

**PLUG-N-PLAY 1000
1000 WATT DIGITAL
FM TRANSMITTER**

April, 2002

IM No. 597-9972

OPERATION/FEATURE PROGRAMMING.

The PNP 1000 allows the user to select many types of different operating parameters and features. Many of the operating parameters and features are programmed on the DSP and front-panel interface circuit boards. Refer to the following text to program the transmitter for the desired operating characteristics.

OPERATING PARAMETERS/FEATURES/INDICATORS – DSP CIRCUIT BOARD.

Many of the operating parameters and features are programmed on the DSP circuit board. Refer to the following text to program the transmitter for the desired operating characteristics. Refer to Figure 6.

AUDIO INPUT SELECT HEADER –

Header J13 controls the selection of the audio input signal. The unit can be configured for: 1) an analog only input, 2) a digital only input, or 3) auto mode. The auto mode automatically switches between the analog and digital inputs. The unit is shipped from the factory configured for auto mode. Program J13 for the desired mode of operation as follows: 1–2 Analog, 2–3 Auto, 5–6 Digital.

DIGITAL INPUT STATUS –

Indicator D1 presents the status of the digital input. The indicator will illuminate when the digital input is missing.

ANALOG INPUT –

Header J8 controls the right channel audio impedance. Headers J24/J25 program the right channel audio input level. Header J10 controls the left channel audio impedance. Headers J31/J32 program the left channel audio input level. Refer to AUDIO INPUT CONNECTIONS/PROGRAMMING and the ANALOG INPUT procedures for information associated with the analog input.

POWER SUPPLY INDICATORS –

The DSP circuit board is equipped several power supply status indicators. Indicator D15 illuminates when the –10V dc supply is operational. Indicator D5 illuminates when the +1.8V dc supply is operational. Indicator D7 illuminates when the +2.5V dc supply is operational. Indicator D4 illuminates when the +3.3V dc supply is operational. Indicator D11 illuminates when the +5V dc supply is operational. Indicator D12 illuminates when the +12V dc supply is operational.

OPERATING PARAMETERS/FEATURES – FRONT PANEL INTERFACE CIRCUIT BOARD.

Some of the operating parameters and features are programmed on the front-panel interface circuit board. Refer to the following text and Figure 4 to program the transmitter for the desired operating characteristics.

SCA OPERATION –

SCA operation is controlled by SW2 on the controller interface circuit board. The SCA input can be configured for ON/OFF operation and can be set for 5 kHz or 7.5 kHz deviation. Position 6 on SW2 controls the ON/OFF operation and position 5 controls the deviation setting.

FREQUENCY PROGRAMMING –

The PNP 1000 carrier frequency is programmed by SW1 and SW2 on the controller interface circuit board. Refer to FREQUENCY PROGRAMMING for information associated with programming the transmitter carrier frequency. See Table 2.

PREEMPHASIS –

The transmitter can be configured for flat, 50 uS preemphasis, or 75 uS preemphasis via SW2 on the controller interface circuit board. Position 8 on SW2 turns pre-emphasis ON/OFF and position 7 sets pre-emphasis at 50 uS or 75 uS. The unit is programmed from the factory for 75 uS preemphasis. SW2 Position 7 OFF = 75uS, ON=50uS. SW2 position 8 ON = Pre-emphasis OFF, OFF = Pre-emphasis ON. Refer to Figure 4.

OPERATING PARAMETERS/FEATURES – FRONT–PANEL CIRCUIT BOARD.

Some of the operating parameters and features are programmed on the front–panel circuit board . Refer to the following text and Figure 2 to program the transmitter for the desired operating characteristics.

AC POWER ON/OFF BREAKER –

Provides primary ac power control for the transmitter.

MENU UP/DOWN CONTROLS –

Steps through the following readings for the PNP 1000 transmitter. 1) Forward Power. 2) Reflected Power. 3) PA Voltage. 4) Total PA Current. 5) PA Currents 1–4. 6) PA Heatsink Temperature. 7) Exciter Forward Power. 8) Exciter Reflected Power. 9) Exciter Current. 10) Exciter Heatsink Temperatures.

POWER RAISE/LOWER CONTROLS –

Adjusts the transmitter RF output power from 250 watts to 1050 watts.

ON SWITCH/INDICATOR –

SWITCH – Enables the transmitter RF output by unmuting the exciter and final power amplifier module.

INDICATOR – Illuminates to indicate the transmitter RF output is enabled.

OFF SWITCH/INDICATOR –

SWITCH – Disables the transmitter RF output by muting the exciter and final power amplifier module.

INDICATOR – Illuminates to indicate the transmitter RF output is disabled.

POWER SUPPLY VOLTAGE INDICATORS –

Illuminates to indicate the +48, +12 AND –12 volt dc from the power supply is operational.

AC LINE FAULT INDICATOR –

The AC line fault indicator illuminates when the AC voltage is outside the operating range required for the power supply. This range is 95–132 or 190–264 depending on the AC input configuration.

POWER SUPPLY FAULT INDICATOR –

The power supply fault indicator will illuminate when the power supply registers a fault condition. The power supply fault conditions are as follows. 1) 48V is out of regulation (+8V or –1V). 2) +/-12V supply is out of regulation (+/-0.5Volts). 3) A surge current from the +48Volt supply occurs. 4) Heatsink temperature on the power supply exceeds 70C.

EXCITER AMPLIFIER FAULT INDICATOR –

The exciter fault indicator illuminates when one of the following conditions exists. 1) Exciter heatsink temperature is above 77C. 2) Exciter current is above 4.0 amps. 3) Exciter power falls below 40 watts. 4) Exciter reflected power is above 20 watts when the transmitter total power is above 200 watts. 5) Exciter reflected power is above 25 watts when the transmitter total power is below 200 watts. The transmitter will shut down if any of the above conditions occur.

POWER AMPLIFIER FAULT INDICATOR –

The PA fault indicator illuminates when one of the following conditions exists. 1) PA heatsink temperature around any device is above 93C. 2) The bias voltage is maximized but desired output power is not achieved. 3) Any PA device current is above 11.5 amps. 4) The total PA current is above 42 amps. The transmitter will maximize power output just below the thresholds defined if any of the above conditions occur.

HIGH VSWR FAULT INDICATOR –

The high VSWR fault indicator illuminates when the reflected power back into the PNP 1000 RF output exceeds 40 watts. The transmitter will maximize power output just below the 40W threshold when high reflected power is detected.

INPUT AUDIO OVERLOAD INDICATOR –

Illuminates to indicate the audio input level is approximately 4 dB above nominal. This level may cause clipping at the digital-to-analog converter and result in high audio distortion.

AUDIO COMPRESSION INDICATOR

Illuminates to indicate the automatic-gain-control circuit on the DSP circuit board is engaged. This will occur when the audio input level is approximately 2 dB above nominal. The circuit is designed to compress higher than nominal levels to prevent clipping at the digital-to-analog converter.

FAILSAFE CLOSED INDICATOR

Illuminates to indicate the failsafe is properly connected on the remote D-sub connector J1-17. If the remote control common is configured for positive logic, J1-17 requires a +5 to +12 volt input. If negative logic is chosen then J1-17 requires a ground connection.

AUDIO INPUT CONNECTIONS/PROGRAMMING.

The PNP 1000 is equipped with several audio inputs: 1) analog left channel and right channel, 2) AES/EBU wire, 3) AES/EBU optical, 4) S/PDIF, and 5) composite. The following text along with Figure 3 presents the procedure to connect and program the unit for the desired audio input.

ANALOG INPUT.

CONNECTIONS –

Analog left and right channel audio is interfaced to the PNP 1000 at connector J2. Connect the analog left and right channel audio to J2 as follows:

<i>AUDIO SIGNAL</i>	<i>J2</i>
Left Channel +	J2-9
Left Channel –	J2-10
Left Channel Shield	J2-11
Right Channel +	J2-1
Right Channel –	J2-2
Right Channel Shield	J2-3

IMPEDANCE PROGRAMMING –

The analog left and right channel audio impedance is controlled by headers J8 and J10 on the DSP circuit board. The unit can be programmed for a 600 Ohm or 10 k Ohm audio impedance. The unit is shipped from the factory configured for a 600 Ohm audio impedance. Program the unit for the desired audio impedance. J8 and J10 jumpers ON = 600 Ohm, OFF = 10k Ohm. Refer to Figure 6.

LEVEL PROGRAMMING –

The analog left and right channel audio level is controlled by headers J24/J25/J31/J32 on the DSP circuit board. The unit can be programmed for a -10 dBm, 0 dBm, +4 dBm, or a +8 dBm audio input level. The unit is shipped from the factory configured for a 0 dBm Ohm audio input level. Program the unit for the desired audio level. J24/J25/J31/J32 jumpers at position 1 = -10dBm, position 2 = 0dBm, position 3 = 4dBm, position 4 = 8dBm. Refer to Figure 6.

AES/EBU WIRE.

An AES/EBU wire input is interfaced to the PNP 1000 at remote interface connector J2. Connect the AES/EBU signal to J2-7 and J2-8. The AES/EBU signal is polarity independent. Therefore, the signal cables can be connected to J2-7 and J2-8 in any combination. Refer to Figure 3.

AES/EBU OPTICAL.

An AES/EBU optical input is interfaced to the PNP 1000 at DIGITAL IN OPTICAL connector U1. Connect the AES/EBU signal to DIGITAL IN OPTICAL connector U1. Refer to Figure 3.

S/PDIF.

An S/PDIF input is interfaced to the PNP 1000 at DIGITAL IN S/PDIF connector J2. A BNC-to-RCA phono adapter is provided in the accessory kit. Install the adapter and connect the S/PDIF cable to DIGITAL IN S/PDIF connector J2. Refer to Figure 3.

COMPOSITE.

CONNECTIONS –

A composite input is interfaced to the PNP 1000 at COMPOSITE IN connector J4. Connect the composite signal to COMPOSITE IN connector J4. Refer to Figure 3.

IMPEDANCE PROGRAMMING –

The composite input can be programmed for a 50 Ohm or 10 k Ohm impedance. The unit is shipped from the factory configured for a 50 Ohm input impedance. Program header J6 as desired. Program header J6 to position 1-2 for 50 Ohms and positions 2-3 for 10k Ohms. Refer to Figure 7.

AUTOMATIC SWITCHING BETWEEN COMPOSITE AND ANALOG LEFT/RIGHT CHANNEL PROGRAMMING –

The PNP 1000 is designed to automatically detect and select the composite input when a pilot is present. If no pilot is detected, the analog left/right channel input will be selected. However, the unit can be programmed to select: 1) only the composite input (J5 on positions 2-3) or 2) only the analog left/right channel input (J5 on removed) or 3) autodetect (J5 on positions 1-2). The unit is shipped from the factory for automatic switching between the composite input and the analog left/right channel input. If the unit is to be configured for composite only or left/right channel only operation, program header J5 as desired. Refer to Figure 7.

SCA.

The transmitter is equipped with a built-in 67 kHz SCA encoder. The encoder is controlled by SW2 on the controller interface board and J23 on the DSP board.

CONNECTIONS –

SCA audio is interfaced to the PNP 1000 at connector J2. Connect: 1) SCA + to J2-12, 2) SCA – to J2-13, and 3) SCA shield to J2-14.

IMPEDANCE PROGRAMMING –

The SCA audio impedance is controlled by header J23 on the DSP circuit board. The unit can be programmed for a 600 Ohm (J23 installed) or 10 k Ohm audio impedance (J23 removed). The unit is shipped from the factory configured for a 600 Ohm audio impedance. Program the unit for the desired audio impedance. Refer to Figure 6.

ON/OFF CONTROL –

SCA ON/OFF operation is controlled by SW2 position 6 on the controller interface board. The unit is shipped from the factory with the SCA operation disabled. Set SW2 position 6 to OFF to enable SCA operation or ON to disable the SCA operation.

5 kHz/7.5 kHz DEVIATION –

5 kHz or 7.5 kHz deviation is controlled by SW2 position 5 on the controller board. The unit is shipped from the factory with the unit configured for 7.5 kHz deviation. Set SW2 position 5 to ON for 7.5kHz deviation or OFF for 5kHz deviation.

REMOTE CONTROL AND INDICATIONS.

The PNP 1000 is designed for remote control/indication operation. The transmitter will interface with almost any remote control unit or panel. The following text along with Figure 3 presents a description of the remote control and indicator functions.

TRANSMITTER ON COMMAND –

The transmitter on command is located at J1-1. The command allows the transmitter to be enabled from a remote location. The command can be activated using positive or negative control. Positive control requires: 1) the use of a momentary or sustained contact to a +5 volt to +12 volt dc signal to enable transmitter operation. Negative control requires: 1) the use of a momentary or sustained contact to ground to enable transmitter operation. The positive or negative control is established with the R. C. IN Common pin located at J1-15. If this pin is grounded the logic is positive if it is tied to +5 volt to +12 volt dc signal the logic is negative.

TRANSMITTER OFF COMMAND –

The transmitter off command is located at J1-2. The command allows the transmitter to be disabled from a remote location. The command can be activated using positive or negative control. Positive control requires: 1) the use of a momentary or sustained contact to a +5 volt to +12 volt dc signal to disable transmitter operation. Negative control requires: 1) the use of a momentary or sustained contact to ground to disable transmitter operation. The positive or negative control is established with the R. C. IN Common pin located at J1-15. If this pin is grounded the logic is positive if it is tied to +5 volt to +12 volt dc signal the logic is negative.

TRANSMITTER RAISE COMMAND –

The transmitter raise command is located at J1-3. The command allows the forward power to be raised from a remote location. The command can be activated using positive or negative control. Positive control requires: 1) the use of a momentary or sustained contact to a +5 volt to +12 volt dc signal to disable transmitter operation. Negative control requires: 1) the use of a momentary or sustained contact to ground to disable transmitter operation. The positive or negative control is established with the R. C. IN Common pin located at J1-15. If this pin is grounded the logic is positive if it is tied to +5 volt to +12 volt dc signal the logic is negative.

TRANSMITTER LOWER COMMAND –

The transmitter lower command is located at J1-4. The command allows the forward power to be lowered from a remote location. The command can be activated using positive or negative control. Positive control requires: 1) the use of a momentary or sustained contact to a +5 volt to +12 volt dc signal to disable transmitter operation. Negative control requires: 1) the use of a momentary or sustained contact to ground to disable transmitter operation. The positive or negative control is established with the R. C. IN Common pin located at J1-15. If this pin is grounded the logic is positive if it is tied to +5 volt to +12 volt dc signal the logic is negative.

TRANSMITTER FAULT RESET COMMAND –

The transmitter fault reset command is located at J1-5. The command allows a fault condition to be reset from a remote location. If the fault has went away the fault will be cleared, if teh fault is still valid the fault will remain. The command can be activated using positive or negative control. Positive control requires: 1) the use of a momentary or sustained contact to a +5 volt to +12 volt dc signal to disable transmitter operation. Negative control requires: 1) the use of a momentary or sustained contact to ground to disable transmitter operation. The positive or negative control is established with the R. C. IN Common pin located at J1-15. If this pin is grounded the logic is positive if it is tied to +5 volt to +12 volt dc signal the logic is negative.

TRANSMITTER ON INDICATOR –

The transmitter on indicator presents the transmitter on status. The indicator will go LOW (0 volts dc) when the transmitter is enabled. The transmitter on indicator is located at J1-6. Current limiting resistors required.

TRANSMITTER OFF INDICATOR –

The transmitter off indicator presents the transmitter off status. The indicator will go LOW (0 volts dc) when the transmitter is disabled. The transmitter off indicator is located at J1–7.

EXCITER AMPLIFIER FAULT INDICATOR –

The exciter fault indicator is located at J1–8 and is active low. This fault is active when one of the following conditions exists. 1) Exciter heatsink temperature is above 77C. 2) Exciter current is above 4.0 amps. 3) Exciter power falls below 40 watts. 4) Exciter reflected power is above 20 watts when the transmitter total power is above 200 watts. 5) Exciter reflected power is above 25 watts when the transmitter total power is below 200 watts. The transmitter will shut down if any of the above conditions occur.

PA FAULT INDICATOR –

The PA fault indicator is located at J1–9 and is active low. This fault is active when one of the following conditions exists. 1) PA heatsink temperature around any device is above 93C. 2) The bias voltage is maximized but desired output power is not achieved. 3) Any PA device current is above 11.5 amps. 4) The total PA current is above 42 amps. The transmitter will maximize power output just below the thresholds defined if any of the above conditions occur.

HIGH VSWR FAULT INDICATOR –

The high VSWR fault indicator is located at J1–10 and is active low. This fault is active when the reflected power back into the PNP 1000 RF output exceeds 40 watts. The transmitter will maximize power output just below the 40W threshold when high reflected power is detected.

FORWARD POWER METER OUTPUT –

The remote forward power meter output is located at J1–11. The forward power meter will output +2 volts dc when the transmitter output is 1000 watts. Circuit ground is recommended for remote metering connections.

REFLECTED POWER METER OUTPUT –

The remote reflected power meter output is located at J1–12. The reflected power meter will output +2 volts dc when the reflected power is 40 watts. Circuit ground is recommended for remote metering connections.

TOTAL CURRENT METER OUTPUT –

The remote total current meter output is located at J1–13. The total current meter will output +2 volts dc when the total current is 35 amps. Circuit ground is recommended for remote metering connections.

+12V DC –

+12 volts dc is located at J1–14. The supply is used for remote control and indicator connections.

R.C. IN COMMON –

The R.C. in common input is located at J1–15. The remote control common input determines the polarity of remote control operation. For negative control operation, connect a jumper between J1–14 and J1–15. For positive control operation, connect a jumper between J1–16 and J1–15.

CIRCUIT GROUND –

Circuit ground is located at J1–16. The ground is recommended for remote control, indicator, and metering connections.



NOTE

NOTE

ENSURE A FAILSAFE JUMPER OR CONTROL DEVICE IS CONNECTED TO FAILSAFE INPUT J1–17. THE UNIT IS EQUIPPED WITH A PRE-WIRED INTERFACE CONNECTOR TO PERMIT IMMEDIATE ON-AIR OPERATION.

FAILSAFE INPUT –

The transmitter failsafe input is located at J1-17. The failsafe input is used to mute and unmute the transmitter RF output. This input is designed for the connection of a control device such as a remote control unit failsafe connection. To permit immediate on-air operation, the unit is equipped with a pre-wired 25-Pin D-Type interface connector. The connector is located in the accessory kit and contains a failsafe input jumper. To permit immediate operation, install the connector on J1.

POWER SUPPLY FAULT INDICATOR –

The power supply fault is located at J1-23 and is active low. This fault occurs when the power supply registers a fault condition. The power supply fault conditions are as follows. 1) 48V is out of regulation (+8V or -1V). 2) +/-12V supply is out of regulation (+/-0.5Volts). 3) A surge current from the +48Volt supply occurs. 4) Heat-sink temperature on the power supply exceeds 70C.

PAV SAMPLE –

A PAV (power amplifier voltage) sample is provided at J1-24. The sample will output 2 volts for a PA voltage of 50 volts.

ANALOG RIGHT CHANNEL INPUT –

The analog right channel input + is located at J2-1. The analog right channel input – is located at J2-2. The analog right channel input ground is located at J2-3. The input impedance can be configured for 600 Ohms or 10 k Ohms. The input level can be configured for -10 dBm, 0 dBm, +4 dBm, or +8 dBm.

ANALOG LEFT CHANNEL INPUT –

The analog left channel input + is located at J2-9. The analog left channel input – is located at J2-10. The analog left channel input ground is located at J2-11. The input impedance can be configured for 600 Ohms or 10 k Ohms. The input level can be configured for -10 dBm, 0 dBm, +4 dBm, or +8 dBm.

AES/EBU INPUT –

The AES/EBU input + is located at J2-8. The AES/EBU input – is located at J2-7. The AES/EBU signal is polarity independent. Therefore, the signal cables can be connected to J2-8 and J2-7 in any combination.

SCA AUDIO INPUT –

The SCA audio input + is located at J2-12. The SCA audio input – is located at J2-13. The SCA audio input ground is located at J2-14. The input impedance can be configured for 600 Ohms or 10 k Ohms.

MODULATION MONITOR CONNECTION.

The PNP 1000 is equipped with an **RF SAMPLE** receptacle. The sample port is for the connection of a modulation monitor or test equipment. The receptacle will provide 3.1V RMS at 1000 watts. Connect the desired equipment to the **RF SAMPLE** receptacle as required.

ANTENNA CONNECTION.

A Type-N RF output receptacle is provided for the connection of the antenna to the transmitter. Connect the antenna to the RF output receptacle.

GROUND CONNECTION.



WARNING

ENSURE THE TRANSMITTER AC LINE CORD IS CONNECTED TO A GROUNDED AC RECEPTACLE AND AN EARTH GROUND IS CONNECTED TO THE CHASSIS GROUND LUG.

WARNING

The transmitter must be connected to a grounded and circuit breaker/fused protected ac receptacle. Ensure the transmitter is connected to a grounded ac receptacle.

The transmitter is also equipped with a rear-panel ground lug. Refer to Figure 4 and connect an earth ground to the ground lug using a 2 inch wide (5.05 cm) copper strap or equivalent.

AC POWER.



WARNING

ENSURE THE TRANSMITTER IS CONNECTED TO AN APPROPRIATE VOLTAGE RANGE WITH A GROUNDED AC RECEPTACLE.

WARNING

The transmitter requires connection to a 95–135V or 190–264V AC 50/60 Hz power supply. The unit requires 26 amperes at 120 volts or 13 amperes at 220V.

The transmitter must be connected to a grounded and circuit breaker/fused protected ac receptacle with a time delay for turn on surge current.

RF OUTPUT LEVEL ADJUSTMENT.

The PNP 1000 transmitter RF output is adjusted for a 1000 watt output at the factory. To re-adjust the RF output, proceed as follows: Refer to Figure 2.

1. Operate the front-panel menu to read forward power by pushing the menu up or menu down buttons.
2. Turn the transmitter on by pressing the TX ON button.
3. Use the raise and lower buttons on the front panel to adjust to desired power level.

AUDIO INPUT LEVEL ADJUSTMENTS.

AUDIO INPUT LEVEL ADJUSTMENT.

The transmitter audio input level must be properly adjusted to provide the desired modulation level and prevent over-driving/clipping of the audio circuitry. It is strongly recommended a modulation monitor be used to adjust the audio level. This ensures the transmitter will provide maximum modulation without over-modulation. If a modulation monitor is not available, the level can be adjusted using the PNP 1000 front panel **COMPRESSION** indicator. However, the adjust will not ensure a 100% modulation level from the transmitter.

ANALOG INPUT – AES/EBU WIRE – AES/EBU OPTICAL – S/PDIF.

The analog input, AES/EBU wire, AES/EBU optical, and S/PDIF audio level is adjusted by using the output level control on the audio source. For the analog input, the level is coarse adjusted by the analog audio input level headers on the DSP circuit board. To fine adjust the level to obtain the desired modulation, proceed as follows:

ADJUSTMENT WITH MODULATION MONITOR –

1. Connect the modulation monitor to the **RF SAMPLE** receptacle.
2. Operate the front–panel breaker to ON.
3. Depress the front–panel ON switch/indicator to illuminate the switch/indicator.
4. Operate the audio source to output a 400 Hz tone at: 1) –2 dBfs for digital sources or 2) the selected nominal level for analog sources.
5. Adjust the audio source output level for 100% modulation on the modulation monitor.

ADJUSTMENT WITHOUT MODULATION MONITOR –



NOTE

WITHOUT A MODULATION MONITOR, THE FOLLOWING ADJUSTMENT WILL NOT ENSURE A 100% MODULATION LEVEL FROM THE TRANSMITTER.

NOTE

1. Operate the front panel breaker to ON.
2. Depress the front–panel ON switch/indicator to illuminate the switch/indicator.
3. Operate the audio source with normal program music audio such as a CD.
4. Adjust the audio source output level until the front–panel COMPRESSION indicator blinks at a rate of approximately once per second. This will provide a modulation level of less than 100%. However, the audio input will be adjusted to a level ensuring audio input overload and clipping will not occur.

COMPOSITE.

The composite input level is adjusted at the factory for 100% modulation with a 3.5 volt peak–to–peak input level. The input level is adjusted by composite input level control R11 on the rear–panel circuit board. If re–adjustment of the input level is required, proceed as follows:

ADJUSTMENT WITH MODULATION MONITOR –

1. Refer to Figure 3 and connect the modulation monitor to the **RF SAMPLE** receptacle.
2. Operate the rear–panel ON/OFF switch to ON.
3. Depress the front–panel ON switch/indicator to illuminate the switch/indicator.
4. Operate the audio source to output a 400 Hz tone at the nominal level.
5. Ensure pilot indicator DS1 is illuminated. If the indicator is not illuminated, the composite signal is not present at the transmitter.
6. Adjust the composite source output level control for 100% modulation on the modulation monitor. If the composite source does not contain an output level control, refer to Figure 6 and adjust composite input level control R11 for 100% modulation on the modulation monitor. Ensure the level does not exceed 3.5 volts peak–to–peak.

ADJUSTMENT WITHOUT MODULATION MONITOR –



NOTE

WITHOUT A MODULATION MONITOR, THE FOLLOWING ADJUSTMENT WILL NOT ENSURE A 100% MODULATION LEVEL FROM THE TRANSMITTER.

NOTE

1. Operate the front–panel breaker to ON.
2. Depress the front–panel ON switch/indicator to illuminate the switch/indicator.
3. Operate the audio source with normal program music.
4. Ensure pilot indicator DS1 is illuminated. If the indicator is not illuminated, the composite signal is not present at the transmitter.
5. Adjust the composite source output level control until the front–panel **COMPRESSION** indicator blinks at a rate of approximately once per second. This will provide a modulation level of less than 100%. However, the audio input will be adjusted to a level preventing audio input overload and clipping. Ensure the level does not exceed 3.5 volts peak–to–peak.

SCA.

