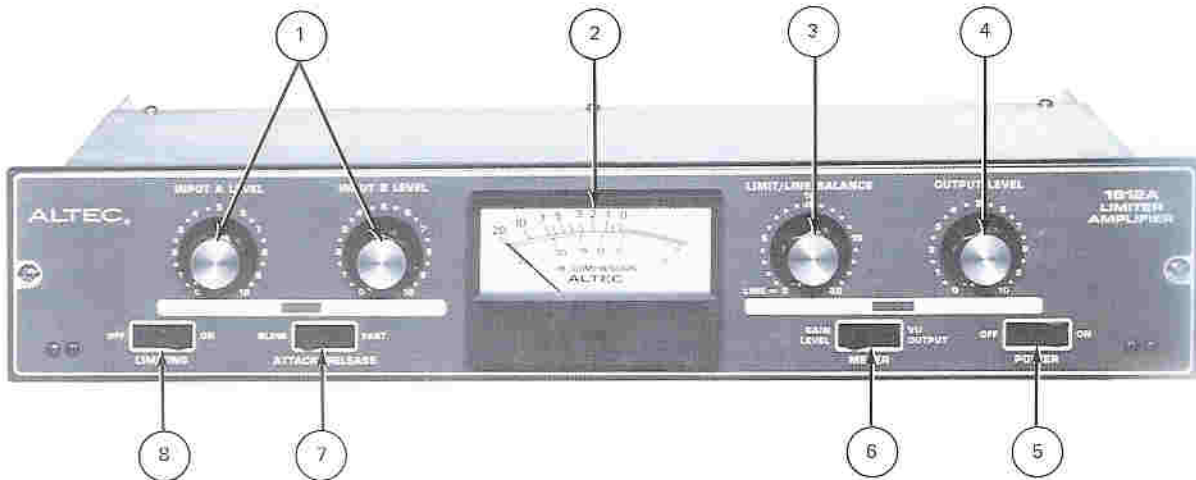
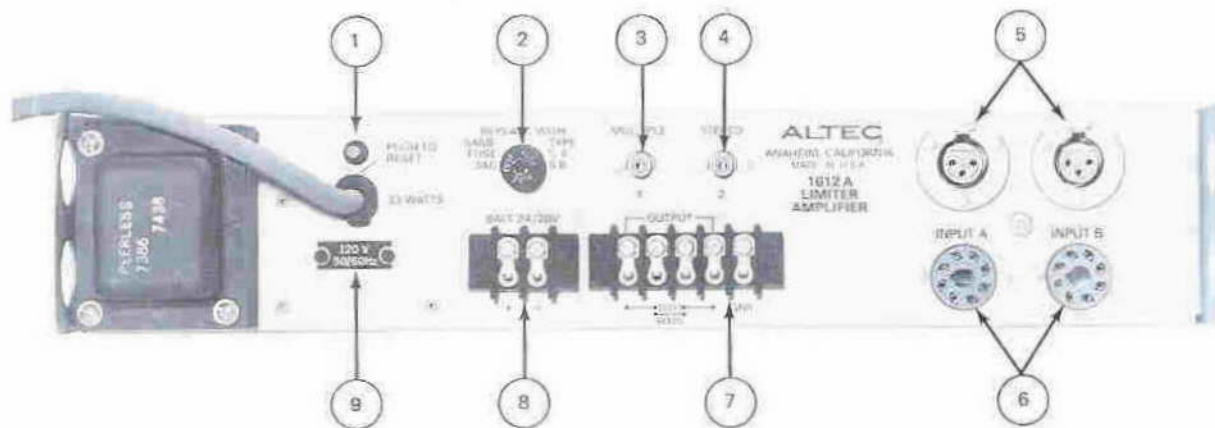