The SCA input audio level is adjusted by using the output level control on the audio source. To adjust the level to obtain the desired modulation, proceed as follows:

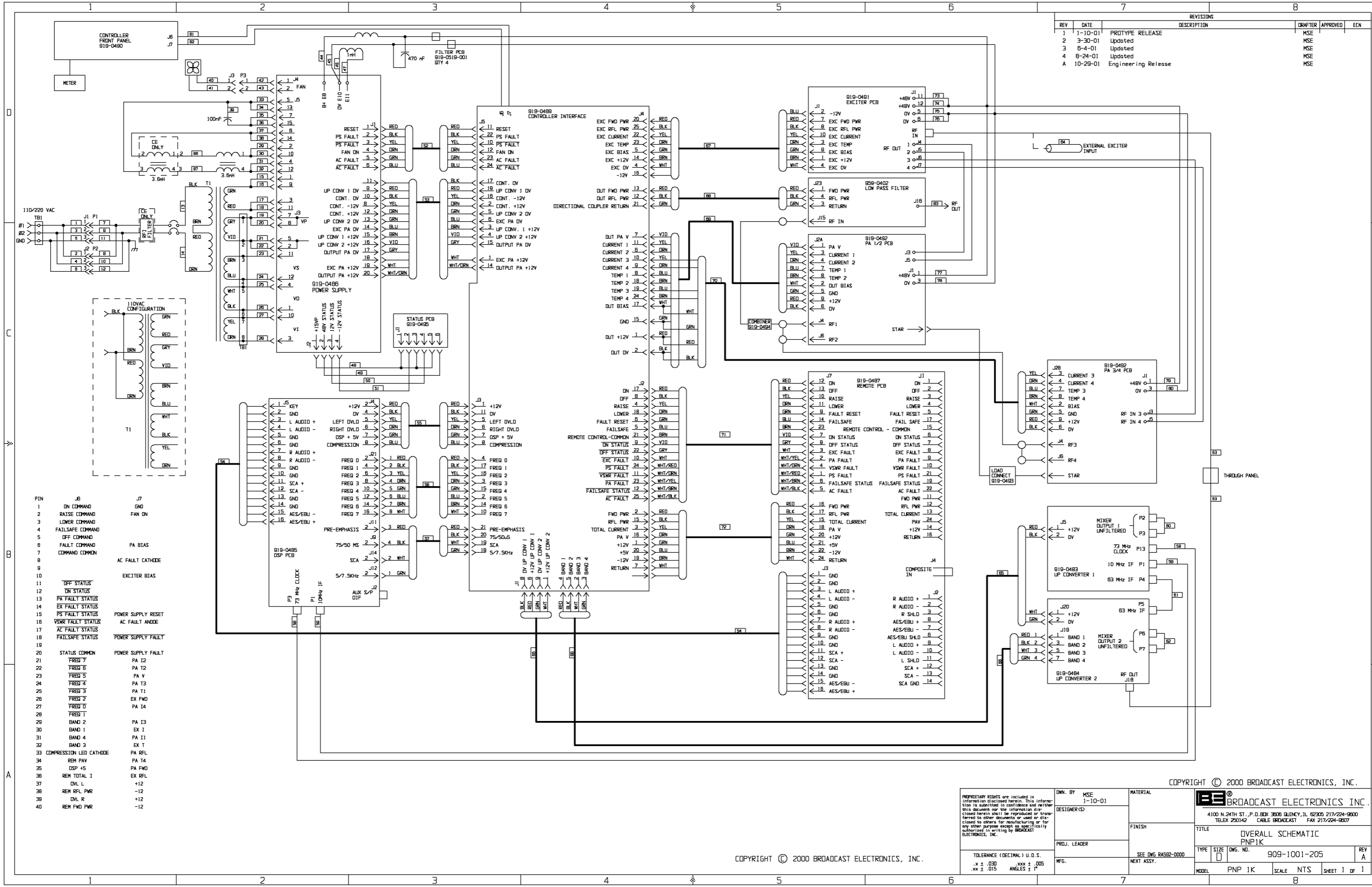
1. Connect an SCA decoder to the modulation monitor.
2. Operate the front–panel breaker to ON.
3. Depress the front–panel ON switch/indicator to illuminate the switch/indicator.
4. Operate the audio source to output a 400 Hz tone.
5. Adjust the audio source output level for approximately 15% modulation on the SCA decoder. Indicator D8 on the DSP circuit board illuminates to indicate the overload of the SCA input. If D8 illuminates decrease the audio level until D8 extinguishes.

MOUNTING.

The PNP 1000 transmitter requires 21 inches (53.3 cm) of a 19 inch (48.3 cm) rack cabinet. Do not mount the transmitter directly above or below heat generating equipment. Once a rack location is determined, mount the chassis in the rack using 4 screws.

PNP-1000 SCHEMATICS

REVISIONS			DRAFTER	APPROVED	EEN
REV	DATE	DESCRIPTION	MSE	MSE	MSE
1	1-10-01	PROTOTYPE RELEASE	MSE	MSE	MSE
2	3-30-01	Updated	MSE	MSE	MSE
3	6-4-01	Updated	MSE	MSE	MSE
4	8-24-01	Updated	MSE	MSE	MSE
A	10-29-01	Engineering Release	MSE	MSE	MSE



PIN	J6	J7
1	DN COMMAND	GND
2	RAISE COMMAND	FAN ON
3	LOWER COMMAND	
4	FAILSAFE COMMAND	
5	OFF COMMAND	PA BIAS
6	FAULT COMMAND	AC FAULT CATHODE
7	COMMAND COMMON	EXCITER BIAS
8		
9		
10		
11	OFF STATUS	
12	DN STATUS	
13	PA FAULT STATUS	
14	EX FAULT STATUS	
15	PS FAULT STATUS	POWER SUPPLY RESET
16	VSWR FAULT STATUS	AC FAULT ANODE
17	AC FAULT STATUS	POWER SUPPLY FAULT
18	FAILSAFE STATUS	
19		
20	STATUS COMMON	POWER SUPPLY FAULT
21	FREQ 7	PA I2
22	FREQ 6	PA I2
23	FREQ 5	PA V
24	FREQ 4	PA I3
25	FREQ 3	PA I1
26	FREQ 2	EX FWD
27	FREQ 1	PA I4
28	FREQ 0	
29	BAND 2	PA I3
30	BAND 1	EX I
31	BAND 4	PA I1
32	BAND 3	EX T
33	COMPRESSION LED CATHODE	PA RFL
34	REM PAV	PA T4
35	DSP +5	PA FWD
36	REM TOTAL I	EX RFL
37	DVL L	+12
38	REM RFL PWR	-12
39	DVL R	+12
40	REM FWD PWR	-12

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DWN. BY MSE
DESIGNER(S) J-10-01

PROJ. LEADER

MFG.

MATERIAL

FINISH

SEE DWG RA582-0000
NEXT ASSY.

4100 N. 24TH ST., P.O. BOX 3606 QUINCY, IL 62305 217/224-9600
TELEX 250142 CABLE BROADCAST FAX 217/224-9607

TITLE: OVERALL SCHEMATIC
PNP1K

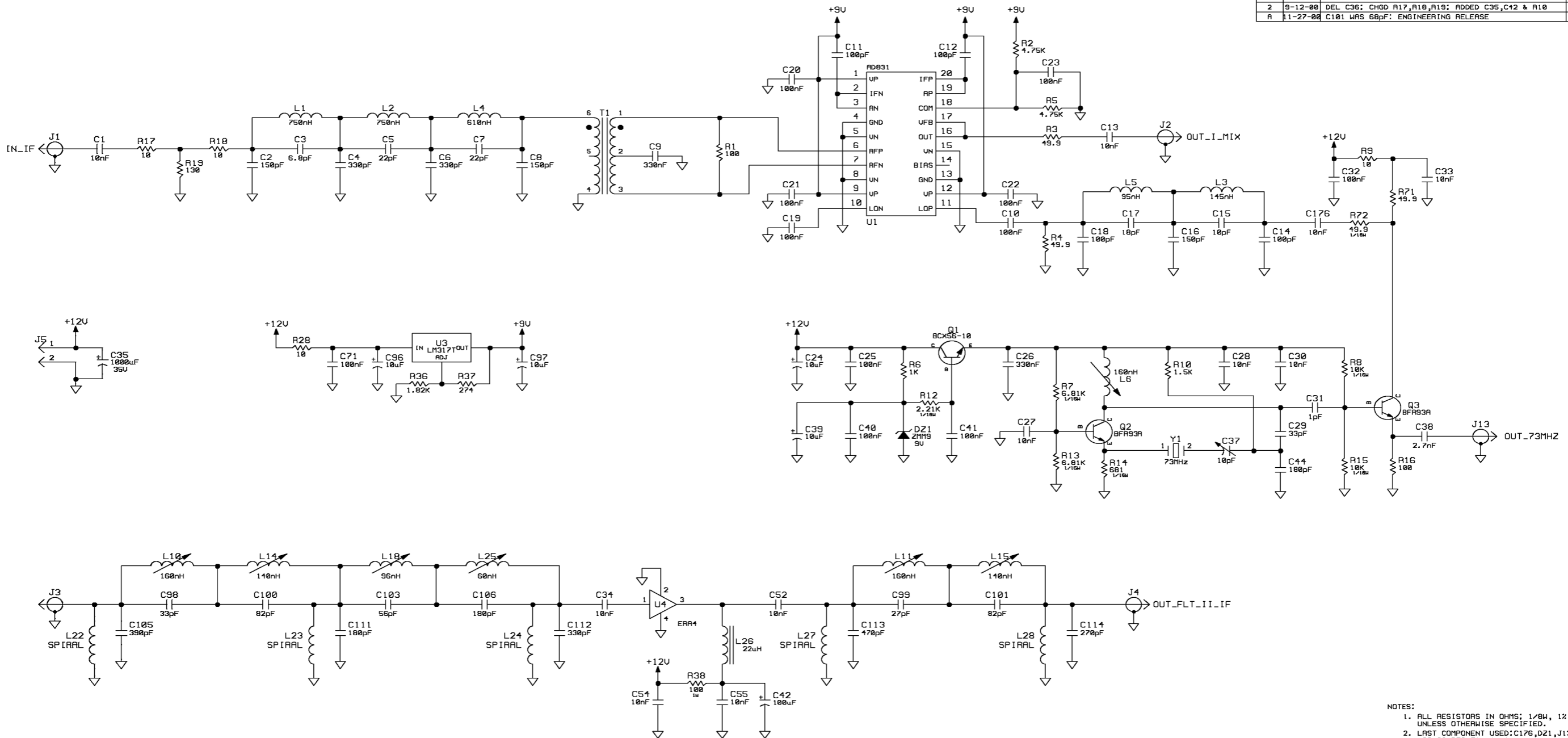
TYPE: D
SIZE: D
DWG. NO.: 909-1001-205
REV: A

MODEL: PNP 1K
SCALE: NTS
SHEET: 1 OF 1

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REVISIONS				DATE	DESCRIPTION	DRAWN	APPROVED	ECN
1	7-18-00	PROTOTYPE RELEASE.	KT					----
2	9-12-00	DEL C36; CHGD R17,R18,R19; ADDED C35,C42 & R10	KT					----
A	11-27-00	C101 WAS 68pF; ENGINEERING RELEASE	KT					----

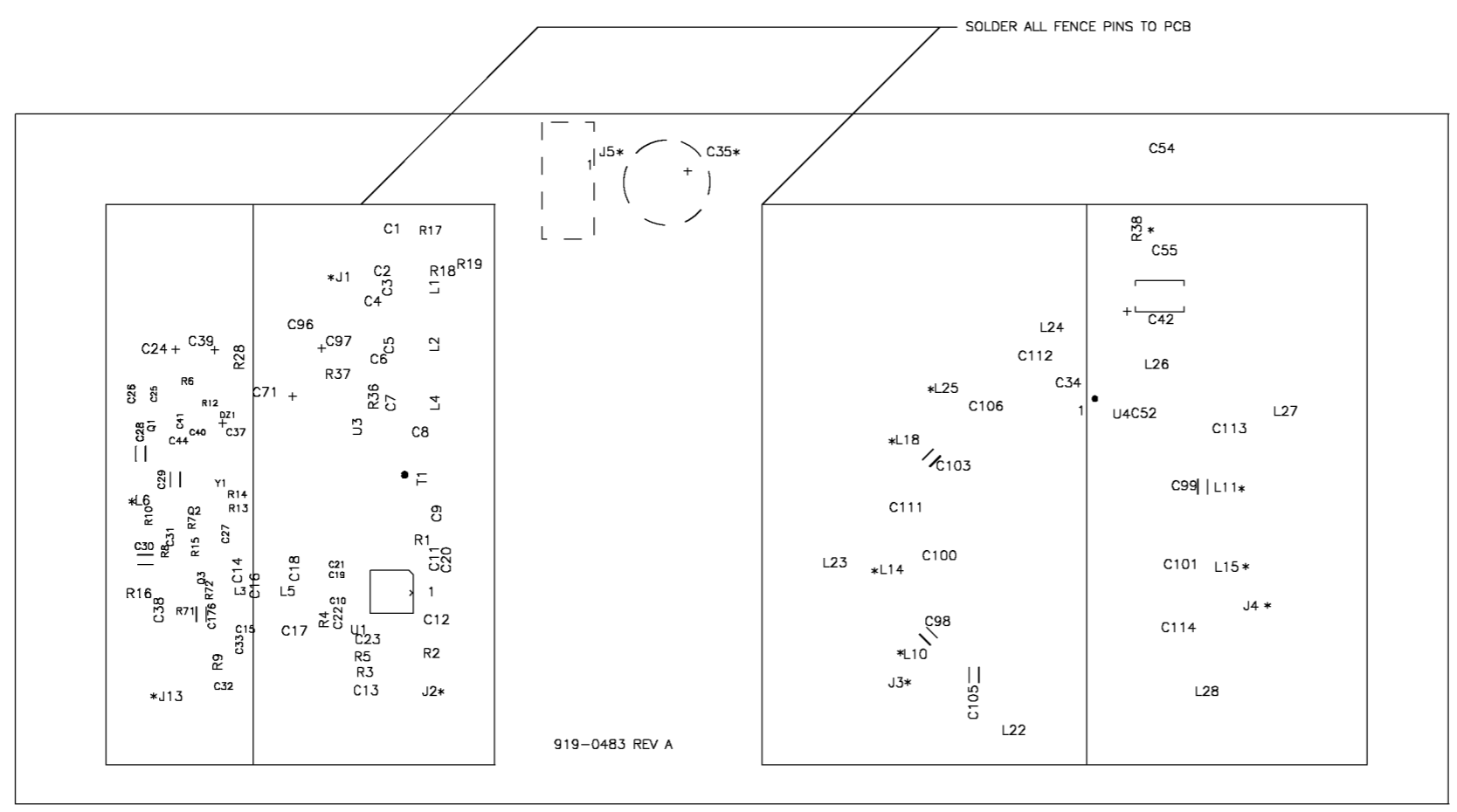


- NOTES:
1. ALL RESISTORS IN OHMS: 1/8W, 1% UNLESS OTHERWISE SPECIFIED.
 2. LAST COMPONENT USED: C176, D21, J13, L28, Q3, R72, T1, U4, Y1
 3. COMPONENTS NOT USED: C36, C43, C45-C51, C53, C56-C70, C72-C95, C102, C104, C107-C110, C115-C175, J6-J12, L7-L9, L12, L13, L16, L17, L19-L21, R11, R20-R27, R29-R35, R38-R70, U2
 4. SEE ASSEMBLY: AB919-0483

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TOLERANCE (DECIMAL) U.O.S. .x ± .030 .xxx ± .005 .xx ± .015 ANGLES ± 1°		PROJ. LEADER	NEXT ASSY.	MODEL PNP-150	SCALE NONE
COPYRIGHT © 2000 MARTI ELECTRONICS		MARTI ELECTRONICS INC. 121 MARTI DRIVE, CLEBURNE, TX 76031 817/645-9163 FAX 817/641-3869		SHEET 1 OF 1	

REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	7-11-00	PROTOTYPE RELEASE			-----
2	9-12-00	ADDED C35,C42 & R10; DEL C36; CHGD R17-R19; MODEL RELEASE	KT		-----
A	11-8-00	C101 WAS 68 pF; ENGINEERING RELEASE	KT		-----

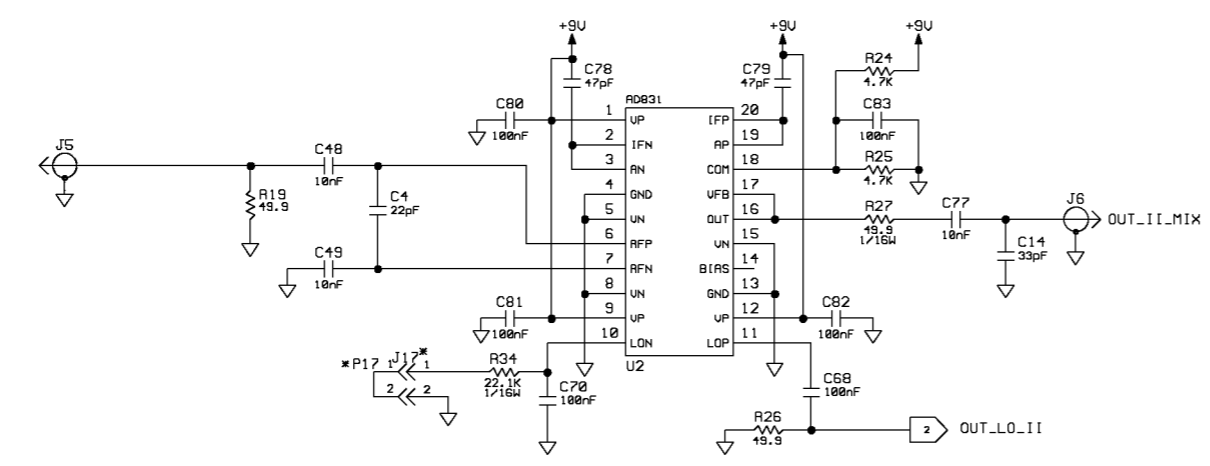
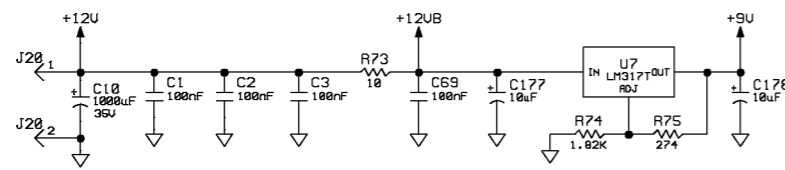
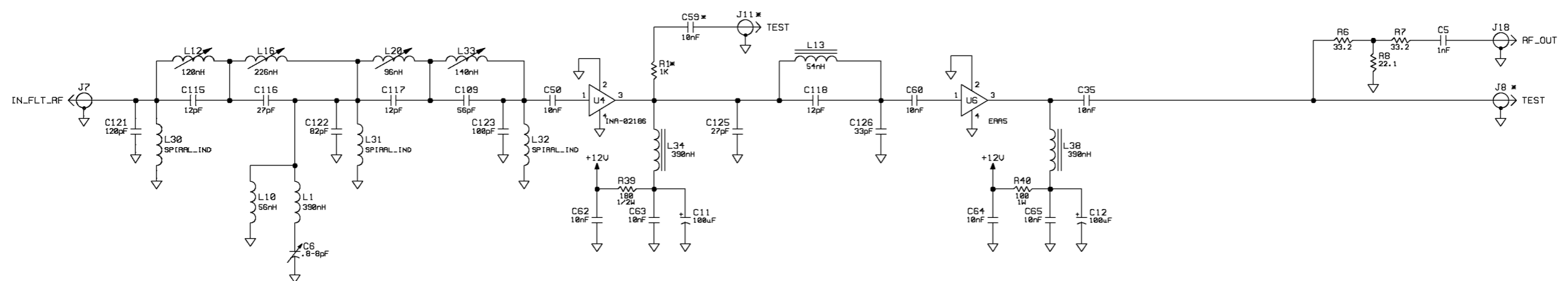


NOTES:
 1) * INDICATES PARTS STUFFED ON SOLDER SIDE OF PCB: (J1-J5,J13, L6,L10,L11,L14,L15,L18,L25,R38)

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	DESIGNER(S)	SEE BOM 919-0483			
	PROJ. LEADER	FINISH	TITLE FIRST UPCONVERTER		
	MFG.	NEXT ASSY.	TYPE	SIZE	DWG No.
TOLERANCE (DECIMAL) U.O.S. .X ± .030 .XXX ± .005 .XX ± .015 ANGLES + 1°		A	B	919-0483	A
		MODEL PNP-150		SCALE 1/1	SHEET 1 OF 1

REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	8-14-08	PROTOTYPE RELEASE.	KT	----	----
2	9-13-08	ADDED C10-C14; SEE SHEET 2; MODEL RELEASE	KT	----	----
A	11-27-08	ENGINEERING RELEASE WITH CHANGE	KT	----	----
C	5-9-01	ADDED C6, L1 & L10	KT	----	10449

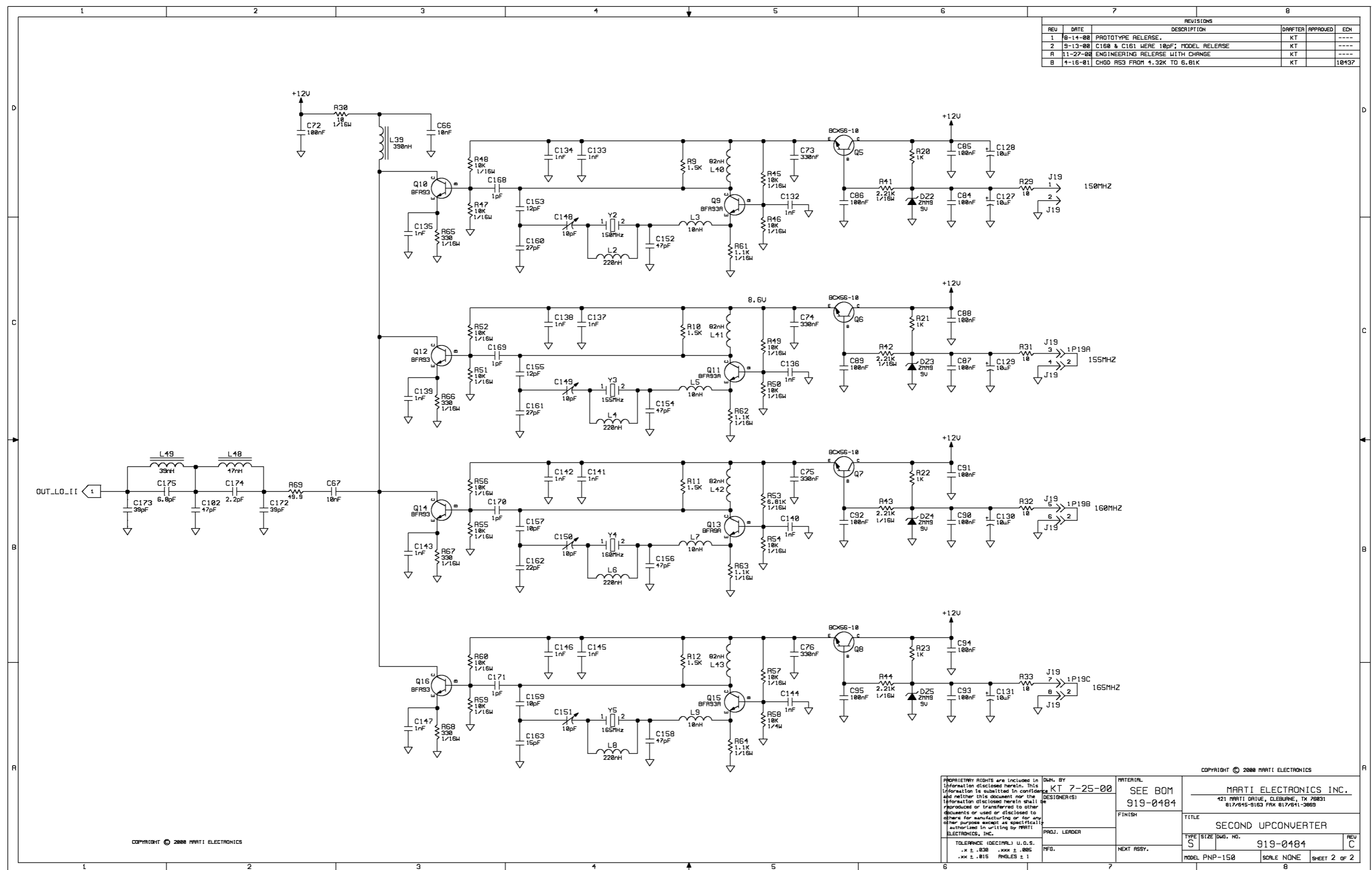


- NOTES:
- ALL RESISTORS IN OHMS: 1/8W, 1% UNLESS OTHERWISE SPECIFIED.
 - LAST COMPONENT USED: C178, D25, J20, Q16, R75, U7, Y5
 - COMPONENTS NOT USED: C7-C9, C13, C15-C18, C36-C49, C51-C58, C61, C71, C96-C101, C102-C108, C110-C114, C119, C120, C124, C154-C167, C176, D21, L11, L14, L15, L17-L19, L21-L29, L35-L37, L44-L47, J1-J4, J9, J10, J12-J16, Q1-Q4, U1, U8, U5, Y1, R2-R6, R13-R18, R20, R35-R38, R70-R73
 - SEE ASSEMBLY: AB919-0484
 - * INDICATES PART NOT INSTALLED: (C59, J8, J11, J17, P17, R1)

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	DESIGNER(S) PROJ. LEADER MFG.	FINISH NEXT ASSY.	TITLE SECOND UPCONVERTER
TOLERANCE (DECIMAL) U.O.S. .x ± .030 .xxx ± .005 .xx ± .015 ANGLES ± 1		MODEL PNP-150	SCALE NONE SHEET 1 OF 2



REVISIONS			DRFTER	APPROVED	ECN
1	8-14-80	PROTOTYPE RELEASE.	KT		----
2	9-13-80	C158 & C161 WERE 10pF; MODEL RELEASE	KT		----
A	11-27-80	ENGINEERING RELEASE WITH CHANGE	KT		----
B	4-16-81	CHGD R53 FROM 4.32K TO 6.81K	KT		10437

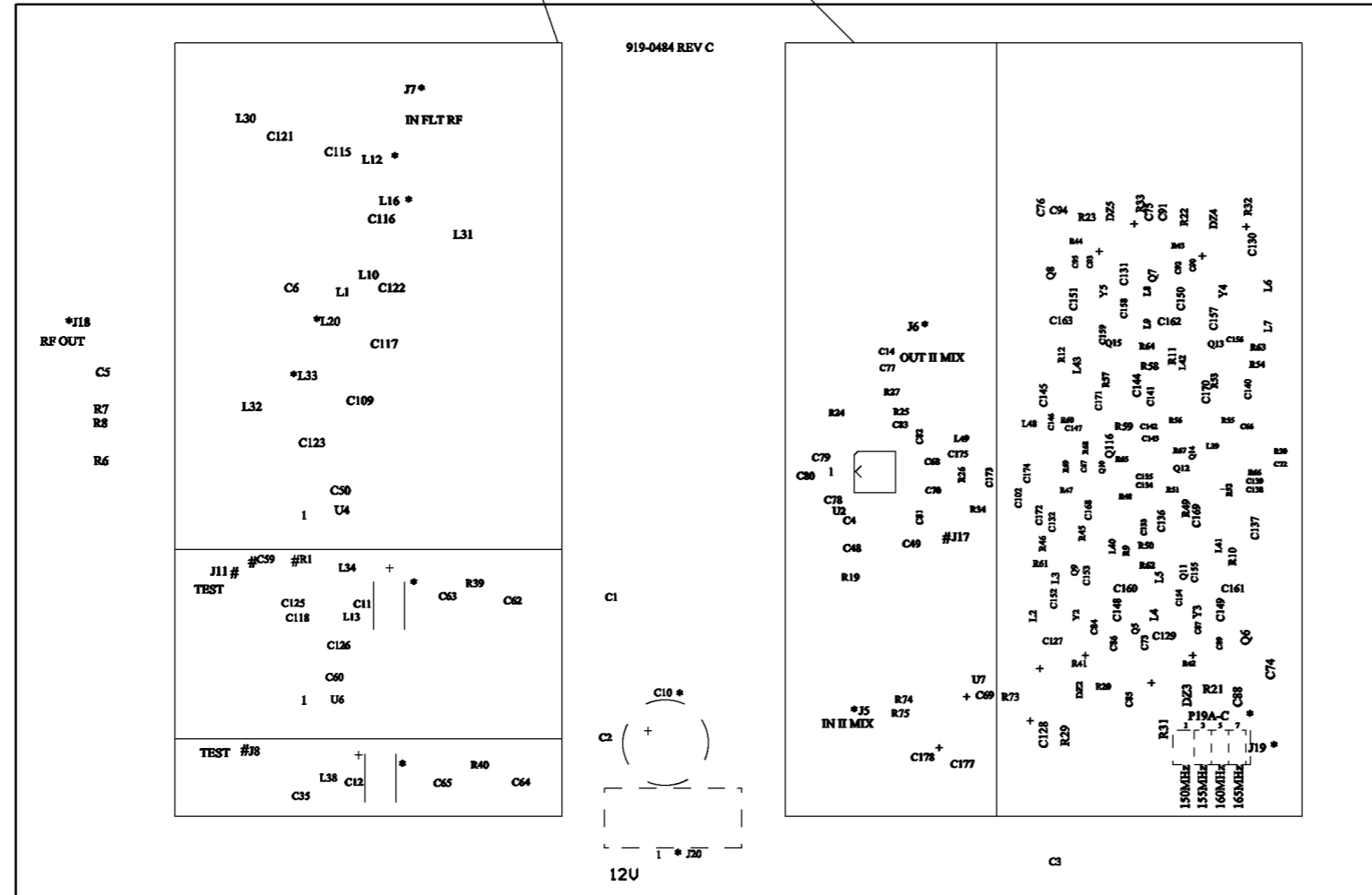
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TOLERANCE (DECIMAL) U.O.S. .xxx ± .005 .xx ± .015 ANGLES ± 1	PROJ. LEADER MFG.	NEXT ASSY.	MODEL PNP-150 SCALE NONE SHEET 2 OF 2	MARTI ELECTRONICS INC. 421 MARTI DRIVE, CLEBURNE, TX 78831 817/645-9163 FAX 817/641-3868

REVISIONS

REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	8-16-00	PROTOTYPE RELEASE.	KT		----
2	9-28-00	ADDED C10-C14; CHGD C5-C8; MODEL RELEASE	KT		-----
A	11-27-00	ENGINEERING RELEASE WITH CHANGE	KT		-----
B	4-16-01	CHGD R53 FROM 4.32K TO 6.81K	KT		10437
C	5-9-01	ADDED C6, L1, L10 & LIDS TO FENCES	KT	RJH	10449

SOLDER ALL FENCE PINS TO PCB THEN INSTALL LIDS



NOTES:
 1) * INDICATES PARTS INSTALLED ON SOLDER SIDE OF PCB.
 (C10,J5-J7,J18-J20,L12,L16,L20,L33,P19A-C,R39,R40)
 2) # INDICATES PARTS NOT INSTALLED (C59,J8,J11,J17,R1)

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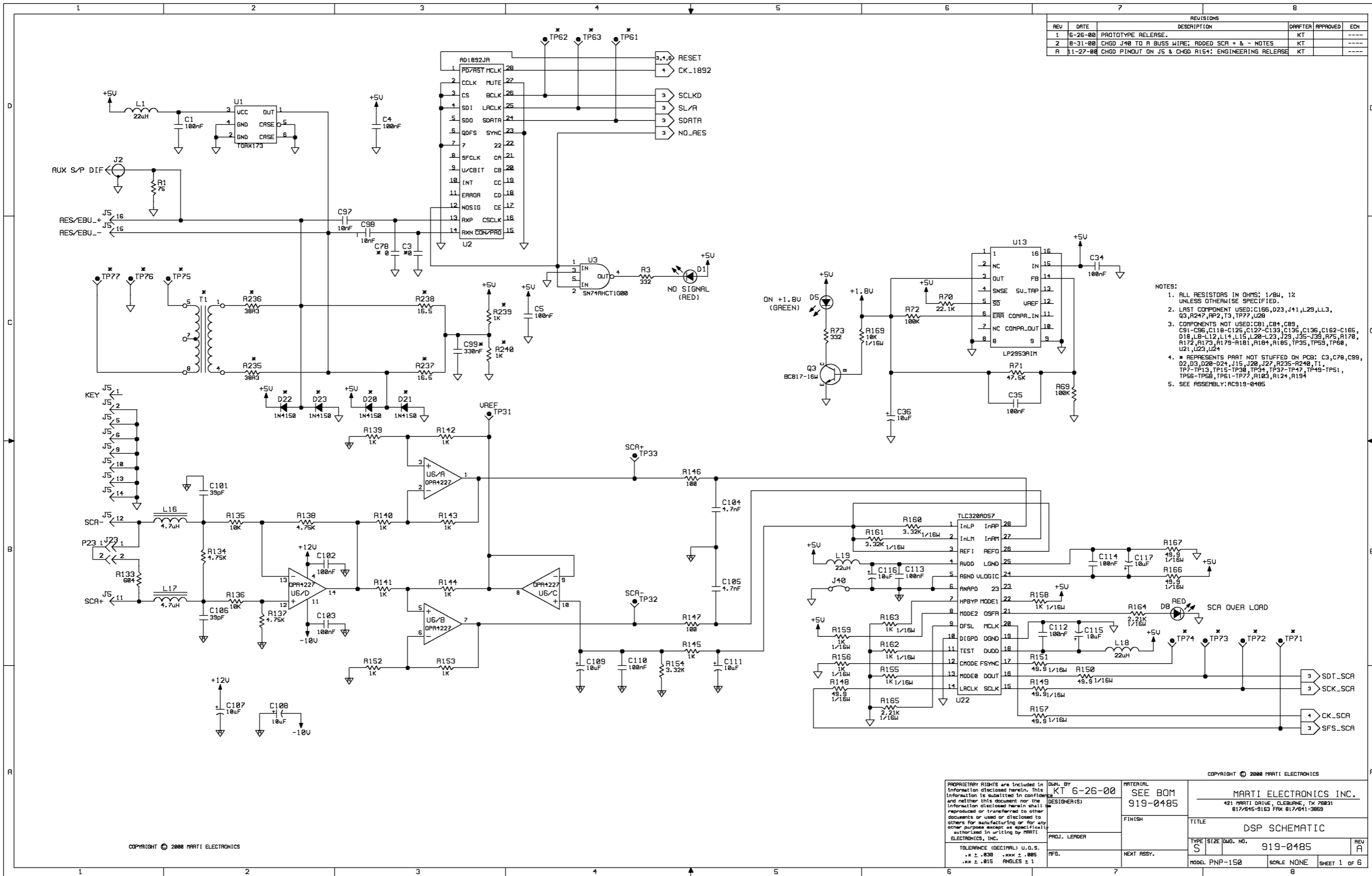
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TOLERANCE (DECIMAL) U.O.S.
 .X ± .030 .XXX ± .005
 .XX ± .015 ANGLES + 1°

DWN. BY
KWT 8-16-00
 DESIGNER(S)
 PROJ. LEADER
 MFG.

MATERIAL
SEE BOM
919-0484
 FINISH
 NEXT ASSY.

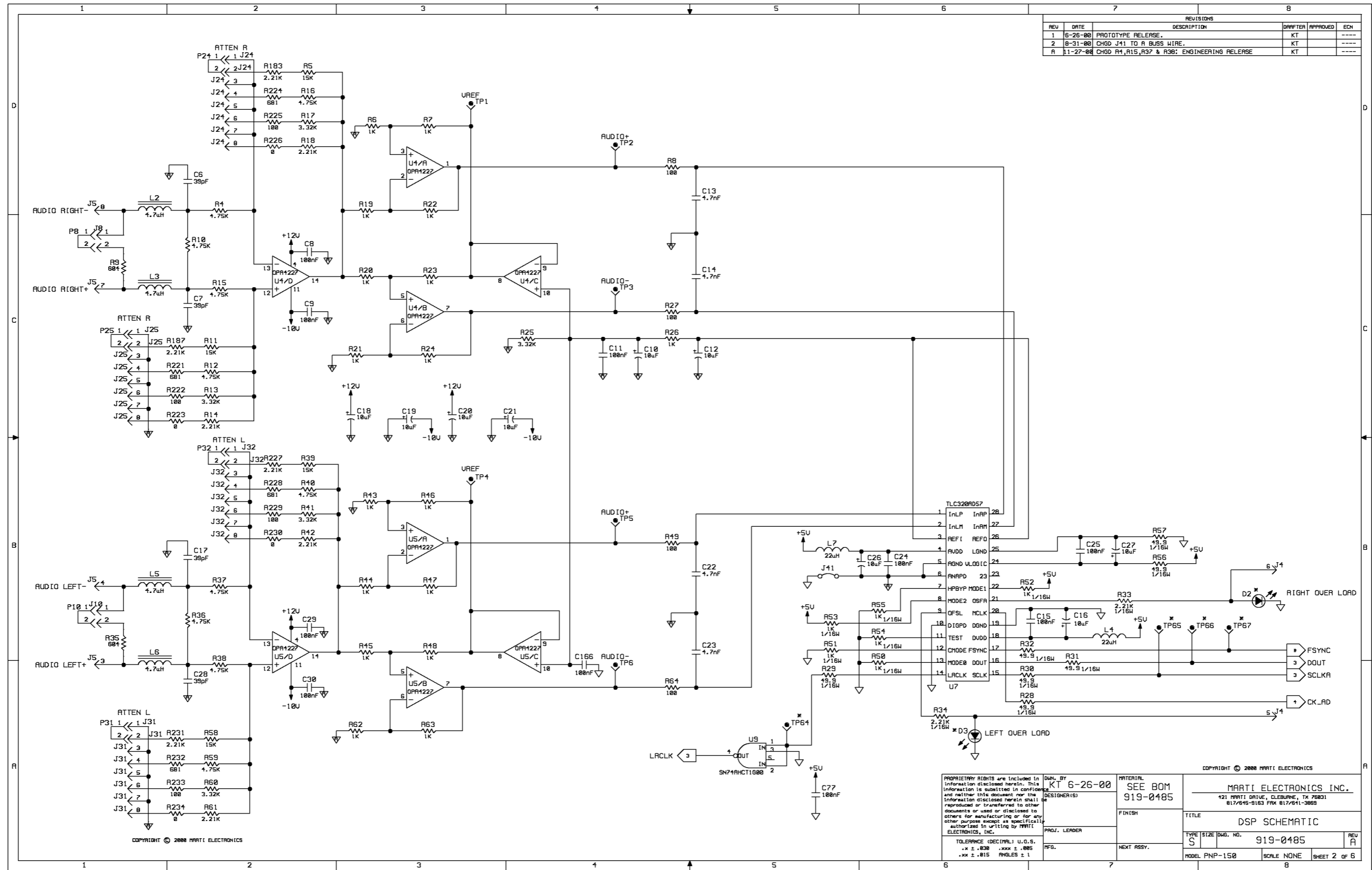
MARTI ELECTRONICS, INC.
 421 MARTI DRIVE, CLEBURNE, TX 76031
 817/645-9163 FAX 817/641-3869
 TITLE
SECOND UP CONVERTER
 TYPE SIZE DWG No. REV
 B 919-0484 C
 MODEL PNP-150 SCALE 1/1 SHEET 1 OF 1



REVISIONS					
REV	DATE	DESCRIPTION	DRAWN	APPROVED	EON
1	6-26-00	PROTOTYPE RELEASE.	KT		----
2	8-31-00	CHGD J40 TO A BUSS WIRE; ADDED SCA + & - NOTES	KT		----
A	11-27-00	CHGD PINOUT ON J5 & CHGD R154; ENGINEERING RELEASE	KT		----

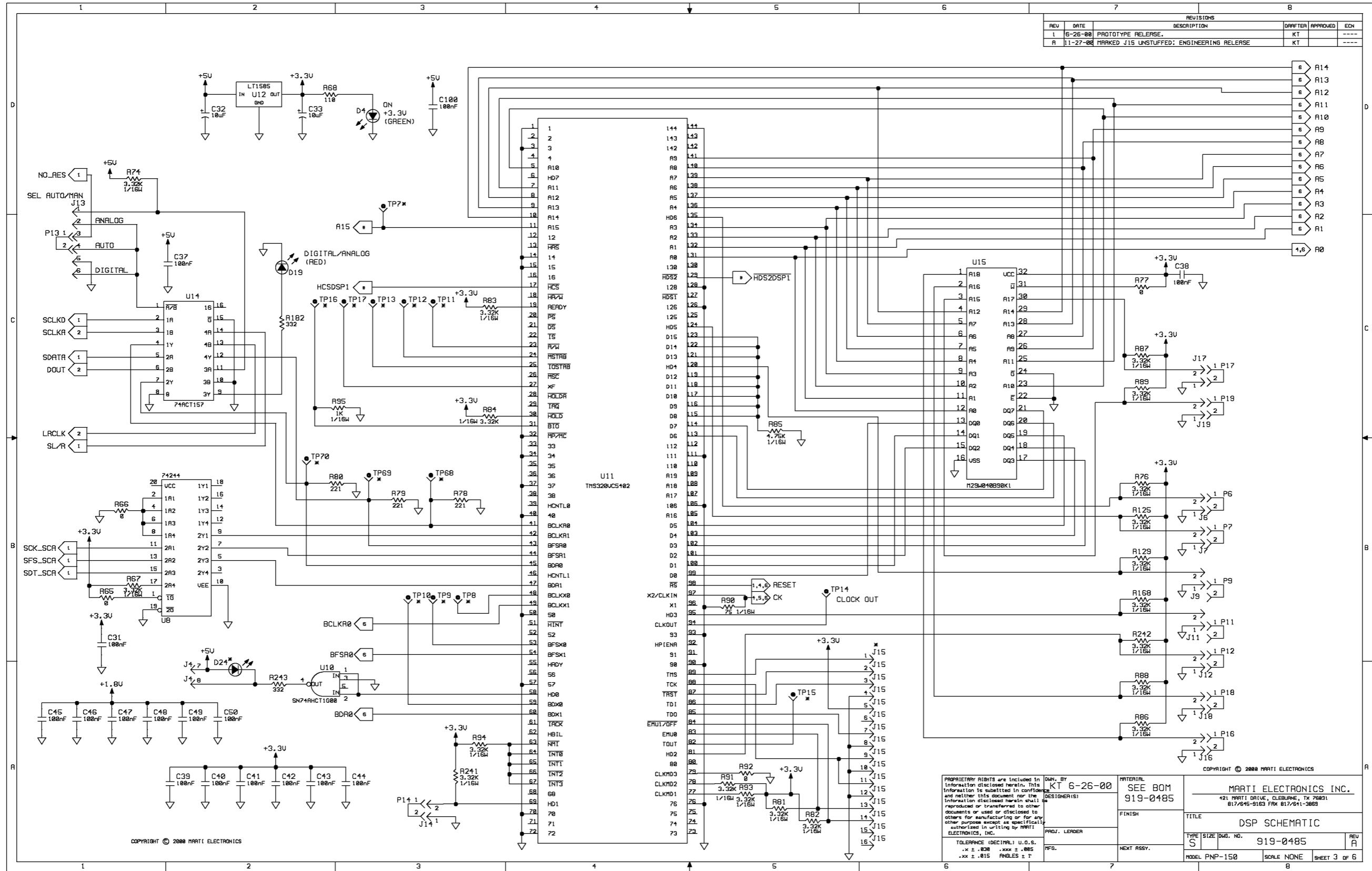
- NOTES:
1. ALL RESISTORS IN OHMS: 1/4W, 1% UNLESS OTHERWISE SPECIFIED.
 2. LAST COMPONENT USED: C166, D23, J41, L29, LL3, Q3, R247, RP2, T3, TP77, U28
 3. COMPONENTS NOT USED: C81, C84, C89, C91-C96, C118-C125, C127-C130, C136, C162-C165, D18, L8-L12, L14, L15, L20-L23, J29, J35-J39, R75, R170, R172, R173, R179-R181, R184, R185, TP35, TP69, TP60, U21, U23, U24
 4. * REPRESENTS PART NOT STUFFED ON PCB: C3, C70, C99, D2, D3, D20-D24, J15, J20, J27, R235-R240, T1, TP7-TP13, TP15-TP30, TP34, TP37-TP47, TP49-TP51, TP56-TP58, TP61-TP77, R103, R124, R194
 5. SEE ASSEMBLY: AC919-0405

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TOLERANCE (DECIMAL) U.O.S. .x ± .030 .xxx ± .005 .xx ± .015 ANGLES ± 1		PROJ. LEADER TPG.	NEXT ASSY.	TYPE SIZE DWS. NO. S 919-0485
COPYRIGHT © 2000 MARTI ELECTRONICS		COPYRIGHT © 2000 MARTI ELECTRONICS		MODEL PNP-150 SCALE NONE SHEET 1 of 6



REV		DATE		DESCRIPTION	DRAWN	APPROVED	ECN
1	6-26-00			PROTOTYPE RELEASE	KT		----
2	8-31-00			CHGD J41 TO A BUSS WIRE	KT		----
3	11-27-00			CHGD R4, R15, R37 & R38: ENGINEERING RELEASE	KT		----

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TOLERANCE (DECIMAL) U.O.S. * ± .030 * ± .065 * ± .015 * ANGLES ± 1		PROJ. LEADER	FINISH	TITLE DSP SCHEMATIC
NEXT ASSY.		TYPE S	SIZE 919-0485	REV A
MODEL PNP-150		SCALE NONE	SHEET 2 OF 6	

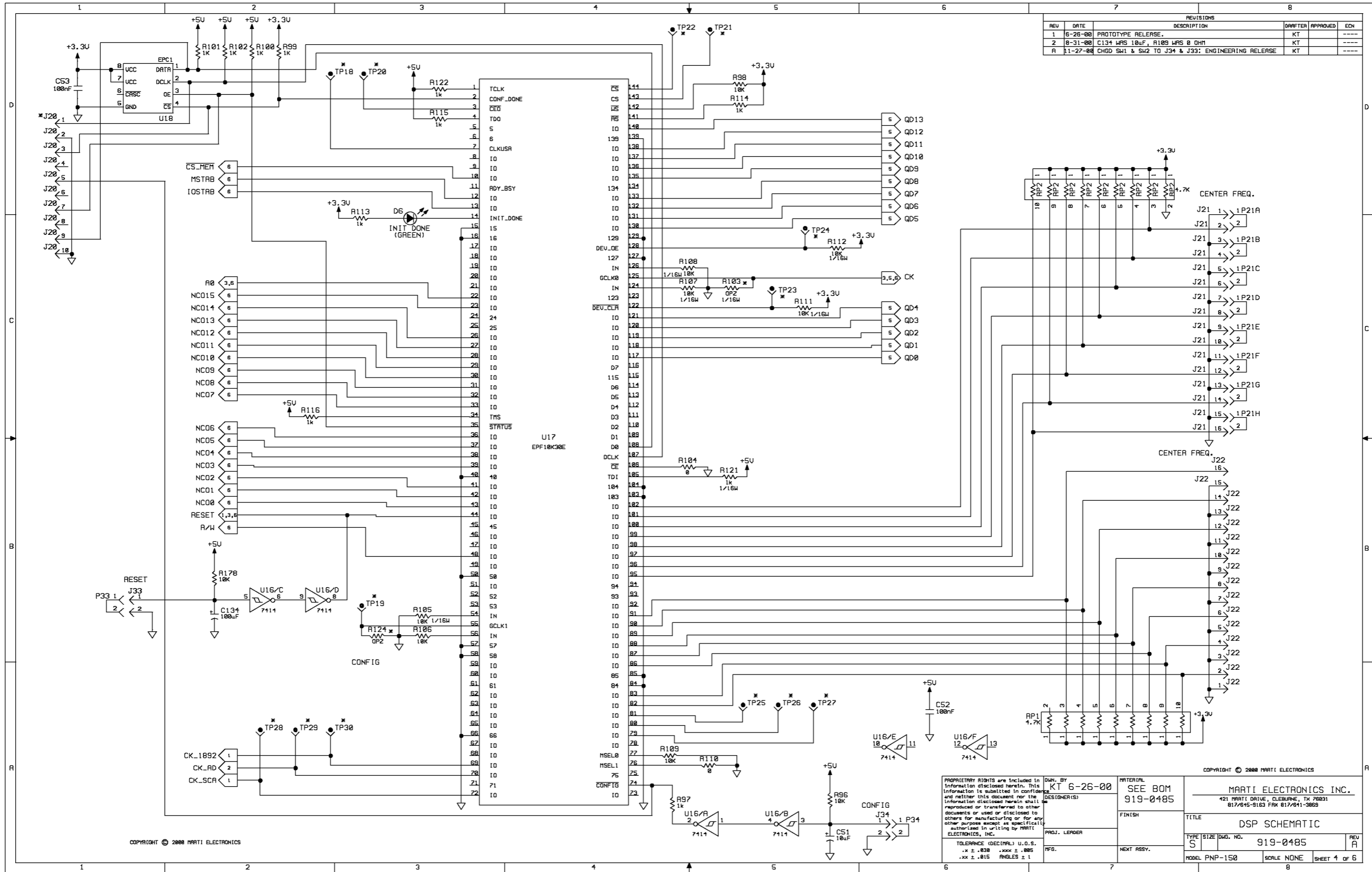


REVISIONS				
REV	DATE	DESCRIPTION	DRAWN	APPROVED
1	6-26-00	PROTOTYPE RELEASE.	KT	----
A	11-27-00	MARKED J15 UNSTUFFED: ENGINEERING RELEASE	KT	----

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TOLERANCE (DECIMAL) U.O.S. .x ± .030 .xxx ± .005 .xx ± .015 ANGLES ± ?	PROJ. LEADER	FINISH	TITLE DSP SCHEMATIC	TYPE SIZE DWG. NO. REV S 919-0485 A
NEXT ASSY.	MODEL PNP-150	SCALE NONE	SHEET 3 OF 6	B

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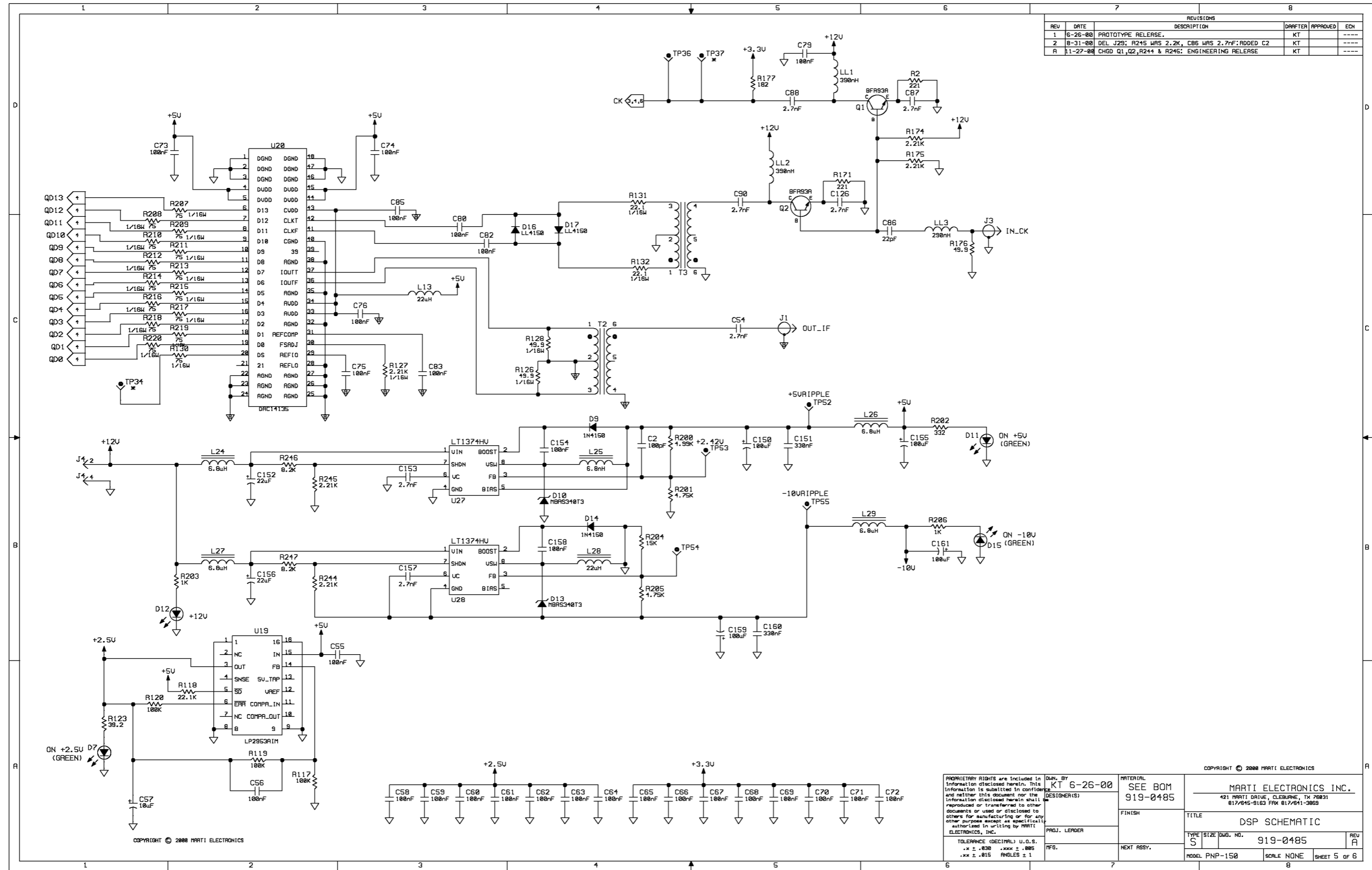