OPERATING INSTRUCTIONS

FRONT PANEL CONTROLS



1	INPUT A LEVEL INPUT B LEVEL controls	Set output level from preamplifier or line transformer in INPUT A or INPUT B accessory receptacles at rear panel. In line mode, used to balance gains from INPUT A and INPUT B; in limiter mode, used to set average level of compression. Continuously variable potentiometers, graduated from 0 to 10. Rotate controls clockwise to increase gain in line mode and to increase average level of compression in limiter mode.
2	VU/gain level meter	Displays output level in volume units (VU) read from upper scale (reference 0 VU corresponds to +8 dBm) for either line or limiter mode, when METER switch is in VU OUTPUT position. Displays dB of compression, read from lower scale, for limiter mode only, when METER switch is in GAIN LEVEL position. Meter is illuminated when power is on.
3	LIMIT/LINE BALANCE control	Effective only in line mode. Inserts adjustable loss in series with OUTPUT LEVEL control to avoid shift of output level when LIMITING switch is shifted from ON to OFF position. In limiter mode, control is shorted out by LIMITING switch. Once control is set for given average dB of compression, OUTPUT LEVEL control is independent of line or limiter mode. Control rotated clockwise to correct for increased dB of compression. Maximum correction approximately 20 dB of compression.
4	OUTPUT LEVEL control	Adjusts output level of composite signal from INPUT A and INPUT B, with or without limiting, up to maximum of +27 dBm. Amount of compression independent of control setting. Continuously variable potentiometer, graduated from 0 to 10. Rotate control clockwise to increase output level.
5	POWER OFF-ON switch	Applies dc power from rectified low-voltage ac or external battery to input filter capacitor when switched to ON position. Circuit breaker in line side of power transformer. External battery circuit opened in OFF position.
6	METER GAIN LEVEL/VU OUTPUT switch	Selects meter function as VU OUTPUT (both line and limiter mode) or as GAIN LEVEL (limiter mode only). Gain level constant at 0 dB compression in line mode.
7	ATTACK-RELEASE SLOW-FAST switch	Selects fast or slow attack/release times. FAST position provides first quarter-cycle attack (typically 10 microseconds), typically 0.8-second release. This setting most often used for speech. SLOW position responds within two cycles (typically 33 microseconds) and allows typically 2.8-second release. This setting is more suitable for music.
8	LIMITING OFF-ON switch	Selects line or limiter amplifier mode.



1	PUSH TO RESET circuit breaker pushbutton	Resets overload protection in transformer primary. Not effective during dc operation. If circuit breaker opens repeatedly, find and correct fault.
2	Battery power fuse	Protects against excessive drain from external battery. Replace with same type 1/2-ampere slow-blow fuse.
3	MULTIPLE jack	Allows 1612A to be combined, independent of compression level or output level, with other ALTEC equipment having MULTIPLE or MASTER MULTIPLE connectors. Jack is prior to MOS-FET gain control.
4	STEREO jack	Connects to similar jack of second 1612A for desired gain control interaction in stereo installation.
5	Input cable connectors	Accept XLR-3 type connectors from 150-ohm microphone, magnetic phono, or high-level line sources. Pin 1 ground, pin 2 low, pin 3 high.
6	INPUT A/INPUT B receptacles	Accept 150-ohm microphone preamplifier module 1588C, phone preamplifier module 1579C, line-bridging transformer 15095A, or line matching transformer 15356A. Direct connection via pin 1 high and pin 6 low.
7	OUTPUT terminal board	Connects 1612A to 150-ohm load (short pin 2 to pin 3, short pin 4 to pin 5) or 600-ohm load (short pin 3 to pin 4). Connect optional ground (short pin 1 to pin 2). Output pin 2 low and pin 4 high.
8	BATT 24/28V terminal board	For auxiliary operation or standby switchover to external 24/28V dc supply. Chassis negative ground, positive input switched and fused.
9	Voltage rating plate	Specifies factory connection of primary winding for indicated option: 120V ac, 50/60 Hz; or 240V ac, 50/60 Hz. Plate reversible in case of field modification.

PARTS LIST
MAIN CHASSIS

Reference Designator	Ordering Number	Name and Description
A1	27-01-042980-05	PCB assembly, limiter amplifier
A2	27-01-044197-01	PCB assembly, input power
C1, 2	15-01-108236-01	Cap., 100 μF, 35V
C3	15-01-107430-01	Cap., 4000 μF, 35V
C4, 5	15-02-121767-01	Cap., 0.0047 μF ± 20%, 1400V
CB1	51-03-119107-01	Circuit breaker, 0.49A hold, 0.86A trip
CR1	48-02-042787-01	Rectifier, 1N4004 (1A-400V PIV)
CR2	48-02-108577-01	Bridge, 1.5A, 100V
DS1A, DS1B	39-03-119072-02	Meter illumination kit, bulbs and sockets
F1	51-04-109448-01	Fuse, 05A, 3AG, slo-blo

Reference Designator	Ordering Number	Name and Description
F2	51-04-119088-01	Fuse, 1A, 3AG, pigtail
L1, 2	56-01-044110-01	Choke, ferrite bead (Stackpole 57-0602)
L3 thru L13	56-01-043100-01	Choke, ferrite bead (Stackpole 57-00531)
M1	29-01-119106-02	Meter, VU/compression
R1, 2, 4	47-06-013600-03	Pot., audio taper, 750Ω ± 20%
R3	47-06-121051-01	Pot., special taper, 5KΩ
R5	47-01-102913-01	Res., 150Ω ± 10%, 2W
R6	47-01-102163-01	Res., 1KΩ ± 10%, 1/4W
S1, 2, 3, 4	51-02-120154-01	Switch, rocker, DPDT
T1	56-08-007386-05	Transformer, power (Peerless)