REVISIONS			DATE	DESCRIPTION	DRAWN	APPROVED	ECN
1	6-26-00	PROTOTYPE RELEASE.			KT		----
2	8-31-00	C134 WAS 10uF, R109 WAS 0 OHM			KT		----
A	11-27-00	CHGD SW1 & SW2 TO J34 & J33; ENGINEERING RELEASE			KT		----

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PROJ. LEADER	REF.	NEXT ASSY.	TITLE DSP SCHEMATIC
MODEL PNP-150 SCALE NONE SHEET 4 of 6			REV A

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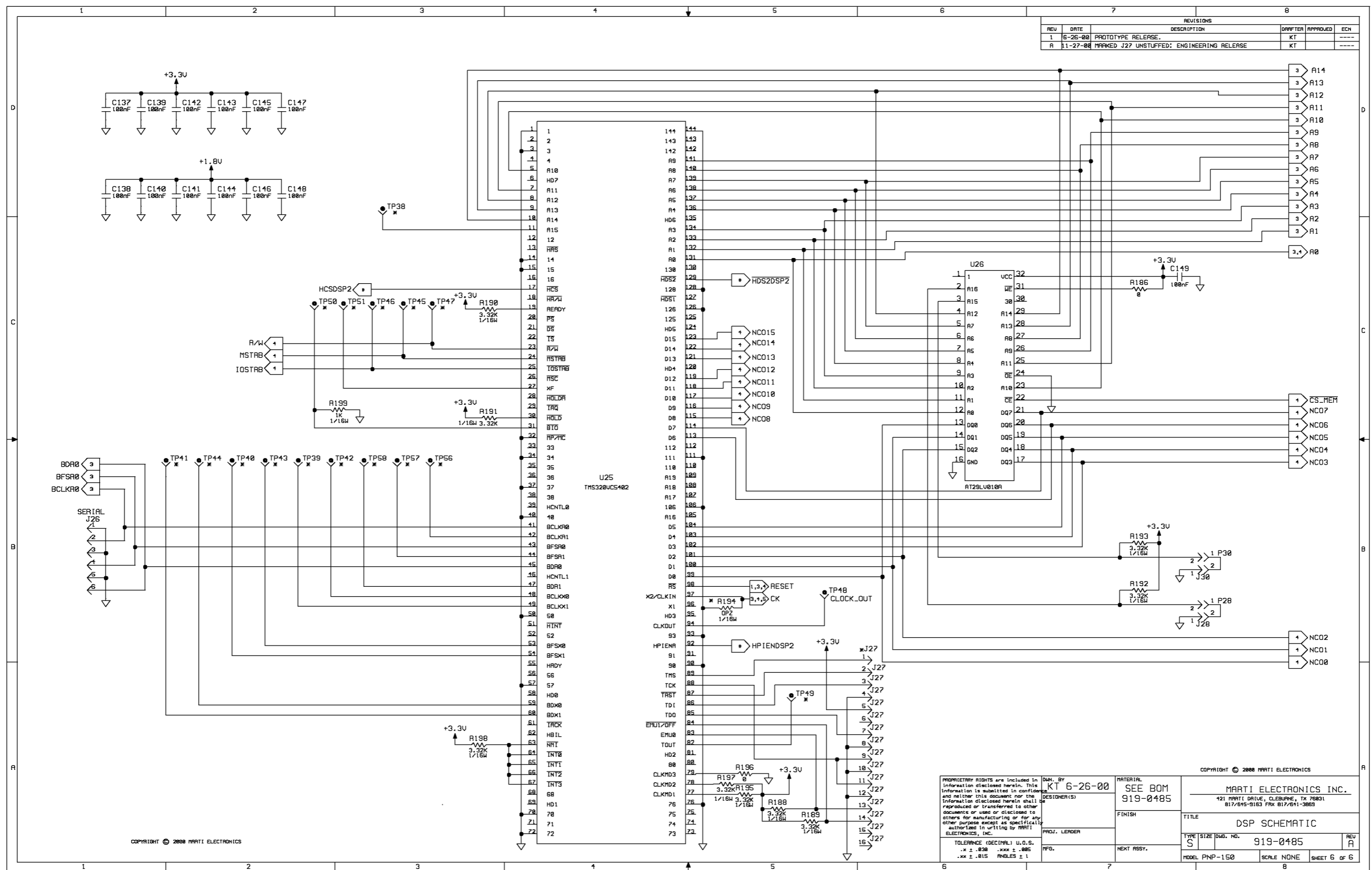
REVISIONS				
REV	DATE	DESCRIPTION	DRAWN	APPROVED
1	6-26-00	PROTOTYPE RELEASE.	KT	----
2	8-31-00	DEL J28; R245 WAS 2.2K; C86 WAS 2.7nF; ADDED C2	KT	----
A	11-27-00	CHGD Q1, Q2, R244 & R245; ENGINEERING RELEASE	KT	----

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PROJ. LEADER	TITLE DSP SCHEMATIC	TYPE SIZE DWG. NO. S 919-0485	REV A
NFG.	NEXT ASSY.	MODEL PNP-150	SCALE NONE SHEET 5 OF 6

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 421 MARTI DRIVE, CLEBURNE, TX 76031
 817/845-9163 FAX 817/841-3669

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REVISIONS			DRAWN	APPROVED	ECN
REV	DATE	DESCRIPTION	KT		
1	6-26-00	PROTOTYPE RELEASE.	KT		----
A	11-27-00	MARKED J27 UNSTUFFED; ENGINEERING RELEASE	KT		----

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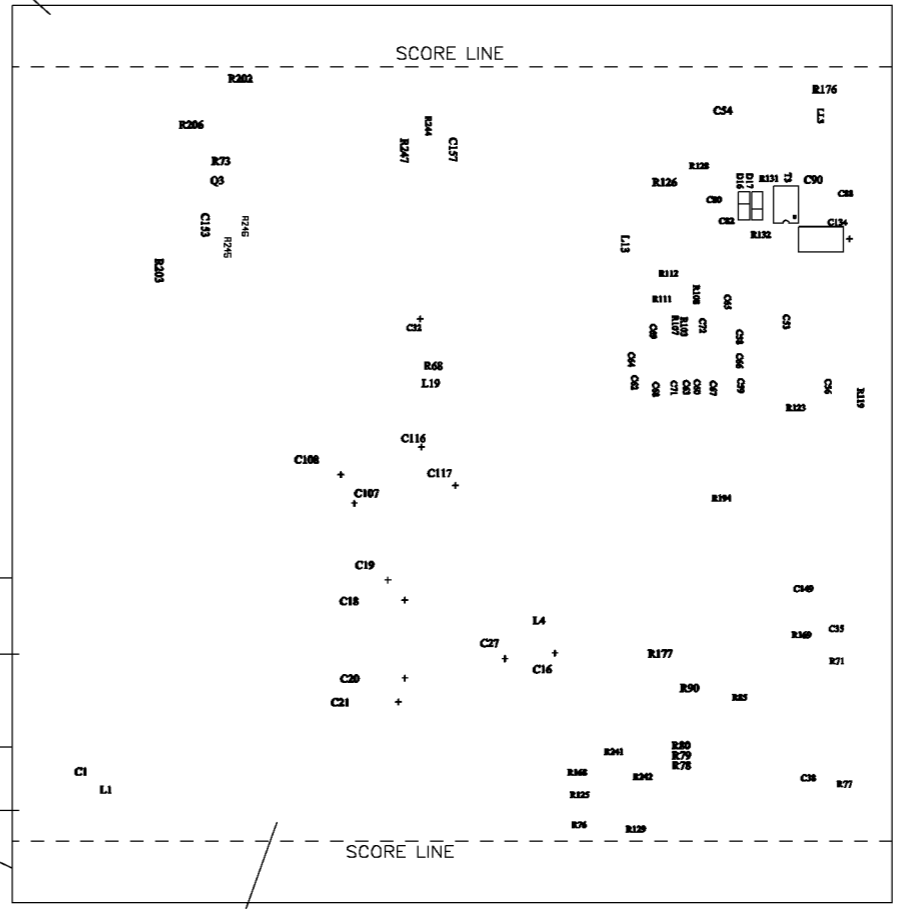
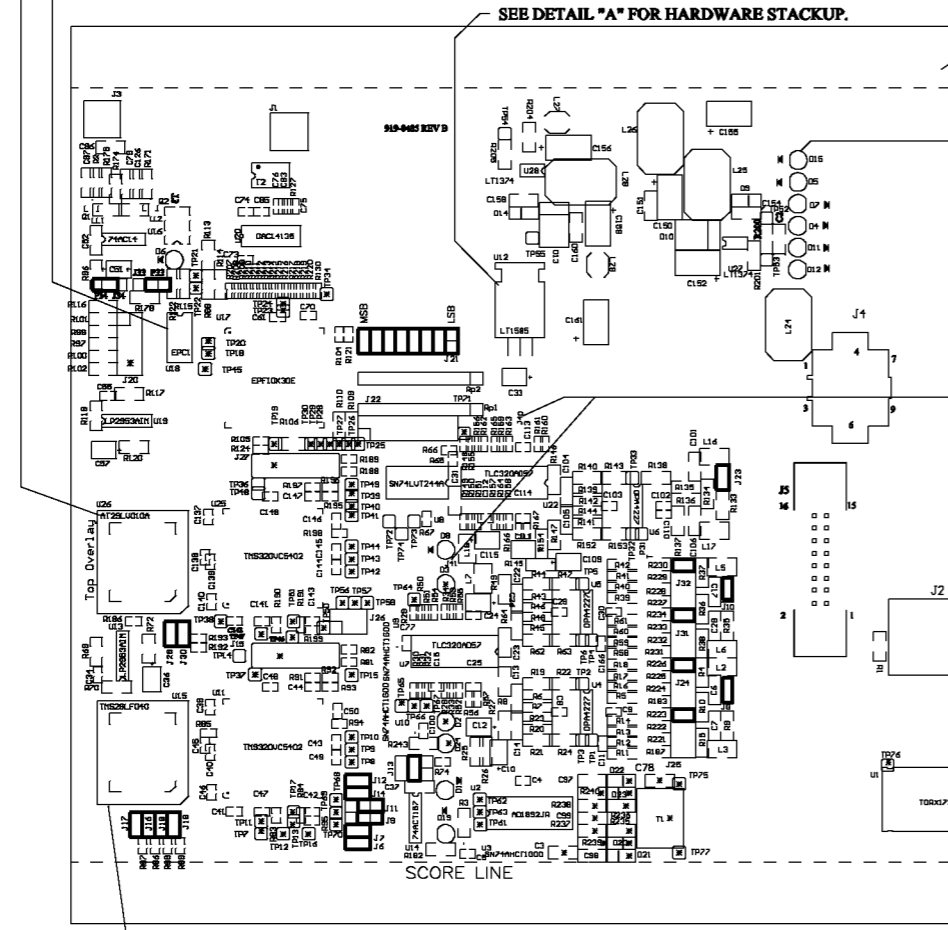
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	DESIGNER(S)	FINISH	TYPE SIZE DWG. NO. S 919-0485
	PROJ. LEADER	NEXT ASSY.	MODEL PNP-150
	PFG.	SCALE NONE	SHEET 6 OF 6

TOLERANCE (DECIMAL) U.O.S.
 .X ± .030 .XXX ± .005
 .XX ± .015 ANGLES ± 1°


REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	6-30-00	PROTOTYPE RELEASE.	KT		----
2	8-31-00	CHGD C8,C134,R85,R109,R245,ADDED NOTES & C2	KT		----
A	11-27-00	ADDED NOTES & CORRECTED J5: ENGINEERING RELEASE	KT	JLT	----
B	4-16-01	ADDED NOTES & CHGD J5 TO A 406-1602	KT	JW	10438

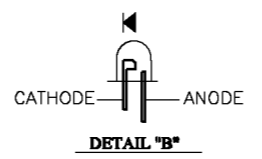
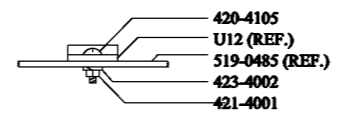
INSTALL SOFTWARE 979-0485-U26 VER 1.0
& LABEL TOP OF U26 WITH VERSION

INSTALL SOFTWARE 979-0485-U18 VER 1.0
& LABEL TOP OF U18 WITH VERSION



INSTALL SOFTWARE 979-0485-U15 VER 1.0
& LABEL TOP OF U15 WITH VERSION

- NOTES:
- 1) INSERT BUSS WIRE IN PLACE OF J40 & J41.
 - 2) * INDICATES PARTS NOT STUFFED: C3,C78, C99,D2,D3,D20-D24,J15,J27,R235-R240, T1,TP7-TP13,TP15-TP30,TP34,TP37-TP47, TP49-TP51,TP56-TP58,TP61-TP77,R103, R124 & R194.
 - 3) REFER TO SOLDER SIDE DRAWING, FOR PARTS STUFFED ON SOLDER SIDE OF BOARD.
 - 4) RAILS TO BE BROKEN OFF AT SCORE LINE, AFTER FLOW SOLDER.
 - 5)  INDICATES LOCATION OF JUMPER PLUGS
 - 6) TRIM ALL LED'S AT SHOULDERS AND MOUNT FLUSH WITH PCB: (D1,D4-D8,D11,D12,D15,D19)



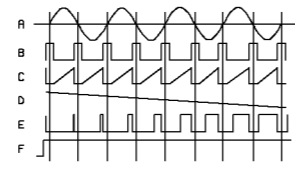
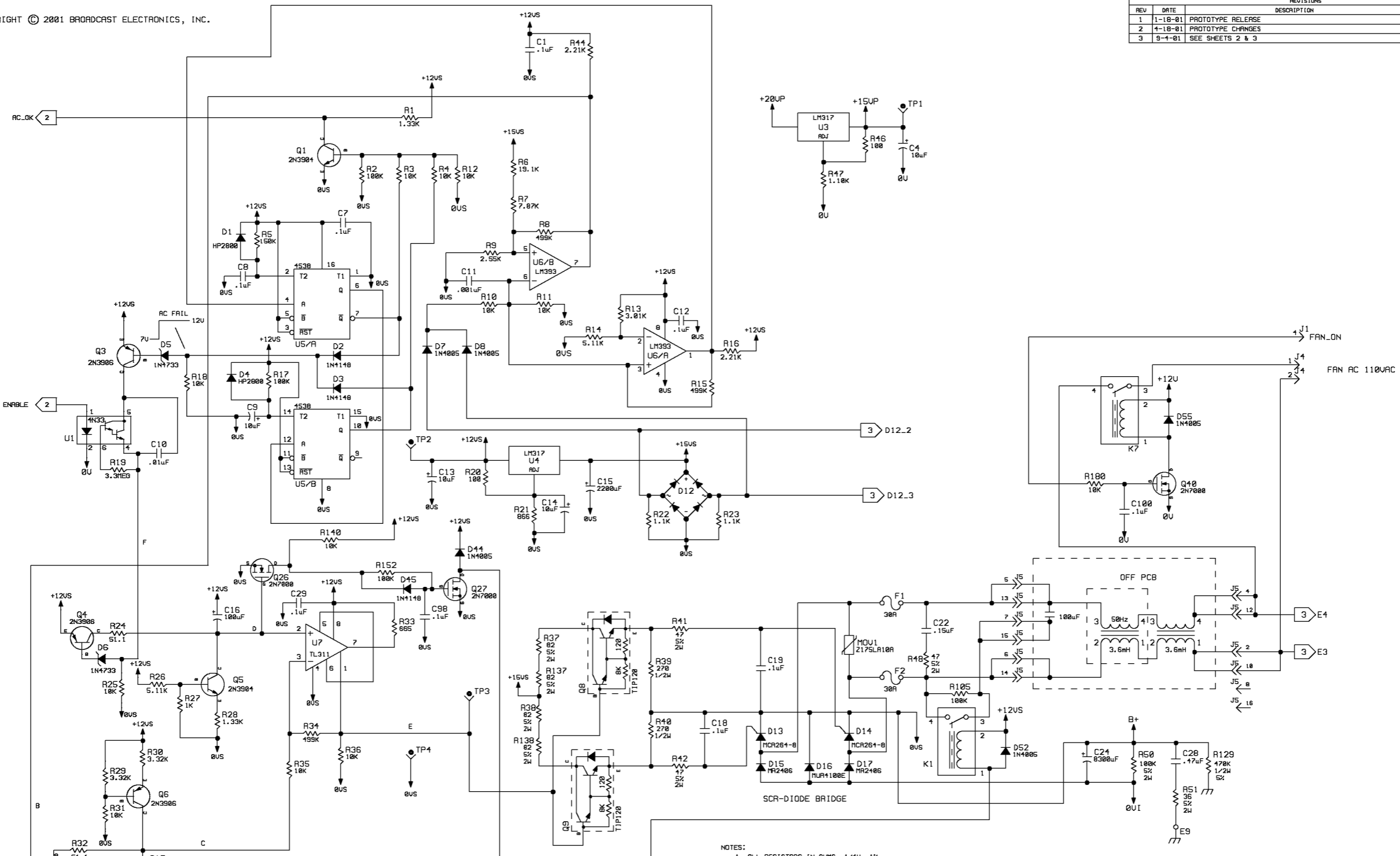
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	DESIGNER(S)	FINISH	TITLE DSP PCB	
PROJ. LEADER JLT 12-13-00	NEXT ASSY.	TYPE A	SIZE C	DWG No. 919-0485
MFG.		MODEL PNP-150	SCALE 1/1	REV B
TOLERANCE (DECIMAL) U.O.S. .X ± .030 .XXX ± .005 .XX ± .015 ANGLES + 1°		SHEET 1 OF 1		

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REVISIONS					
REV	DATE	DESCRIPTION	DFTSPN	ENGR	EDN
1	1-18-01	PROTOTYPE RELEASE	KT		
2	4-18-01	PROTOTYPE CHANGES	KT		
3	9-4-01	SEE SHEETS 2 & 3	KT		L0513



- NOTES:
- ALL RESISTORS IN OHMS, 1/4W, 1%, UNLESS OTHERWISE SPECIFIED.
 - LAST COMPONENT USED: C106, D58, E11, F8, J5, K7, L3, M03, Q48, R191, TP32, U38
 - COMPONENTS NOT USED: C26, C27, C56-C60, C76-C79, C88, C89, C97, D18, D33, E1-E7, F3, F4, L1, L2, R126, R175, TP13, U18, U11, U26, U26

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DRAWN BY: KWT 1-3-01
 CHECKED: []
 DESIGNED: []
 PROJECT ENGR: []
 FINISH: []
 NEXT ASSY: []

SEE DWG. ANG33-0000

TOLERANCE (DECIMAL) U.S.S.
 .x ± .030
 .xx ± .015
 ANGLES ± 1°

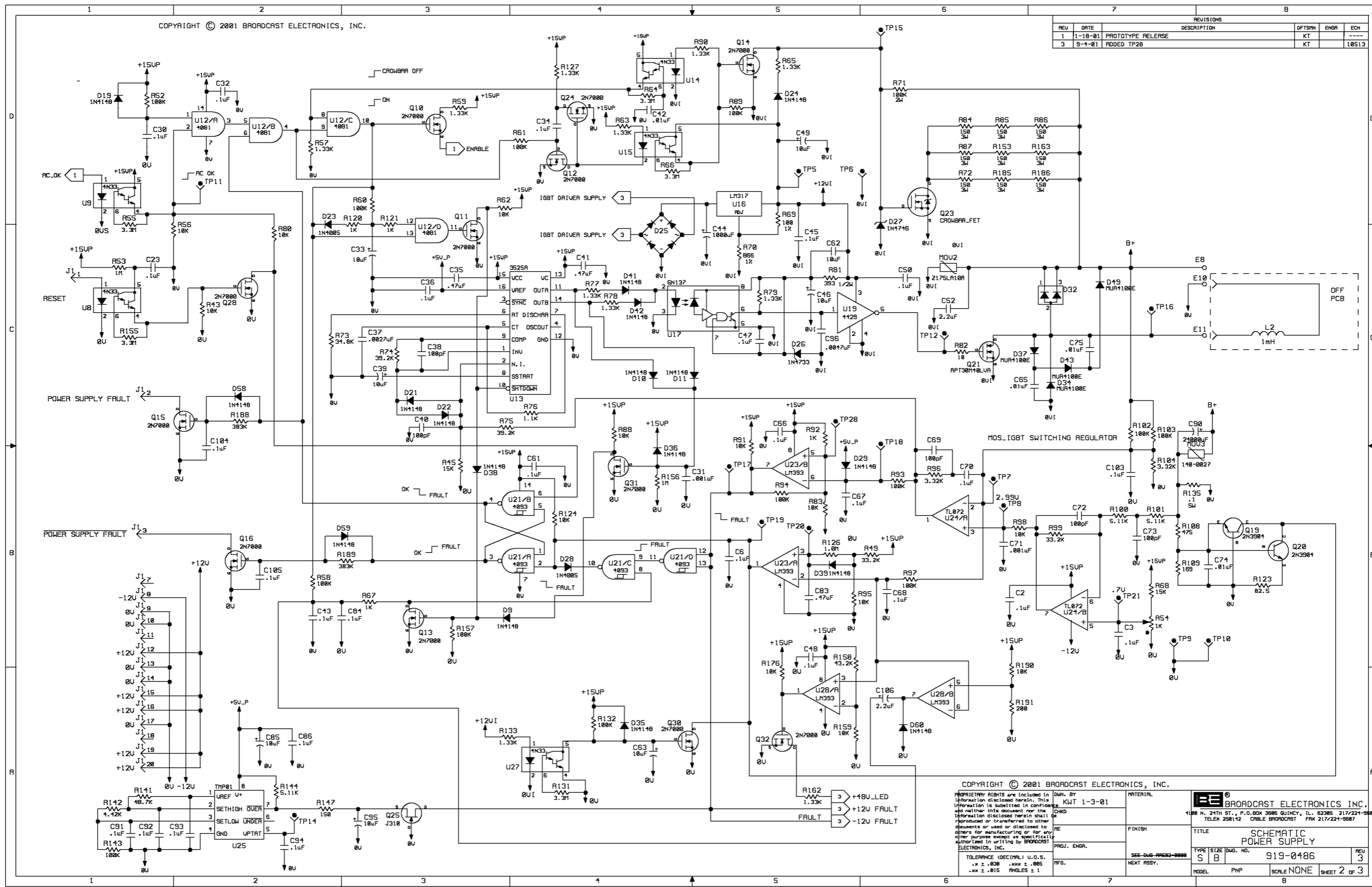
MATERIAL: SEE B/M 919-0486
 4180 N. 24TH ST., P.O. BOX 9686 QUINCY, IL. 62385 217/224-9686
 TELEX 258112 CABLE BROADCAST FAX 217/224-9687

TITLE: SCHEMATIC POWER SUPPLY
 TYPE: S B
 SIZE: DWG. NO. 919-0486
 REV: 3

MODEL: PNP
 SCALE: NONE
 SHEET 1 OF 3

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REVISIONS				DATE	DESCRIPTION	DESIGN	ENGR	ECH
1	1-10-01	PROTOTYPE RELEASE	KT					
3	9-4-01	ADDED TP28	KT					10513



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TOLERANCE (DECIMAL) U.O.S.
 .x ± .030 .xxx ± .005
 .xx ± .015 FRACTIONS ± 1

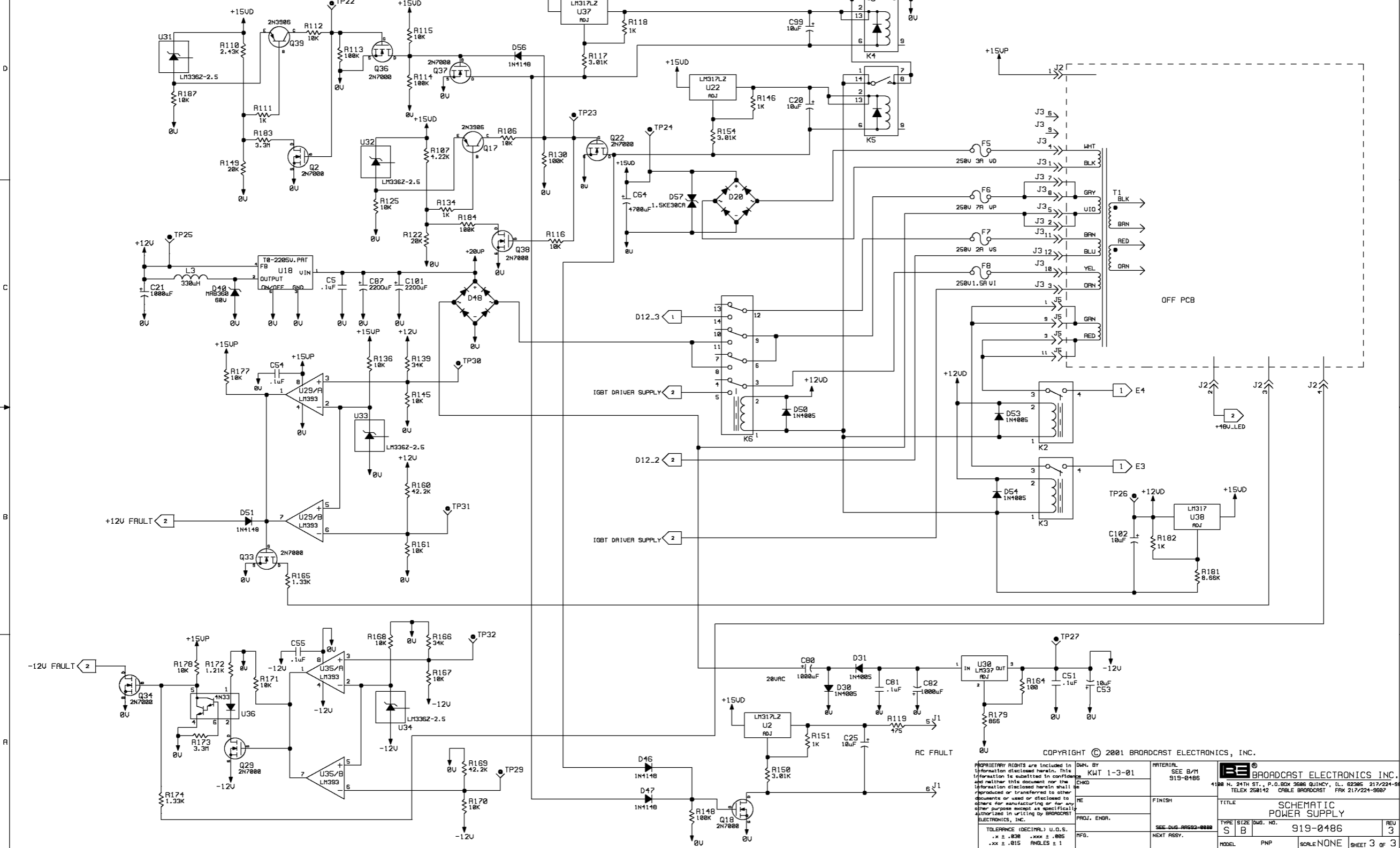
MATERIAL		FINISH	
SEE-DWG-P4692-0000		NEXT ASSY.	
PROJECT ENGR.		DATE	
REV.		DATE	
REV. 1		DATE 1-3-01	
REV. 2		DATE	
REV. 3		DATE	

1188 N. 24TH ST., P.O. BOX 3686 QUINCY, IL 62305 217/221-5687
 TELEX 258142 CABLE BROADCAST FAX 217/221-9687

TITLE SCHEMATIC POWER SUPPLY
 TYPE S B
 SIZE DWG. NO. 919-0486
 MODEL PNP
 SCALE NONE SHEET 2 OF 3

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REVISIONS			DATE	DESCRIPTION	BY	CHKD	ENGR	ECN
1	1-18-01	PROTOTYPE RELEASE			KT			
3	9-4-01	ADDED TP29-TP32			KT			10513



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TOLERANCE (DECIMAL) U.D.S.
 .xx ± .008 .xxx ± .005
 .xx ± .015 ANGLES ± 1

DWG. BY: KWT 1-3-01
 CHKD: []
 DATE: []
 PROJ. ENGR. []
 MFG. []

MATERIAL: SEE B/M 919-0486
 FINISH: []
 SEE DWG. ANGLES 0-90
 NEXT ASSY. []

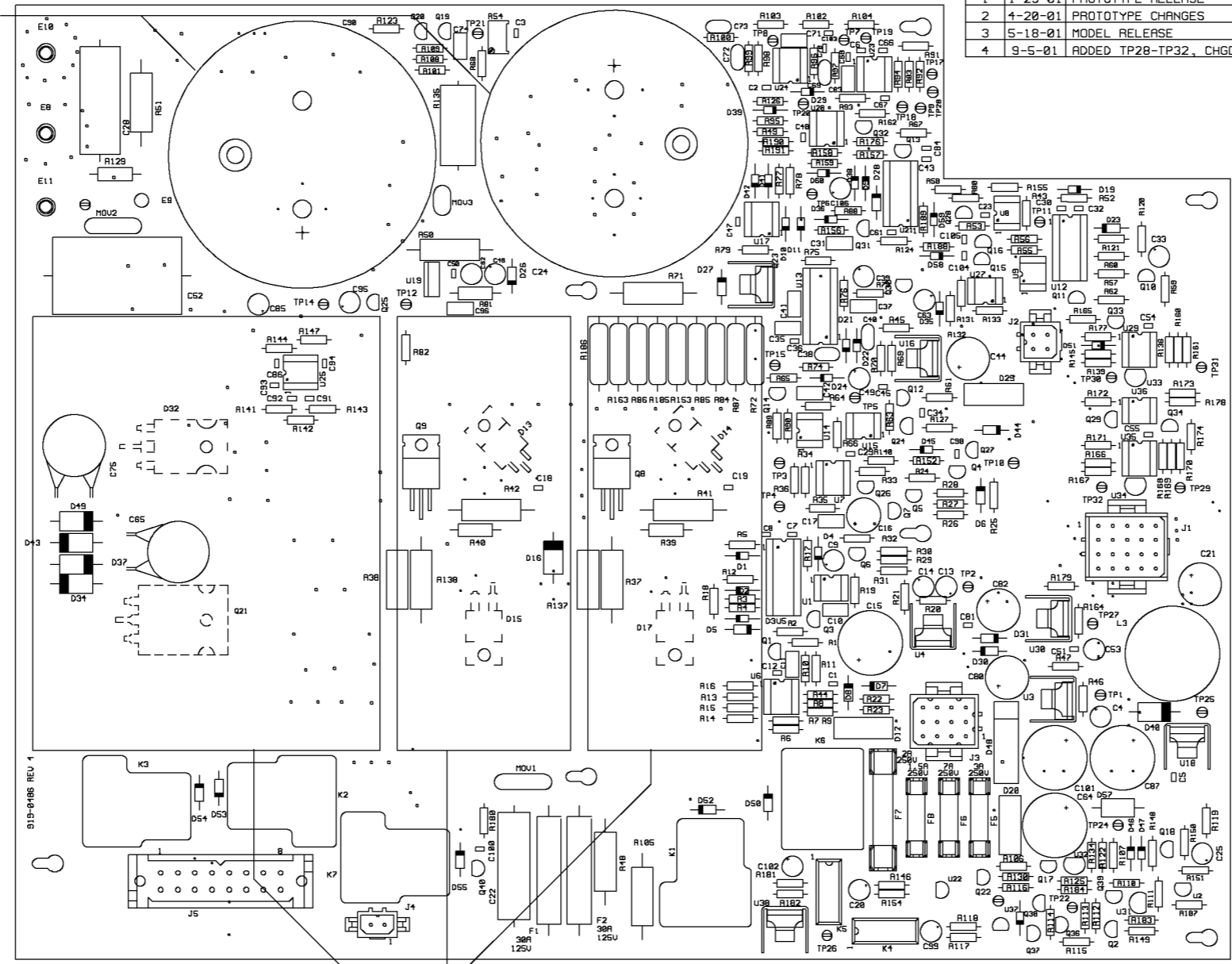
BROADCAST ELECTRONICS, INC.
 4108 N. 24TH ST., P.O. BOX 3888 QUINCY, IL 62305 217/224-9688
 TELEX 266142 CABLE BROADCAST FAX 217/224-9687

TITLE: SCHEMATIC POWER SUPPLY
 TYPE: S B
 SIZE: 11.5 X 17.0
 Dwg. NO.: 919-0486
 REV: 3
 MODEL: PNP
 SCALE: NONE
 SHEET 3 OF 3

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REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	1-23-01	PROTOTYPE RELEASE	KT		----
2	4-20-01	PROTOTYPE CHANGES	KT		----
3	5-18-01	MODEL RELEASE	KT	JW	----
4	9-5-01	ADDED TP28-TP32, CHGD FTPT OF D48, MOVED U19 & U4	KT		10513

SEE DETAIL "A"



SEE DETAIL "B"

NOTES:
1) DASHED COMPONENTS ARE MOUNTED TO HEATSINKS FIRST.

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DESIGNER(S)
JERRY WESTBERG

PROJ. LEADER

MFG.

TOLERANCE (DECIMAL) U.O.S.
.X ± .030 .XXX ± .005
.XX ± .015 ANGLES + 1°

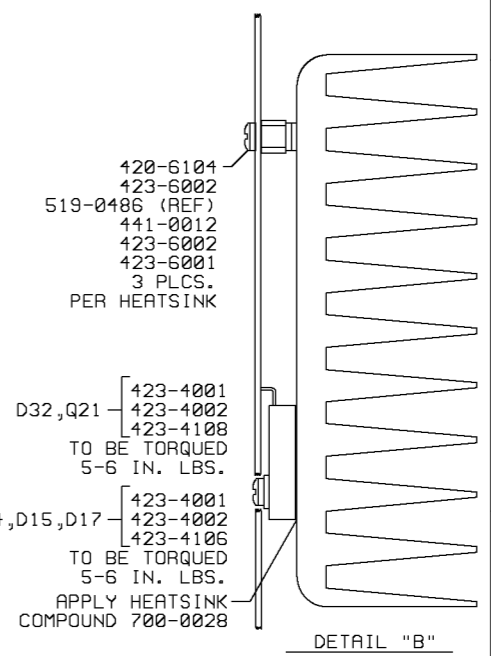
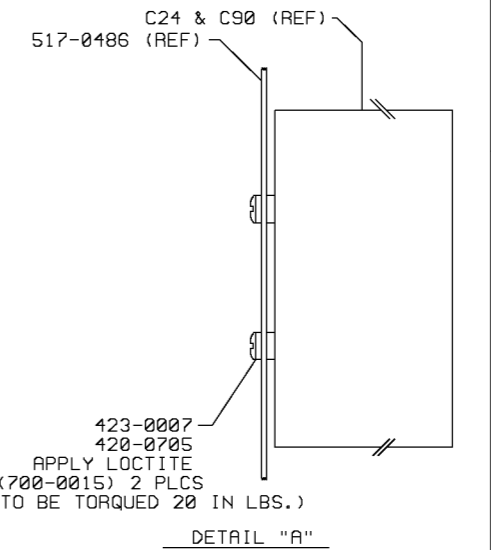
DWN. BY
KWT 1-19-01

MATERIAL

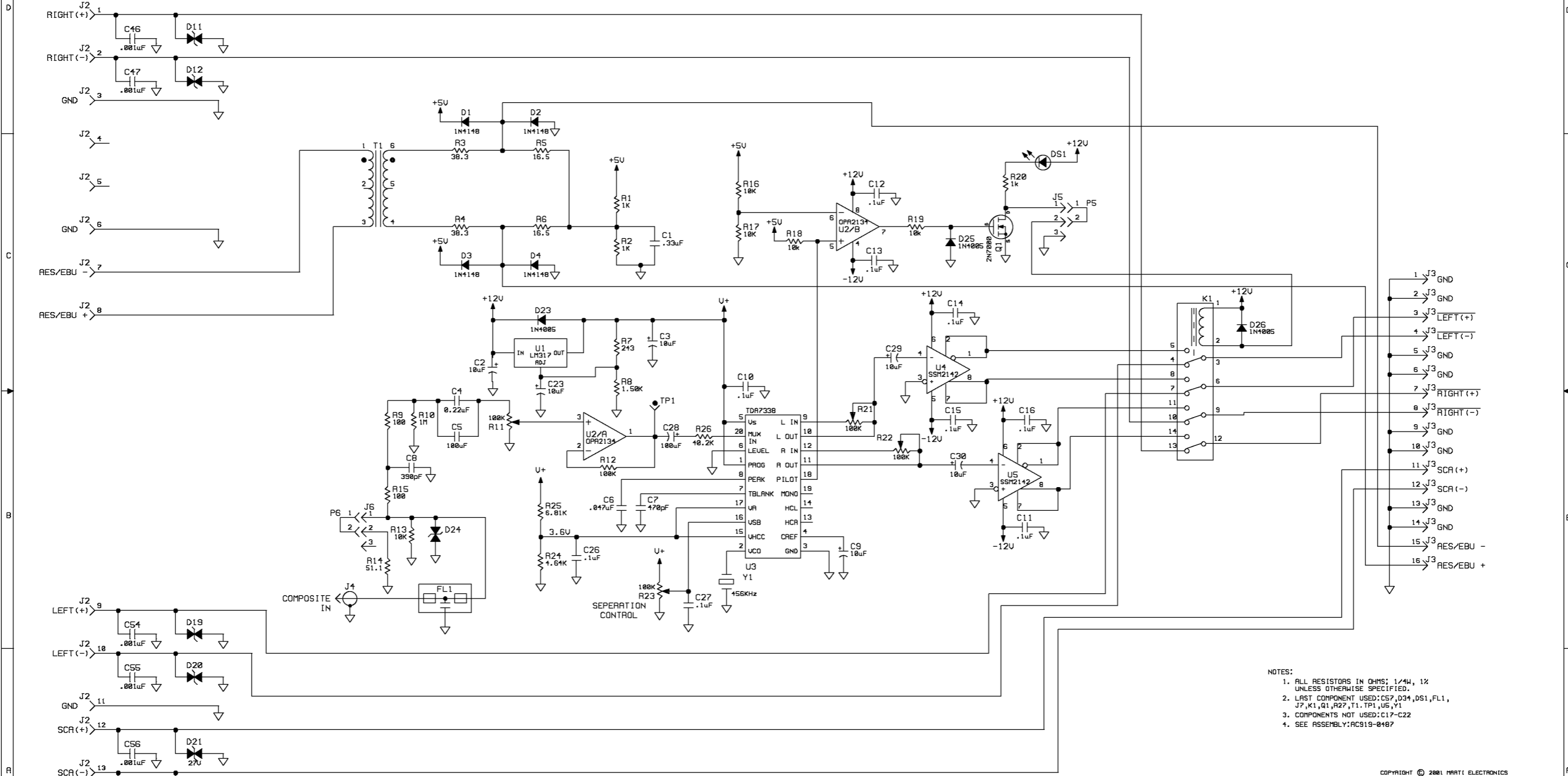
FINISH

NEXT ASSY.

<p>BROADCAST ELECTRONICS INC. 4100 N. 24TH ST., P.O. BOX 3686 QUINCY, ILL. 62305 217/224-9600 FAX 217/224-9607</p>			
TITLE POWER SUPPLY			
TYPE A	SIZE C	DWG No. 919-0486	REV 4
MODEL PNP-1K	SCALE 1/1	SHEET 1 OF 1	



REVISIONS			DATE	DESCRIPTION	DRAWN	APPROVED	ECN
1	1-23-00	PROTOTYPE RELEASE.			KT		----
2	5-16-01	MODEL RELEASE			KT		----

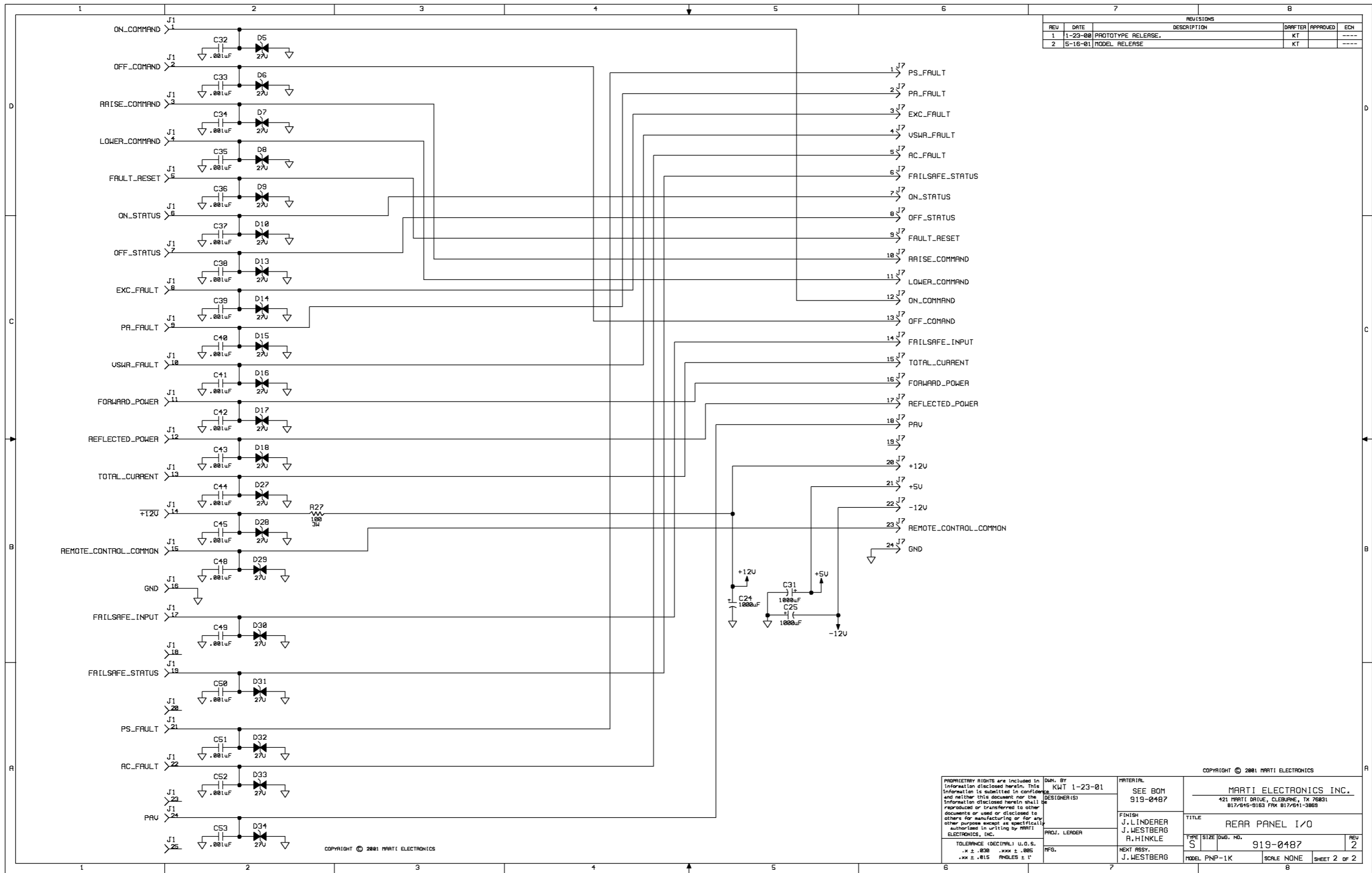


- NOTES:
1. ALL RESISTORS IN OHMS: 1/4W, 1% UNLESS OTHERWISE SPECIFIED.
 2. LAST COMPONENT USED: CS7, D34, DS1, FL1, J7, K1, Q1, R27, T1, TP1, US, Y1
 3. COMPONENTS NOT USED: C17-C22
 4. SEE ASSEMBLY: AC919-0487

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	DESIGNER(S) J. L. WESTBERG R. HINKLE	FINISH	TITLE REAR PANEL I/O
TOLERANCE (DECIMAL) U.O.S. .xx ± .038 .xxx ± .005 .xx ± .015 ANGLES ± 1°	PROJ. LEADER J. WESTBERG	NEXT ASSY.	SCALE NONE SHEET 1 OF 2



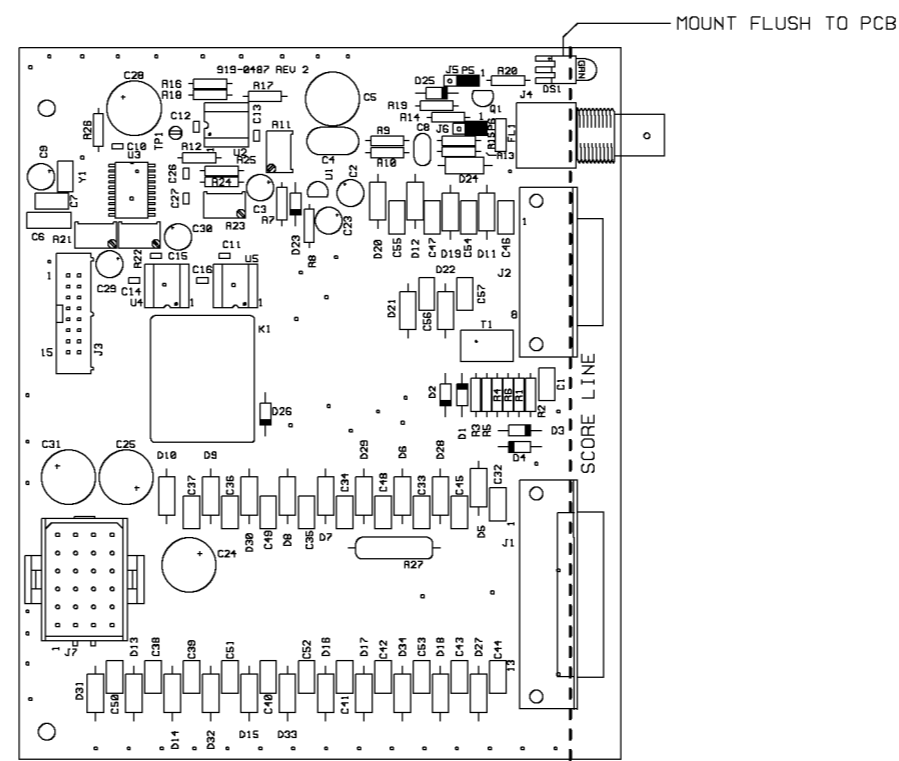
REVISIONS			DRFTER	APPROVED	ECN
1	1-23-00	PROTOTYPE RELEASE.	KT		----
2	5-16-01	MODEL RELEASE	KT		----

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<small>TOLERANCE (DECIMAL) U.O.S.</small> .XX ± .020 .XXX ± .005 .XX ± .015 ANGLES ± 1°		<small>FINISH</small> J. LINDERER J. WESTBERG R. HINKLE	<small>TITLE</small> REAR PANEL I/O	<small>TYPE SIZE DWG. NO.</small> S 919-0487
<small>PROJECT LEADER</small> RFG.		<small>NEXT ASSY.</small> J. WESTBERG	<small>MODEL</small> PNP-1K	<small>SCALE</small> NONE
			<small>SHEET</small> 2 OF 2	<small>REV</small> 2

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REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	1-25-01	PROTOTYPE RELEASE	KT		----
2	5-17-01	MINOR CHANGES: MODEL RELEASE	KT		----



NOTES:
 1) BREAK ALONG SCORE LINE, AFTER FLOW SOLDER.

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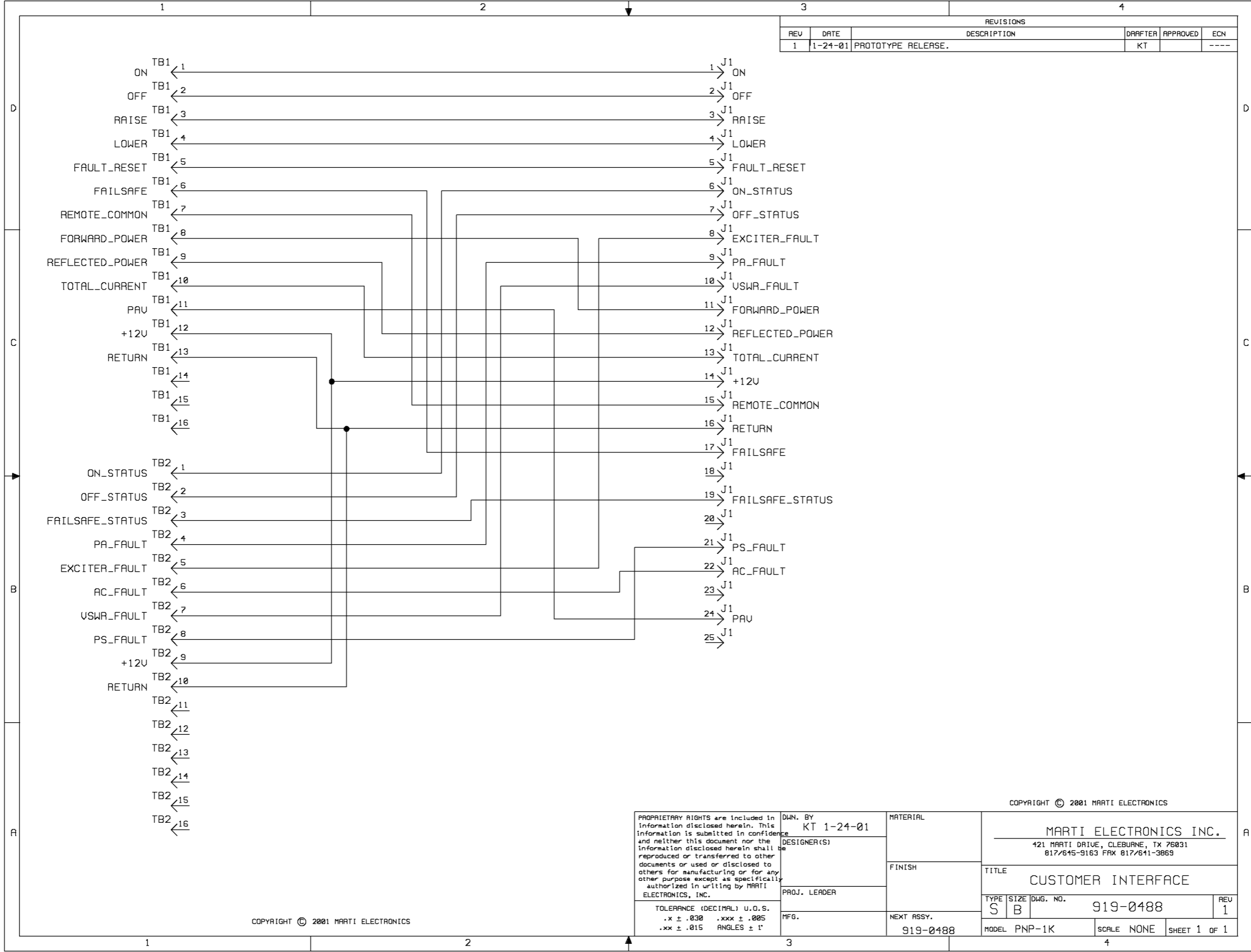
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	DESIGNER(S) JAY LINDERER RICHARD HINKLE JERRY WESTBERG	FINISH	TITLE REAR PANEL I/O		
	PROJ. LEADER JERRY WESTBERG	NEXT ASSY.	TYPE A	SIZE A	DWG No. 919-0487
	MFG.	MODEL PNP-1K	SCALE 1/1	SHEET 1 OF 1	REV 2