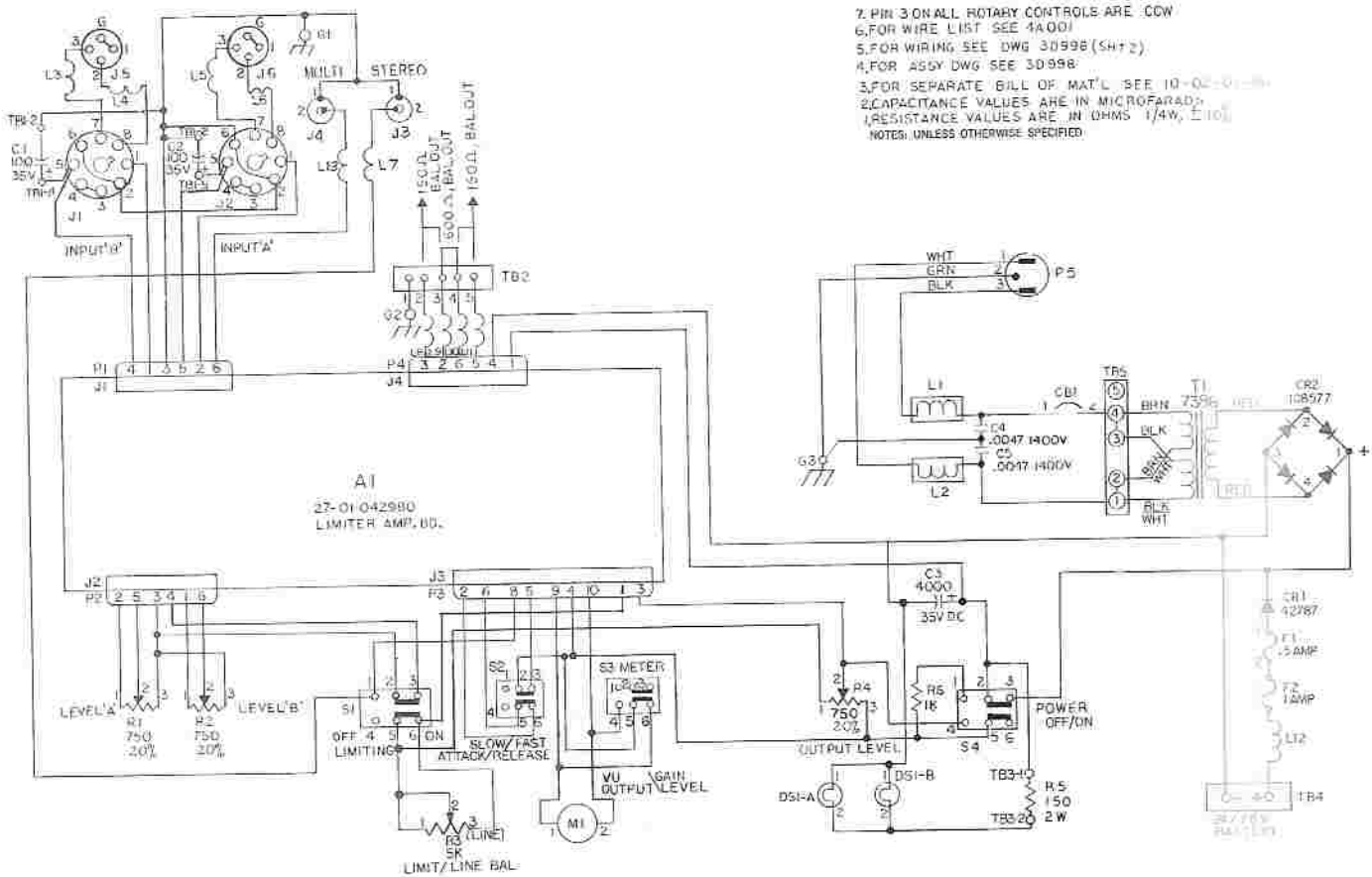


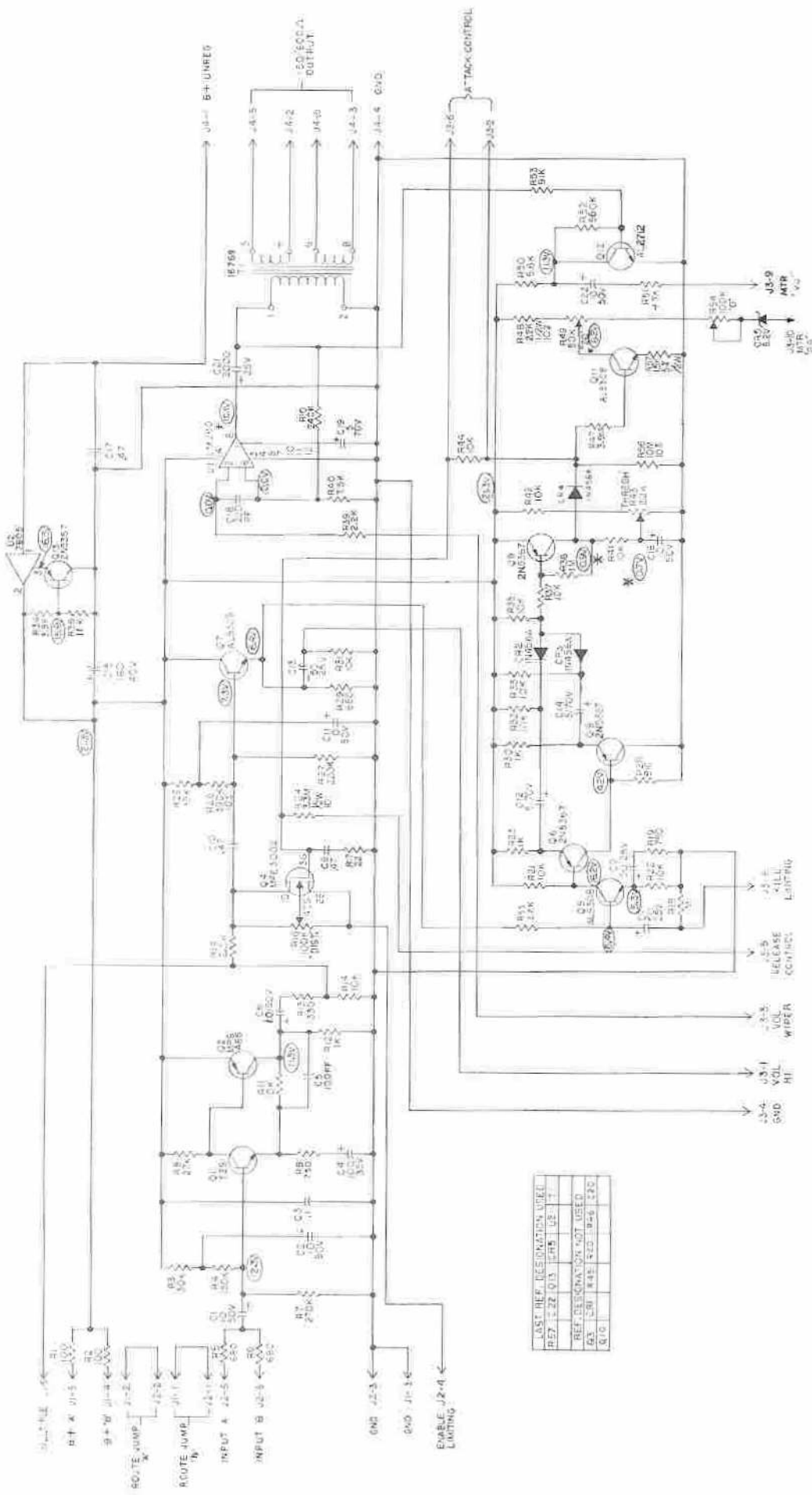
Figure 1. Schematic (3C535-10), Main Frame

PARTS LIST (continued)

LIMITER AMPLIFIER PCB ASSEMBLY A1 (27-01-042980-01)