1

2

3

4



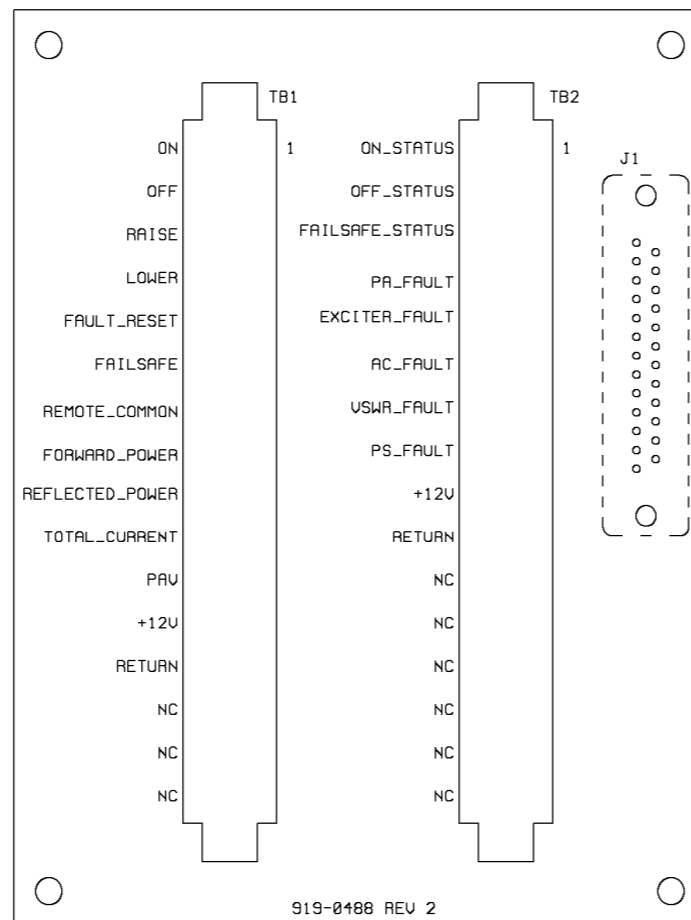
REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	1-24-01	PROTOTYPE RELEASE.	KT		----

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	DESIGNER(S)	FINISH	TITLE CUSTOMER INTERFACE		
	PROJ. LEADER	TYPE SIZE DWG. NO.	S B 919-0488 REV 1		
TOLERANCE (DECIMAL) U.O.S. .x ± .030 .xxx ± .005 .xx ± .015 ANGLES ± 1°	MFG.	NEXT ASSY. 919-0488	MODEL PNP-1K	SCALE NONE	SHEET 1 OF 1

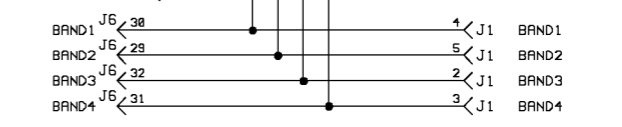
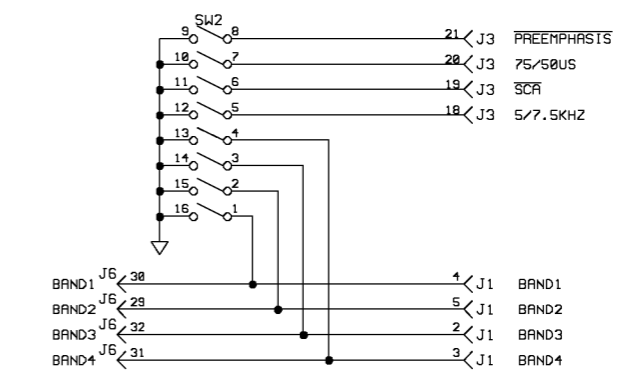
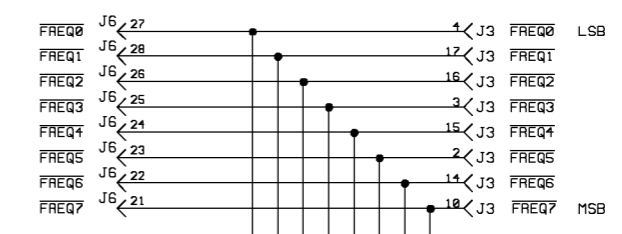
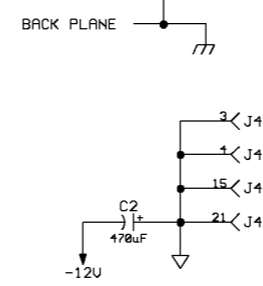
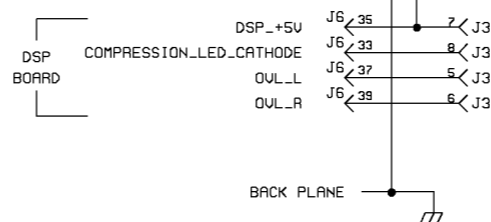
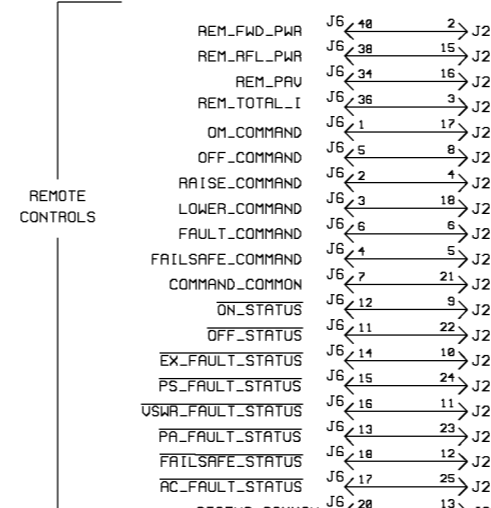
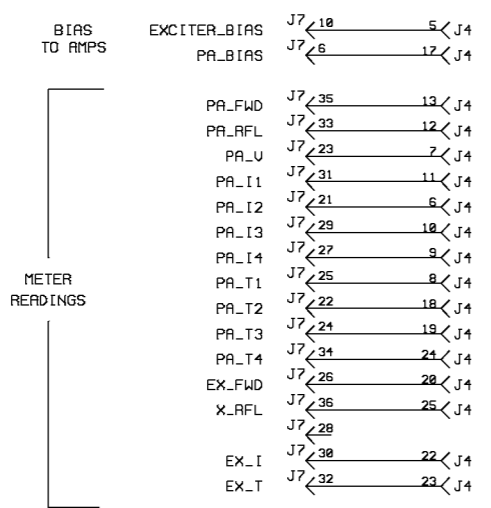
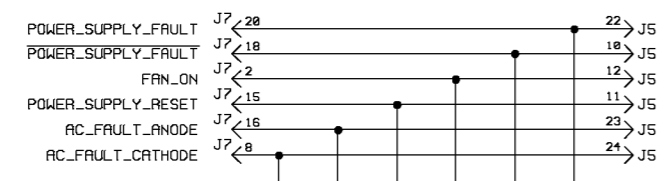
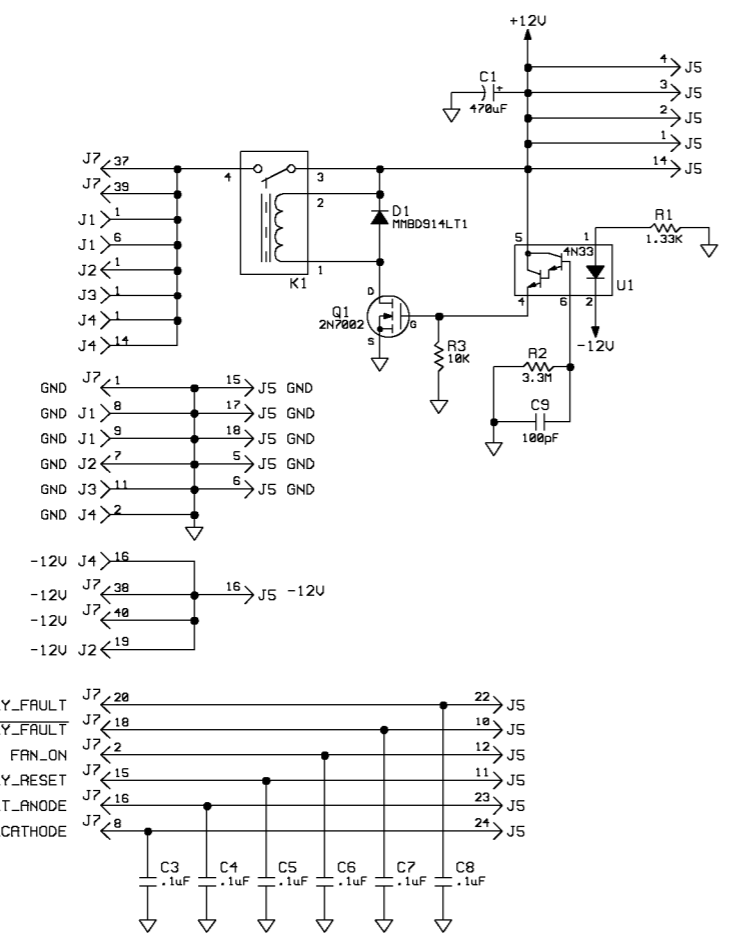
REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	1-29-01	PROTOTYPE RELEASE	KT		----
2	5-18-01	MODEL RELEASE	KT		----



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	DESIGNER(S)	FINISH	TITLE CUSTOMER INTERFACE		
	PROJ. LEADER	NEXT ASSY.	TYPE A	SIZE B	DWG No. 919-0488
	MFG.		REV 2	MODEL PNP-1K	SCALE 1/1 SHEET 1 OF 1
TOLERANCE (DECIMAL) U.O.S. .X ± .030 .XXX ± .005 .XX ± .015 ANGLES + 1°					

REVISIONS				
REV	DATE	DESCRIPTION	DRAWN	APPROVED
1	2-11-01	PROTOTYPE RELEASE	MM	---
2	4-23-01	PROTOTYPE CHANGES/MODEL RELEASE	KT	---
3	10-15-01	ADDED J4-16; TIED ST_CMN TO BP; CHGD NETS	KT	JLT 10509



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DESIGNED BY: MERKEL 2-11-01
 DESIGNER(S):
 PROJ. LEADER:
 PFG:

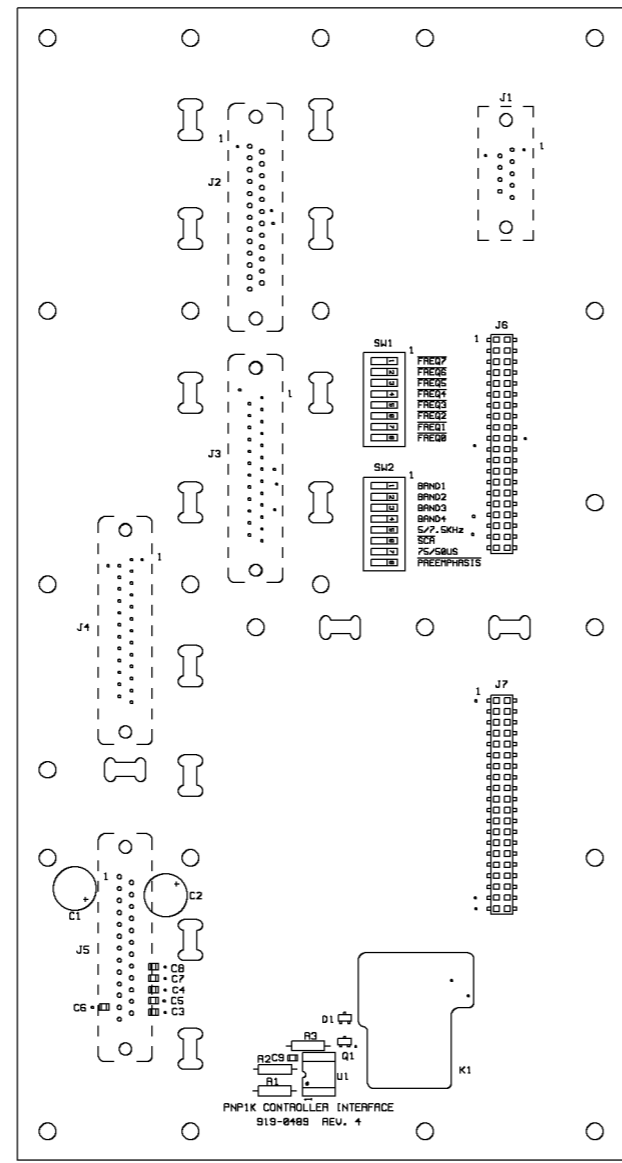
MATERIAL: SEE BOM 919-0189
 FINISH:
 NEXT ASSY:

TOLERANCE (DECIMAL) U.O.S.
 .x ± .030 .xxx ± .005
 .xx ± .015 ANGLES ± 1°

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 1100 N. 217TH ST., P.O. BOX 3688 QUINCY, IL. 62305
 217/224-3688 FAX 217/224-9507

BROADCAST ELECTRONICS, INC.
 TITLE: CONTROLLER INTERFACE
 TYPE: S D
 SIZE: 919-0489
 DWG. NO.:
 REV: 3
 MODEL: PNP-1K
 SCALE: NONE
 SHEET 1 OF 1

REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	2-13-01	PROTOTYPE RELEASE	MM		-----
2	4-24-01	PROTOTYPE CHANGES	KT		-----
3	5-18-01	MODEL RELEASE	KT	JT	-----
4	10-16-01	TIED J4-16 TO -12V, J2-13 & J6-20 TO CHGND	KT		10509

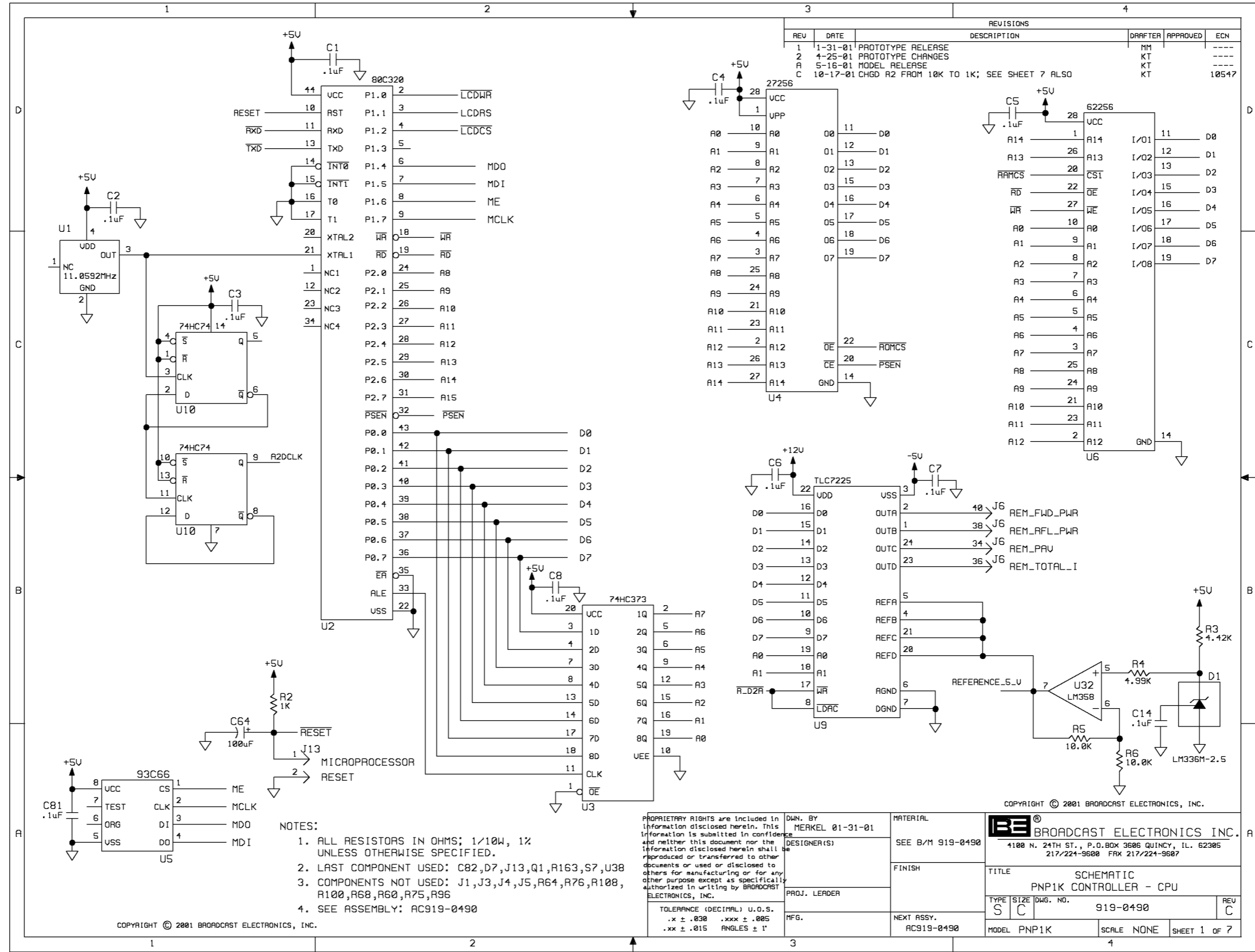


NOTES:
 1) DASHED OUTLINED PARTS ARE STUFFED ON THE SOLDER SIDE OF PCB (J1-J5)

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	DESIGNER(S)	FINISH	
TOLERANCE (DECIMAL) U.O.S. .X ± .030 .XXX ± .005 .XX ± .015 ANGLES ± 1°	PROJ. LEADER	NEXT ASSY.	TITLE CONTROLLER INTERFACE
	MFG.		TYPE SIZE DWG No. REV A C 919-0489 4
			MODEL PNP1K SCALE 1/1 SHEET 1 OF 1



REVISIONS			
REV	DATE	DESCRIPTION	ECN
1	1-31-01	PROTOTYPE RELEASE	MM
2	4-25-01	PROTOTYPE CHANGES	KT
A	5-16-01	MODEL RELEASE	KT
C	10-17-01	CHGD R2 FROM 10K TO 1K; SEE SHEET 7 ALSO	KT

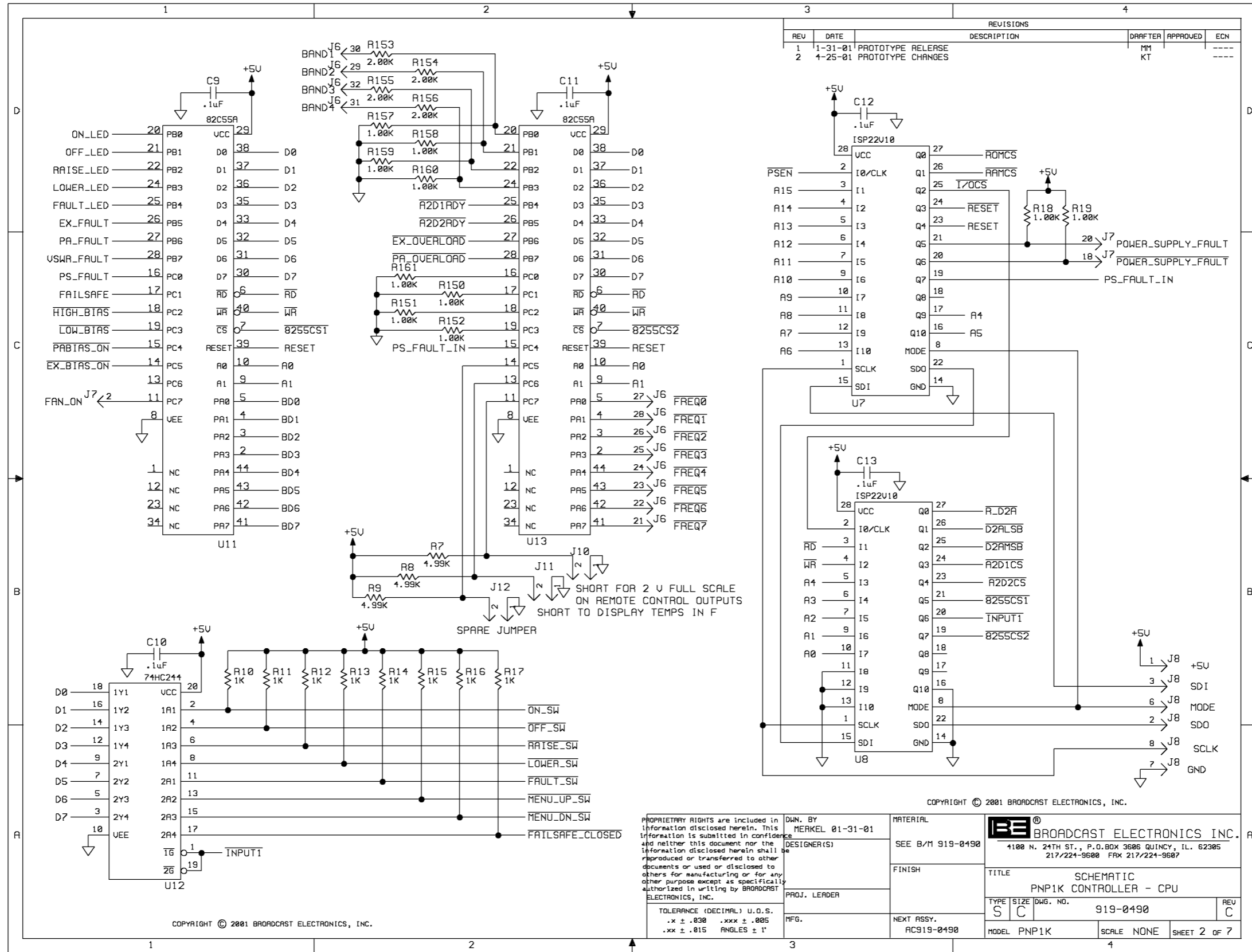
- NOTES:
1. ALL RESISTORS IN OHMS; 1/10W, 1% UNLESS OTHERWISE SPECIFIED.
 2. LAST COMPONENT USED: C82,D7,J13,Q1,R163,S7,U38
 3. COMPONENTS NOT USED: J1,J3,J4,J5,R64,R76,R108,R100,R68,R60,R75,R96
 4. SEE ASSEMBLY: AC919-0490

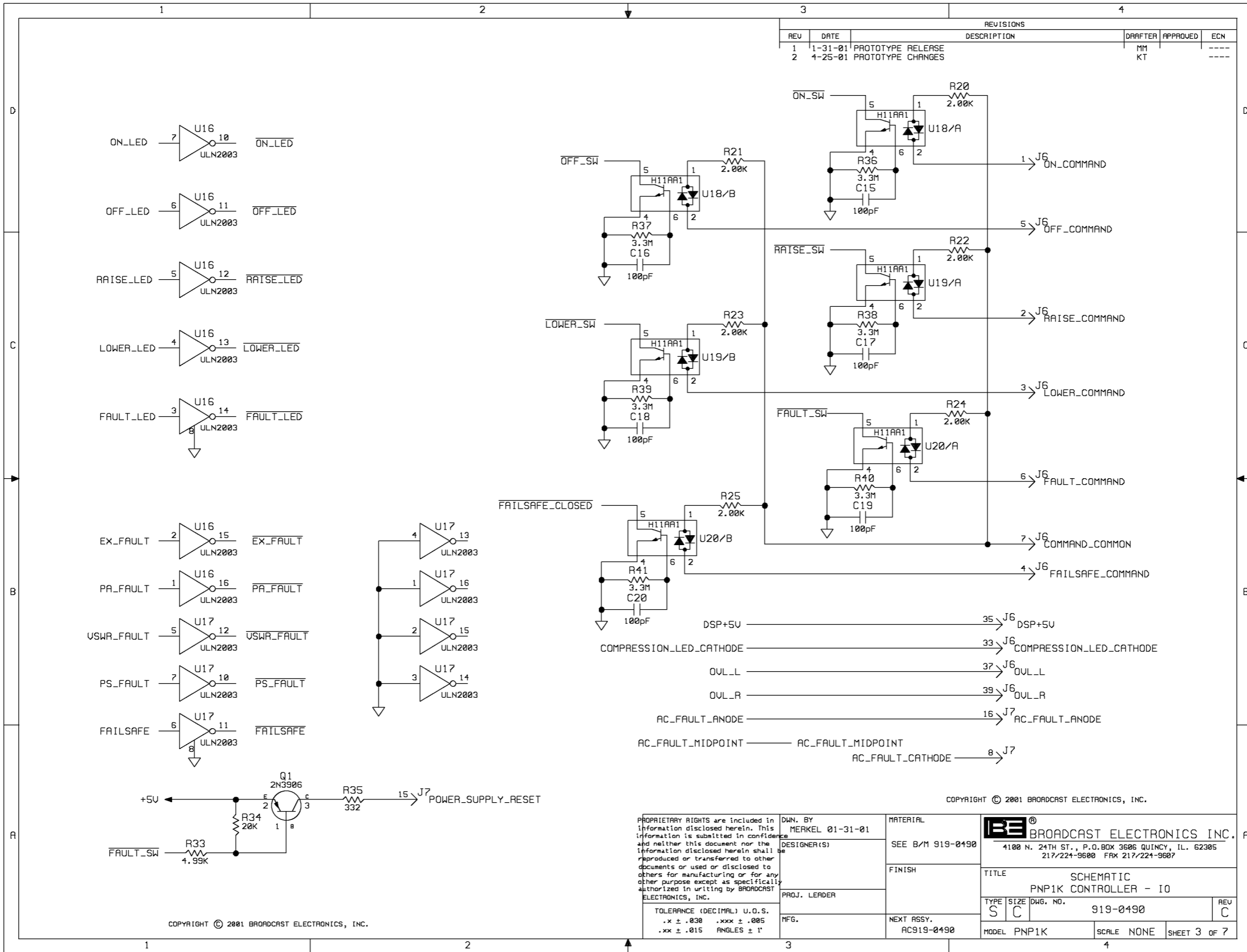
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TOLERANCE (DECIMAL) U.O.S.
 .x ± .030 .xxx ± .005
 .xx ± .015 ANGLES ± °

DWN. BY
 MERKEL 01-31-01
 DESIGNER(S)
 PROJ. LEADER
 MFG.
 NEXT ASSY.
 AC919-0490

MATERIAL SEE B/M 919-0490		 BROADCAST ELECTRONICS INC. 4100 N. 24TH ST., P.O. BOX 3606 QUINCY, IL. 62305 217/224-9600 FAX 217/224-9607	
FINISH		TITLE SCHEMATIC	
TYPE SIZE DWG. NO.		919-0490	
MODEL PNP1K	SCALE NONE	SHEET 1 OF 7	





REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	1-31-01	PROTOTYPE RELEASE	MM		----
2	4-25-01	PROTOTYPE CHANGES	KT		----

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DWN. BY
MERKEL 01-31-01

MATERIAL
SEE B/M 919-0490

FINISH

PROJ. LEADER

MFG.

NEXT ASSY.
AC919-0490

MODEL PNP1K

BE BROADCAST ELECTRONICS, INC.
4100 N. 24TH ST., P.O. BOX 3606 QUINCY, IL. 62305
217/224-9600 FAX 217/224-9607

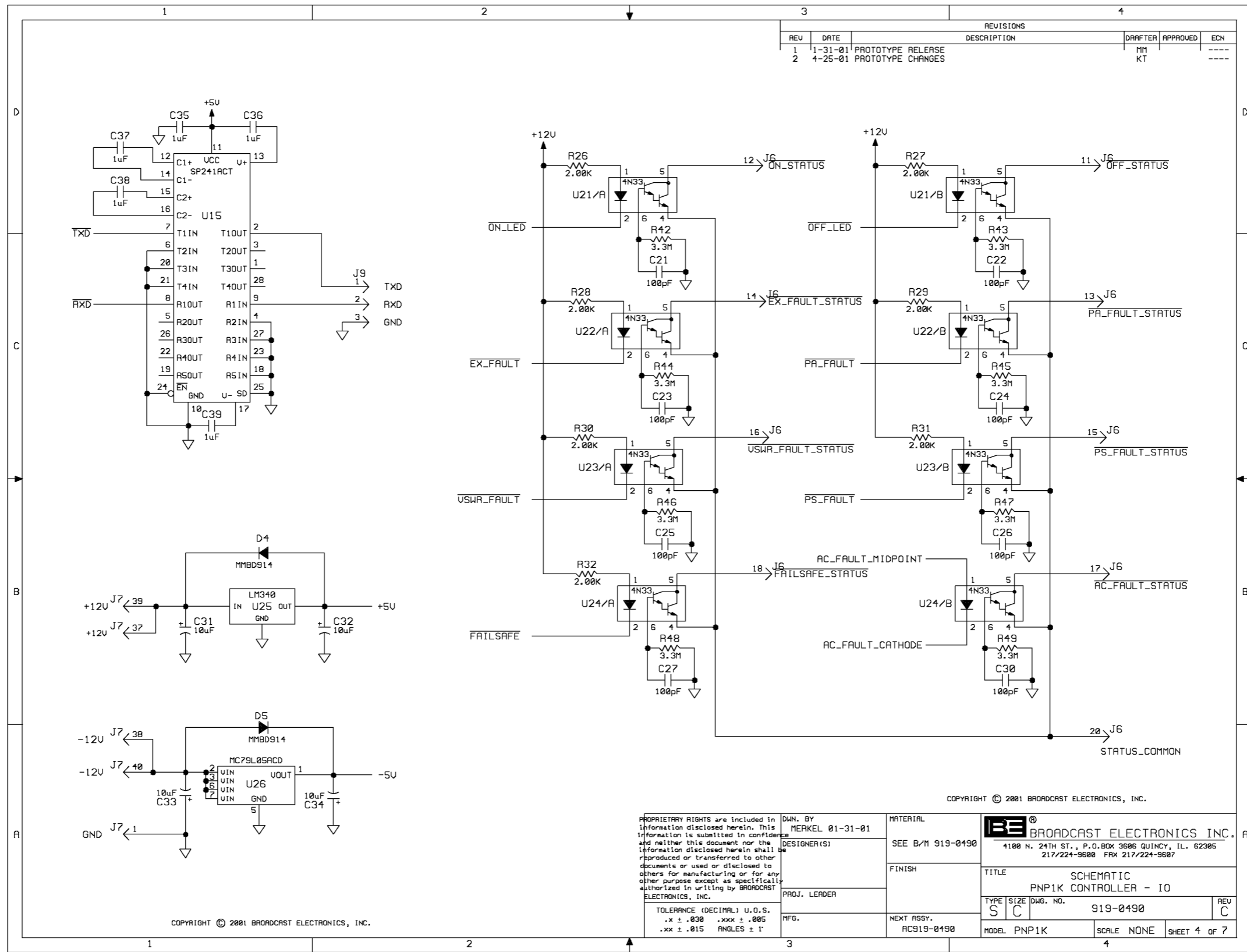
TITLE
SCHEMATIC
PNP1K CONTROLLER - IO

TYPE SIZE DWG. NO. 919-0490

SCALE NONE

SHEET 3 OF 7

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REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	1-31-01	PROTOTYPE RELEASE	MM		----
2	4-25-01	PROTOTYPE CHANGES	KT		----

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DWN. BY
MERKEL 01-31-01

DESIGNER(S)

PROJ. LEADER

MFG.

TOLEANCE (DECIMAL) U.O.S.
.x ± .030 .xxx ± .005
.xx ± .015 ANGLES ± 1°

MATERIAL
SEE B/M 919-0190

FINISH

NEXT ASSY.
ACS19-0190

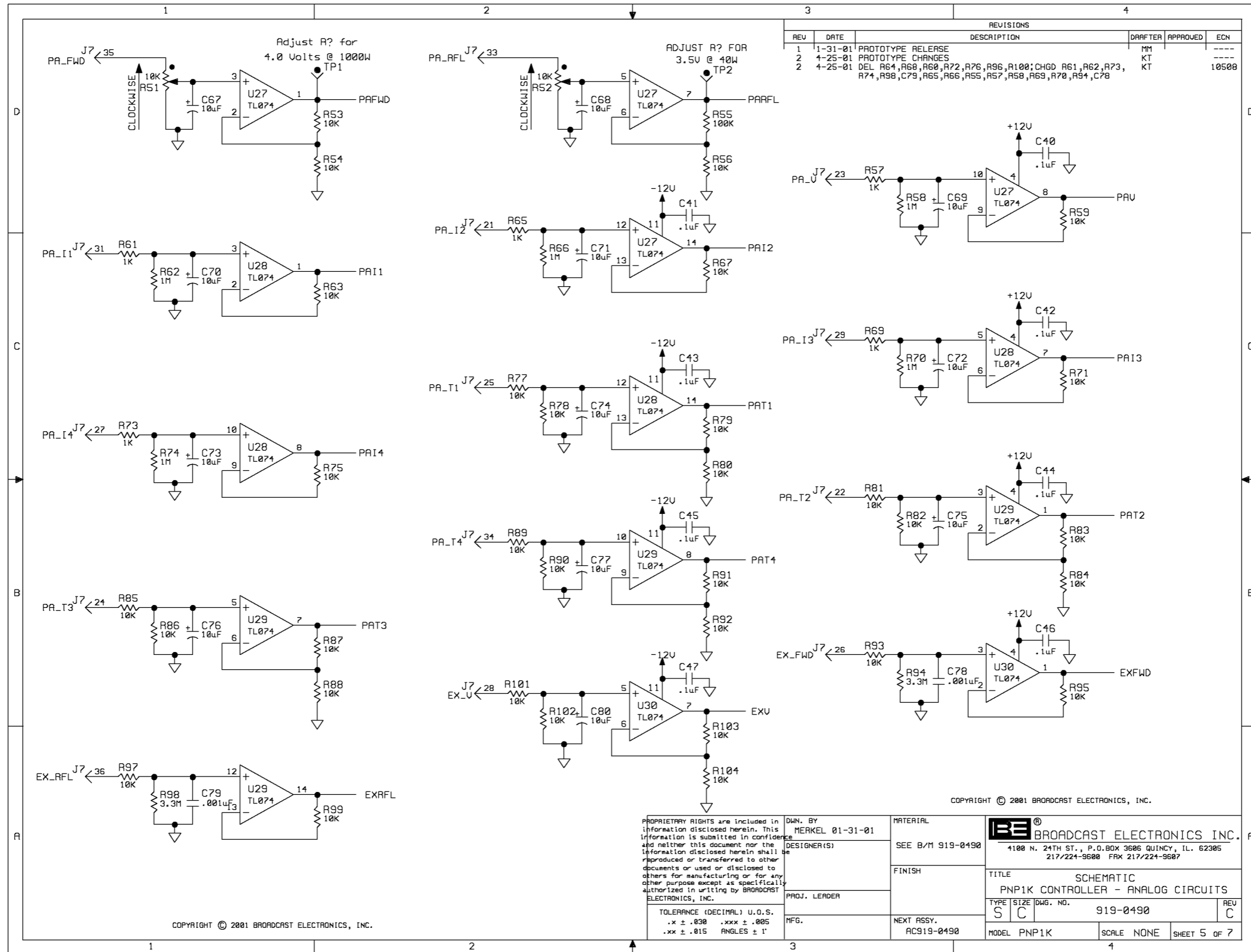
BROADCAST ELECTRONICS INC.
4100 N. 24TH ST., P.O. BOX 3606 QUINCY, IL. 62305
217/224-9600 FAX 217/224-9607

TITLE
PNP1K CONTROLLER - IO

TYPE S SIZE C DWG. NO. 919-0190 REV C

MODEL PNP1K SCALE NONE SHEET 4 OF 7

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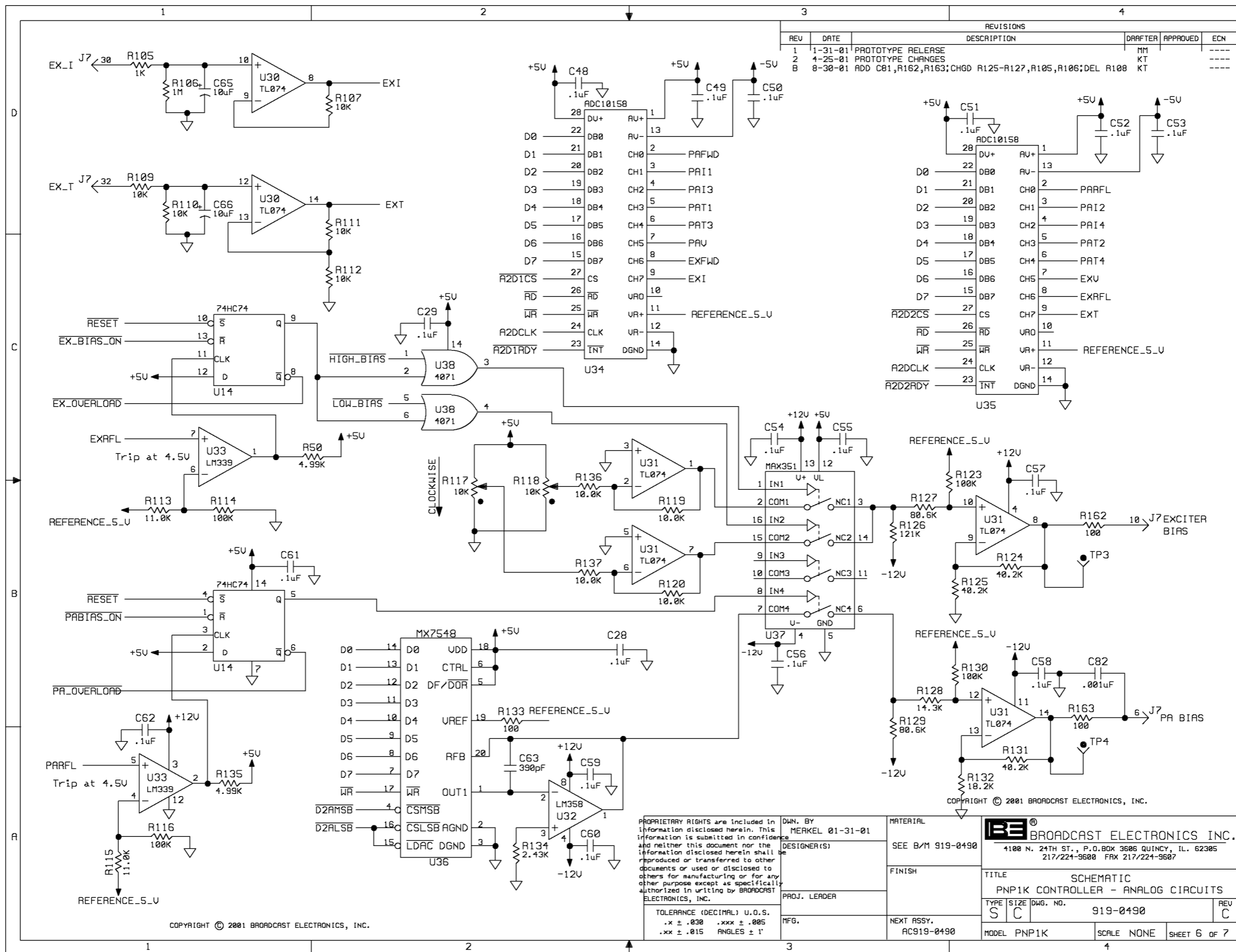


REVISIONS			DRAFTER	APPROVED	ECN
REV	DATE	DESCRIPTION			
1	1-31-01	PROTOTYPE RELEASE	MM		----
2	4-25-01	PROTOTYPE CHANGES	KT		----
2	4-25-01	DEL R64, R68, R68, R72, R76, R96, R100; CHGD R61, R62, R73, R74, R88, C79, R65, R66, R55, R57, R58, R69, R70, R94, C78	KT		10508

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	DESIGNER(S)	FINISH		TITLE SCHEMATIC PNP1K CONTROLLER - ANALOG CIRCUITS
	PROJ. LEADER	MFG.	NEXT ASSY. AC919-0490	TYPE SIZE DWG. NO. S C 919-0490
	TOLERANCE (DECIMAL) U.O.S. .x ± .030 .xxx ± .005 .xx ± .015 ANGLES ± 1'		MODEL PNP1K	SCALE NONE SHEET 5 OF 7

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REVISIONS			
REV	DATE	DESCRIPTION	ECN
1	1-31-01	PROTOTYPE RELEASE	MM
2	4-25-01	PROTOTYPE CHANGES	KT
B	8-30-01	ADD C81,R162,R163;CHGD R125-R127,R105,R106;DEL R108	KT

ADC10158	
D0	22 DB0
D1	21 DB1
D2	20 DB2
D3	19 DB3
D4	18 DB4
D5	17 DB5
D6	16 DB6
D7	15 DB7
A2D1CS	27 CS
RD	26 RD
WR	25 WR
A2DCLK	24 CLK
A2DIRDY	23 INT
DU+	28
AV+	13
AV-	2
CH0	3
CH1	4
CH2	5
CH3	6
CH4	7
CH5	8
CH6	9
CH7	10
UR0	11
UR+	12
UR-	14
DGND	14

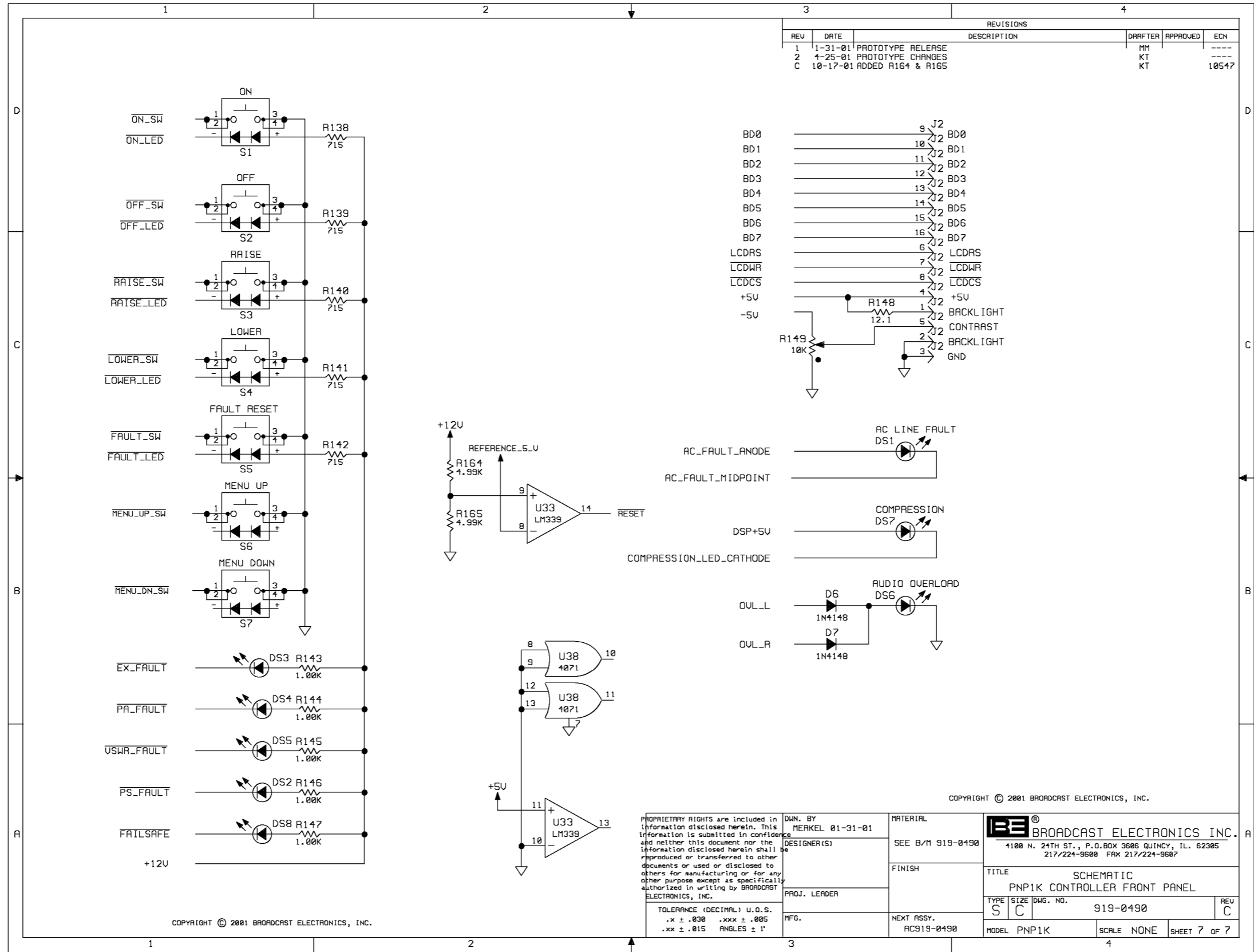
ADC10158	
D0	22 DB0
D1	21 DB1
D2	20 DB2
D3	19 DB3
D4	18 DB4
D5	17 DB5
D6	16 DB6
D7	15 DB7
A2D2CS	27 CS
RD	26 RD
WR	25 WR
A2DCLK	24 CLK
A2D2RDY	23 INT
DU+	28
AV+	13
AV-	2
CH0	3
CH1	4
CH2	5
CH3	6
CH4	7
CH5	8
CH6	9
CH7	10
UR0	11
UR+	12
UR-	14
DGND	14

MX7548	
D0	14 D0
D1	13 D1
D2	12 D2
D3	11 D3
D4	10 D4
D5	9 D5
D6	8 D6
D7	7 D7
WR	17 WR
D2MSB	4 CSMSB
D2LSB	15 CSLSB
LDAC	16 DGND
UDD	18
CTRL	6
DF/DOR	5
VREF	19
RFB	20
OUT1	1
CSLSB	2
AGND	3
DGND	15

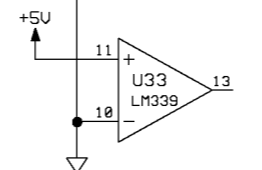
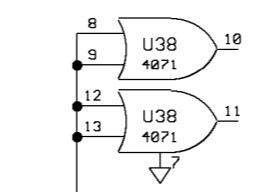
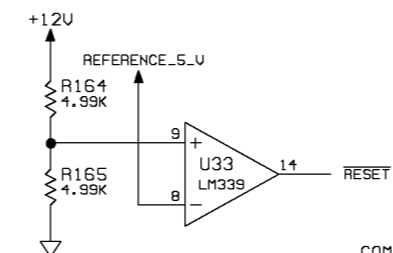
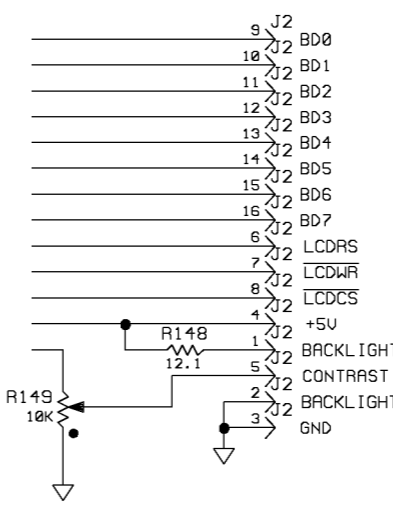
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TOLERANCE (DECIMAL) U.O.S.
 .x ± .030 .xxx ± .005
 .xx ± .015 ANGLES ± 1°

DWN. BY MERKEL 01-31-01	MATERIAL SEE B/M 919-0490	 BROADCAST ELECTRONICS INC. 4100 N. 24TH ST., P.O. BOX 3606 QUINCY, IL. 62305 217/224-9600 FAX 217/224-9607
DESIGNER(S) BE	FINISH	
PROJ. LEADER	TITLE SCHEMATIC PNP1K CONTROLLER - ANALOG CIRCUITS	TYPE SIZE DWG. NO. 919-0490 MODEL PNP1K SCALE NONE SHEET 6 OF 7
MFG.	NEXT ASSY. AC919-0490	



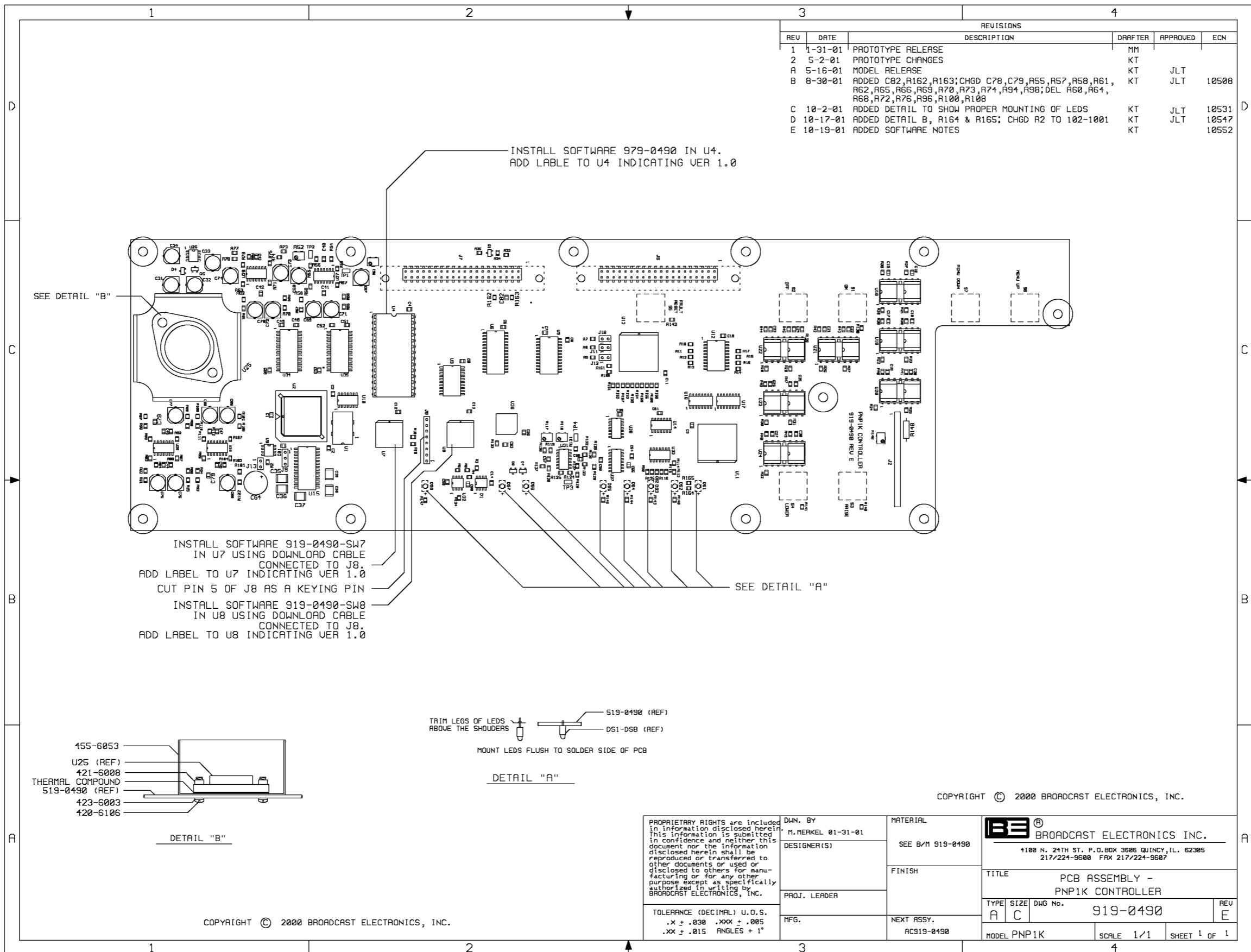
REVISIONS				DRAFTER	APPROVED	ECH
REV	DATE	DESCRIPTION				
1	1-31-01	PROTOTYPE RELEASE		MM		----
2	4-25-01	PROTOTYPE CHANGES		KT		----
3	10-17-01	ADDED R164 & R165		KT		10547



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TOLERANCE (DECIMAL) U.O.S. .x ± .030 .xxx ± .005 .xx ± .015 ANGLES ± 1		DESIGNER(S) PROJ. LEADER	FINISH	TITLE SCHEMATIC PNP1K CONTROLLER FRONT PANEL
MFG.		NEXT ASSY. AC919-0490	MODEL PNP1K	TYPE S SIZE C DWG. NO. 919-0490 REV C SCALE NONE SHEET 7 OF 7

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REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	1-31-01	PROTOTYPE RELEASE	MM		
2	5-2-01	PROTOTYPE CHANGES	KT		
A	5-16-01	MODEL RELEASE	KT	JLT	
B	8-30-01	ADDED C82,R162,R163;CHGD C78,C79,R55,R57,R58,R61,R62,R65,R66,R69,R70,R73,R74,R94,R98;DEL R60,R64,R68,R72,R76,R96,R100,R108	KT	JLT	10508
C	10-2-01	ADDED DETAIL TO SHOW PROPER MOUNTING OF LEDS	KT	JLT	10531
D	10-17-01	ADDED DETAIL B, R164 & R165; CHGD R2 TO 102-1001	KT	JLT	10547
E	10-19-01	ADDED SOFTWARE NOTES	KT		10552

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	DESIGNER(S)	
	PROJ. LEADER	
	MFG.	