Reference Designator	Ordering Number	Name and Description
C1, 2, 6, 11, 16, 22	15-01-107452-01	Cap., 10 μ F, 50V
C3	15-06-100311-01	Cap., 0.1 μ F \pm 20%, 250V
C4	15-01-108236-01	Cap., 100 μ F, 35V
C5	15-02-100024-02	Cap., 100 pF \pm 10%, 500V
C7, 9, 13	15-01-100236-01	Cap., 50 μ F, 25V
C8, 10, 17	15-06-108173-01	Cap., 0.47 μ F \pm 20%, 100V
C12, 14, 19	15-01-110019-01	Cap., 5 μ F, 70V
C15	15-01-112803-01	Cap., 160 μ F, 40V
C18	15-02-107470-01	Cap., 220 pF \pm 10%, 100V
C21	15-01-100290-01	Cap., 2000 μ F, 25V
CR2, 3, 4	48-01-107017-01	Diode, 1N456A (0.1A-25V PIV)
CR5	48-01-100850-02	Diode, Zener, LMZX6.2A (6.2V 5%)
R1, 2	47-01-102054-01	Res., 100 Ω \pm 5%, 1/4 W
R3	47-01-102113-01	Res., 30K Ω \pm 5%, 1/4 W
R4	47-01-102131-01	Res., 150K Ω \pm 5%, 1/4 W
R5, 6, 29	47-01-102070-01	Res., 580 Ω \pm 5%, 1/4 W
R7	47-01-100472-01	Res., 270K Ω \pm 5%, 1/4 W
R8	47-01-102112-01	Res., 27K Ω \pm 5%, 1/4 W
R9, 19	47-01-102075-01	Res., 750 Ω \pm 5%, 1/4 W
R10	47-01-108441-01	Res., 240K Ω \pm 5%, 1/4 W
R11, 14, 21, 22, 31, 32, 33, 35, 37, 41, 42, 44	47-01-102102-01	Res., 10K Ω \pm 5%, 1/4 W
R12, 23, 30	47-01-102078-01	Res., 1K Ω \pm 5%, 1/4 W
R13	47-01-102066-01	Res., 330 Ω \pm 5%, 1/4 W
R15, 39, 55	47-01-102086-01	Res., 2.2K Ω \pm 5%, 1/4 W
R16, 54	47-06-119237-01	Pot., PC trimmer, 100K Ω \pm 30%
R17	47-01-102038-01	Res., 22 Ω \pm 5%, 1/4 W
R18, 38	47-01-108491-01	Res., 1M Ω \pm 5%, 1/4 W

Reference Designator	Ordering Number	Name and Description
R24	47-01-100627-01	Res., 3.3K Ω \pm 10%, 1/2 W
R25	47-01-102116-01	Res., 39K Ω \pm 5%, 1/4 W
R26	47-01-102886-01	Res., 390K Ω \pm 10%, 1/4 W
R27	47-01-107043-01	Res., 220K Ω \pm 5%, 1/4 W
R28	47-01-102077-01	Res., 910 Ω \pm 5%, 1/4 W
R34	47-01-102092-01	Res., 3.9K Ω \pm 5%, 1/4 W
R36	47-01-102103-01	Res., 11K Ω \pm 5%, 1/4 W
R40	47-01-102099-01	Res., 7.5K Ω \pm 5%, 1/4 W
R43	47-05-108937-01	Pot., PC trimmer, 2.2K Ω \pm 20%
R47	47-01-108931-01	Res., 3.9M Ω \pm 10%, 1/4 W
R48	47-01-102359-01	Res., 2.2K Ω \pm 10%, 1/2 W
R49	47-05-108935-01	Pot., PC trimmer, 50K Ω \pm 20%
R50	47-01-102096-01	Res., 5.6K Ω \pm 5%, 1/4 W
R51	47-01-102094-01	Res., 4.7K Ω \pm 5%, 1/4 W
R52	47-01-103587-01	Res., 560K Ω \pm 5%, 1/4 W
R53	47-01-102126-01	Res., 91K Ω \pm 5%, 1/4 W
R56	47-01-107373-01	Res., 10M Ω \pm 10%, 1/4 W
R57	47-01-102268-01	Res., 1.5K Ω \pm 5%, 1/2 W
Q1	48-03-118651-01	Transistor, NPN, Sprague TZ81
Q2	48-03-118651-01	Transistor, PNP, Darlington, MPS-A66
Q4	48-03-108573-01	Transistor, N-channel, MOS-IGFET, MFE 3002
Q5, 7, 11	48-03-119140-02	Transistor, NPN, Darlington, 2N5308 (selected)
Q6, 8, 9, 13	48-03-108557-03	Transistor, PNP, 2N5367 (selected)
Q12	48-03-101098-03	Transistor, NPN, 2N2712 (selected)
T1	56-07-016769-01	Transformer, output (Peerless)
U1	17-01-119185-04	Int. Ckt., power amplifier
U2	17-01-119087-01	Int. ckt., Fairchild VA7805



VOLTAGES SHOWN ARE D.C.V. ($\pm 10\%$) REFERRED TO GROUND, NO SIGNAL APPLIED, MEASURED WITH VTVM.
 * DENOTES "TYPICAL", AND VARIES WITH TRIM CONTROL SETTING.
 CAPACITANCE VALUES ARE IN OHMS $\frac{1}{4}W$, 5%.
 NOTES: UNLESS OTHERWISE SPECIFIED.

Figure 2. Schematic (3D999-6), Limiter Amplifier Board