MATERIAL	SEE B/M 919-0490
FINISH	
NEXT ASSY.	ACS19-0490

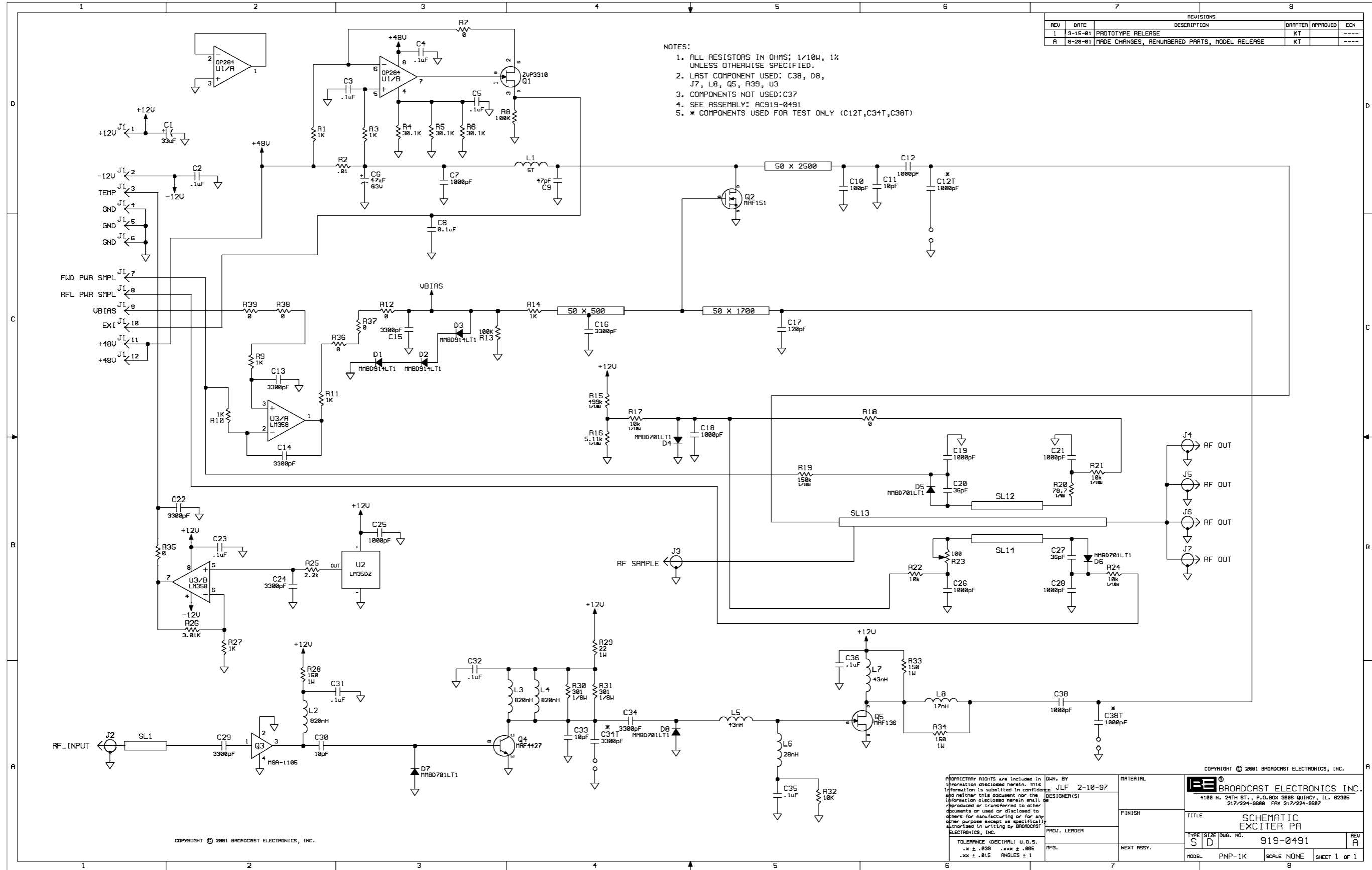
BROADCAST ELECTRONICS INC. 1100 N. 24TH ST. P.O. BOX 3606 QUINCY, IL. 62305 217/224-9600 FAX 217/224-9607		
TITLE		
PCB ASSEMBLY - PNP1K CONTROLLER		
TYPE	SIZE	DWG No.
A	C	919-0490
REV	E	
MODEL	SCALE	SHEET
PNP1K	1/1	1 OF 1

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DETAIL "A"

DETAIL "B"



- NOTES:
1. ALL RESISTORS IN OHMS: 1/10W, 1% UNLESS OTHERWISE SPECIFIED.
 2. LAST COMPONENT USED: C38, D8, J7, L8, Q5, R39, U3
 3. COMPONENTS NOT USED: C37
 4. SEE ASSEMBLY: AC919-0491
 5. * COMPONENTS USED FOR TEST ONLY (C12T, C34T, C38T)

REVISIONS				
REV	DATE	DESCRIPTION	DRAWN	APPROVED
1	3-15-01	PROTOTYPE RELEASE	KT	---
A	8-28-01	MADE CHANGES, RENUMBERED PARTS, MODEL RELEASE	KT	---

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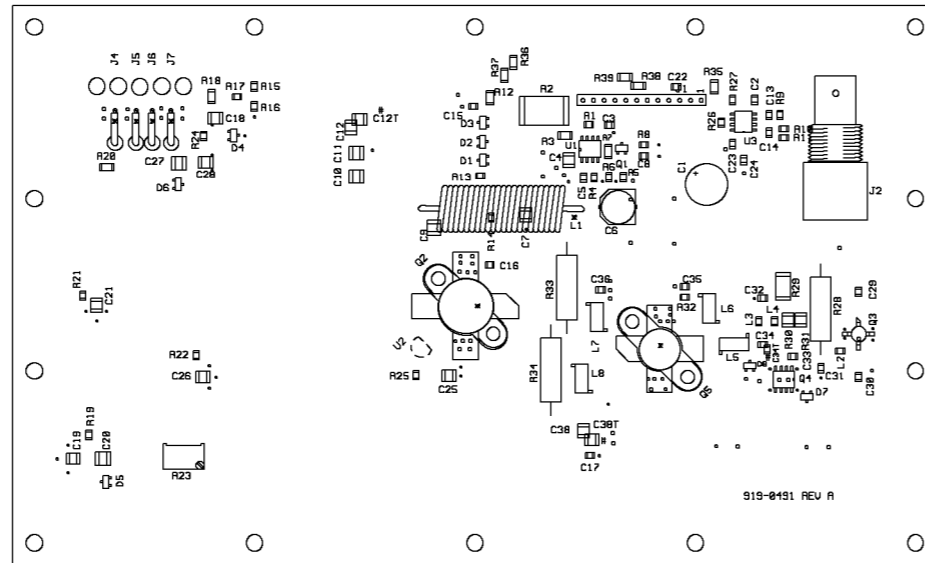
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DESIGNED BY: JLF 2-10-97
 DESIGNER(S):
 PROJ. LEADER:
 MFG.:

MATERIAL		FINISH		NEXT ASSY.	
<p>BROADCAST ELECTRONICS INC. 1100 N. 24TH ST., P.O. BOX 3686 QUINCY, IL. 62385 217/224-9888 FAX 217/224-9887</p>					
TITLE: SCHEMATIC EXCITER PA					
TYPE	SIZE	DWG. NO.	REV		
S	D	919-0491	A		
MODEL	PNP-1K	SCALE	NONE	SHEET 1 OF 1	

REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	3-19-01	PROTOTYPE RELEASE	KT		----
A	8-28-01	RELAID OUT, MODEL RELEASE	KT		----



- NOTES:
- 1) U2 IS STUFFED ON THE SOLDER SIDE OF PCB.
 - 2) * INDICATES PARTS STUFFED ON 959-0491 ASSEMBLY. (J4-J7, L1, Q2 & Q5)
 - 3) # INDICATES PARTS NOT STUFFED (C12T, C34T, C38T)

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TOLERANCE (DECIMAL) U.O.S.
 .X ± .030 .XXX ± .005
 .XX ± .015 ANGLES + 1°

DWN. BY
 KT 3-19-01
 DESIGNER(S)
 PROJ. LEADER
 MFG.

MATERIAL
 SEE BOM
 919-0491
 FINISH
 NEXT ASSY.

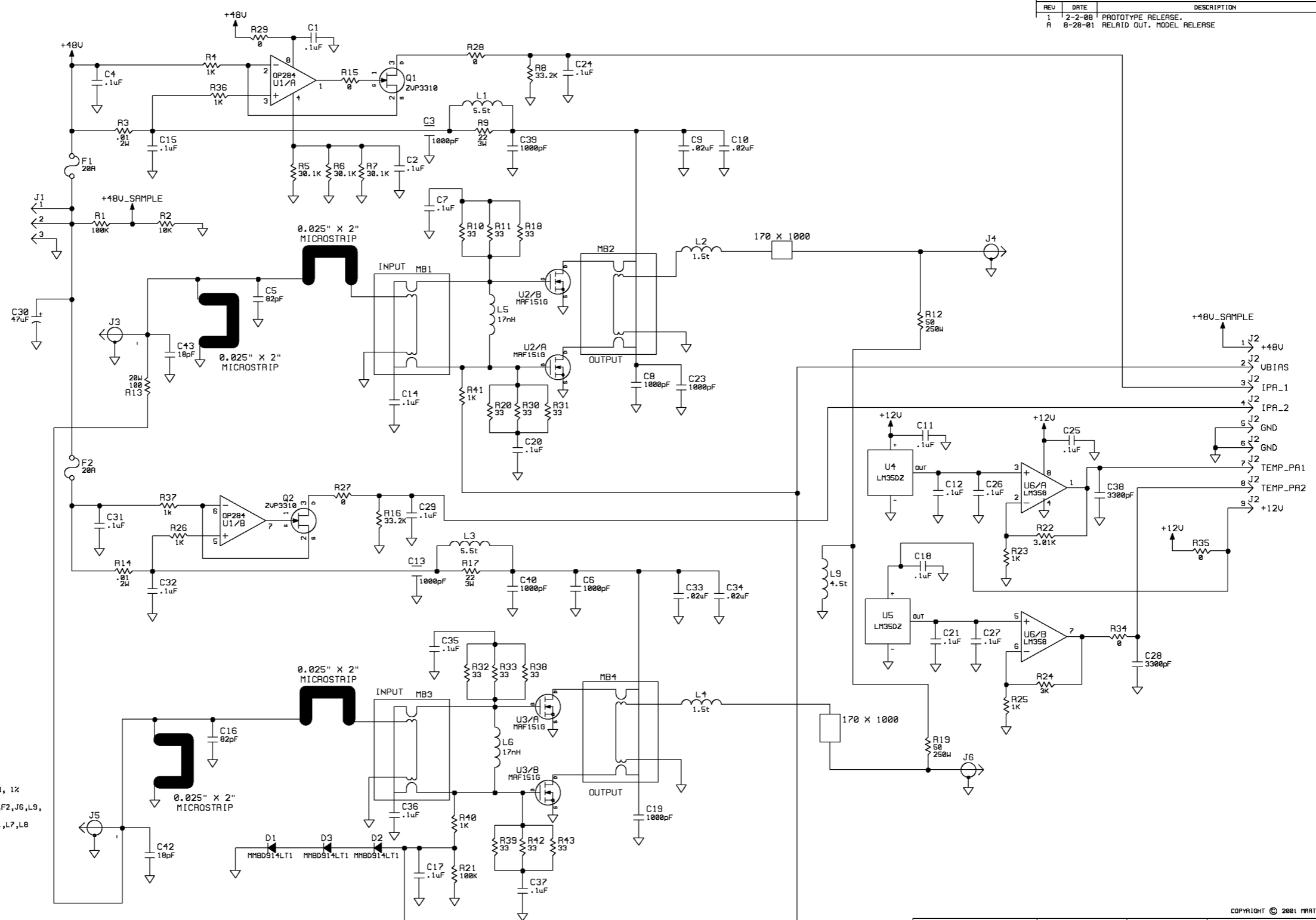
BE BROADCAST ELECTRONICS INC.
 1100 N. 24TH ST. P.O. BOX 3606 QUINCY, IL. 62305
 217/224-9600 FAX 217/224-9607

TITLE
 EXCITER PA

TYPE	SIZE	DWG No.	REV
A	C	919-0491	A

MODEL PNP-1K SCALE 1/1 SHEET 1 OF 1

REVISIONS			DATE	DESCRIPTION	DRAWN	APPROVED	ECN
1	2-2-08	PROTOTYPE RELEASE			KT		---
A	8-28-01	RELAID OUT, MODEL RELEASE			KT		---



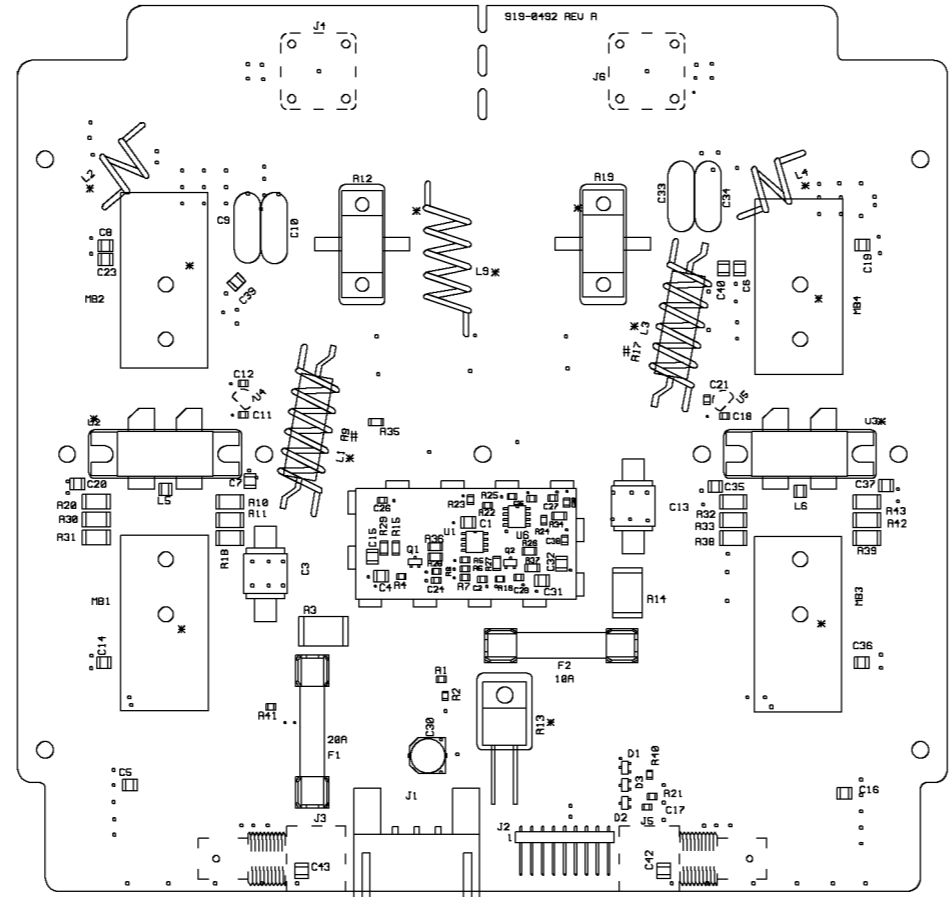
- NOTES:
1. ALL RESISTORS IN OHMS; 1/4W, 1% UNLESS OTHERWISE SPECIFIED.
 2. LAST COMPONENT USED: C43, D3, F2, J6, L9, Q2, R43, U5, W1B
 3. COMPONENTS NOT USED: C22, C41, L7, L8
 4. SEE ASSEMBLY: AC919-0492

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	DESIGNER(S)	FINISH	TITLE AMP BOARD
TOLERANCE (DECIMAL) U.O.S. .x ± .030 .xxx ± .005 .xx ± .015 ANGLES ± 1°	PROJ. LEADER	NEXT ASSY.	TYPE SIZE DWG. NO. S D 919-0492
MODEL PNP-1K		SCALE NONE	SHEET 1 OF 1

REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	2-2-01	PROTOTYPE RELEASE	KT		----
2	5-11-01	RELAI D OUT	KT		----
A	8-28-01	RELAI D OUT; MODEL RELEASE	KT		----



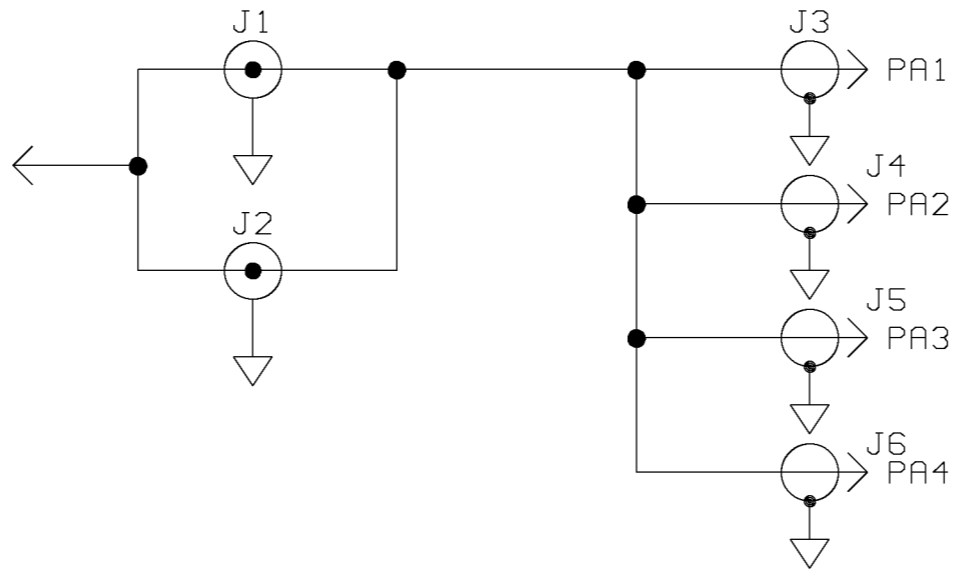
- NOTES:
- 1) DASHED OUTLINED PARTS ARE STUFFED ON SOLDER SIDE OF PCB. (J3, J4, J5, J6, U4 & U5).
 - 2) * INDICATES PARTS STUFFED ON 959-0492 ASSEMBLY. (L1, L2, L3, L4, L9, MB1-MB4, R12, R13, R19, U2 & U3)
 - 3) # INDICATES PARTS NOT STUFFED (R9 & R17)

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	DESIGNER(S)		SEE BOM		421 MARTI DRIVE, CLEBURNE, TX 76031	
	PROJ. LEADER		919-0492		817/645-9163 FAX 817/641-3869	
	MFG.		FINISH	TITLE		AMP
TOLERANCE (DECIMAL) U.O.S. .X ± .030 .XXX ± .005 .XX ± .015 ANGLES + 1°	NEXT ASSY.		TYPE	SIZE	DWG No.	REV
			A	A	919-0492	A
			MODEL PNP-1K	SCALE	1/1	SHEET 1 OF 1

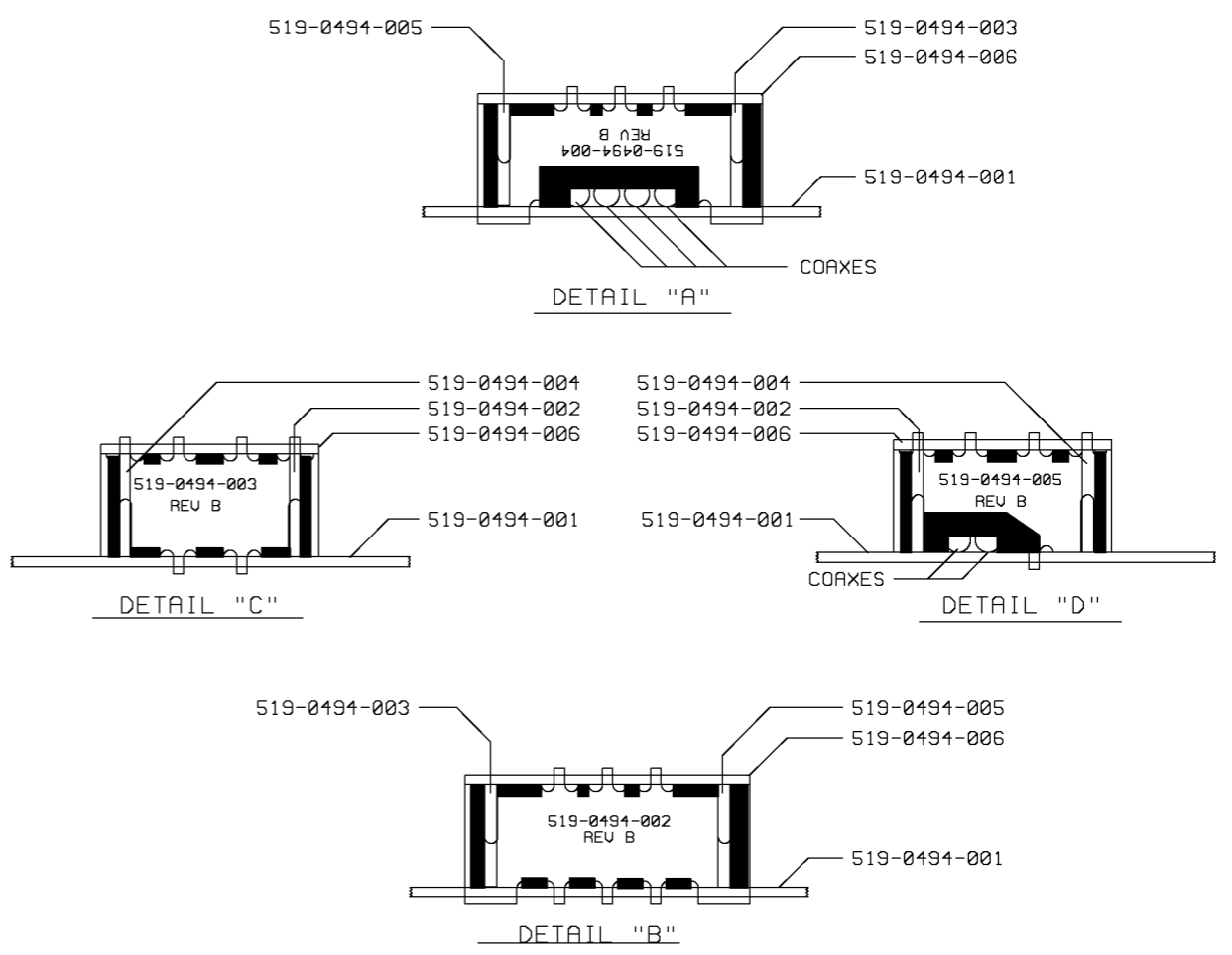
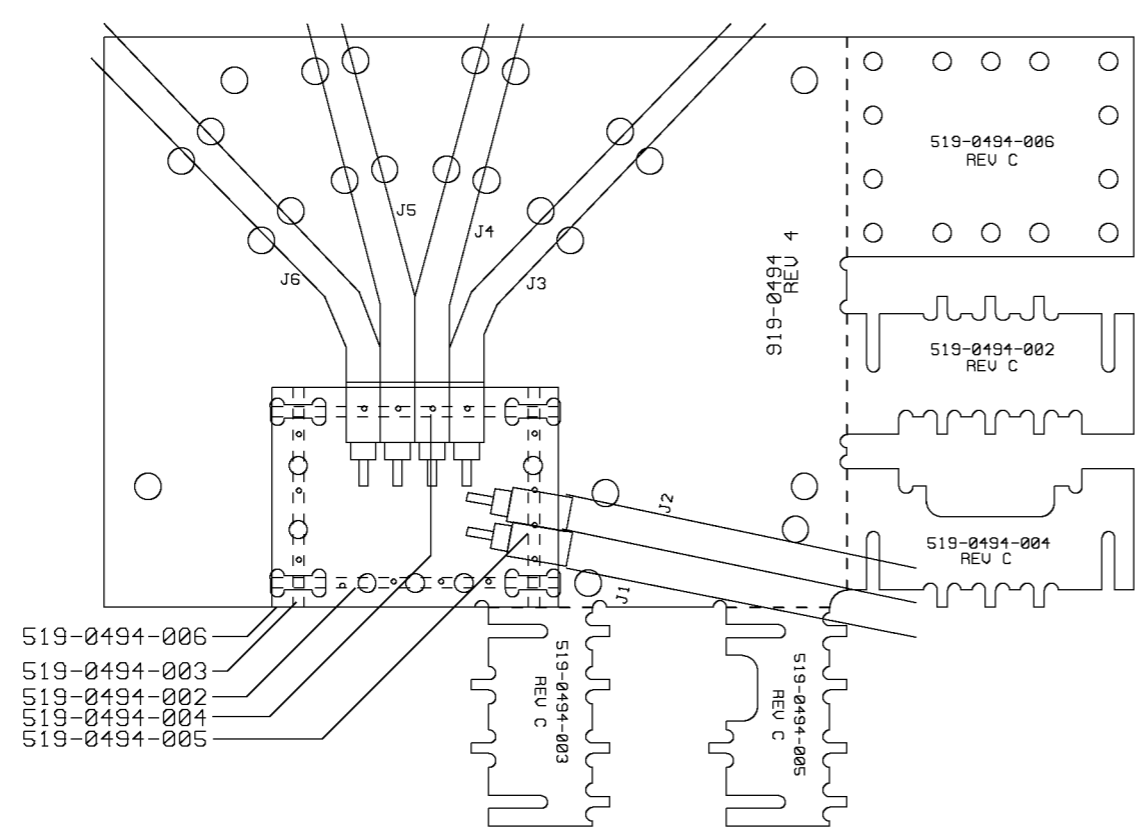
REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	1-30-01	PROTOTYPE RELEASE	KT		----
2	6-20-01	MODEL RELEASE	KT		----
3	10-16-01	DELETED C1,C2 & SL1; ADDED J2	KT		10535



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	DESIGNER(S)	FINISH	TITLE COMBINER			
	PROJ. LEADER	NEXT ASSY.	TYPE S	SIZE A	DWG. NO. 919-0494	REV 3
	MFG.		MODEL PNP-1K	SCALE NONE	SHEET 1 OF 1	
TOLERANCE (DECIMAL) U.O.S. .x ± .030 .xxx ± .005 .xx ± .015 ANGLES ± 1°						

REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	2-16-01	PROTOTYPE RELEASE	KT		----
2	6-20-01	MODEL RELEASE	KT		----
3	9-4-01	RELAID OUT	KT		----
4	10-4-01	ADDED DETAILS AND NOTES	KT		10535



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- NOTES:
- 1) AFTER SOLDERING COAXES IN PLACE, PLACE 519-0494-002 THRU 519-0494-005 ON 519-0494-001.
 - 2) PUT 519-0494-006 ON TOP OF -002 THRU -005.
 - 3) APPLY SOLDER AT SHADED LOCATIONS ON DETAILS "A THRU D".

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TOLERANCE (DECIMAL) U.O.S.
.X ± .030 .XXX ± .005
.XX ± .015 ANGLES + 1°

DWN. BY
KWT 2-16-01

DESIGNER(S)

PROJ. LEADER

MFG.

MATERIAL
SEE BOM
919-0494

FINISH

NEXT ASSY.

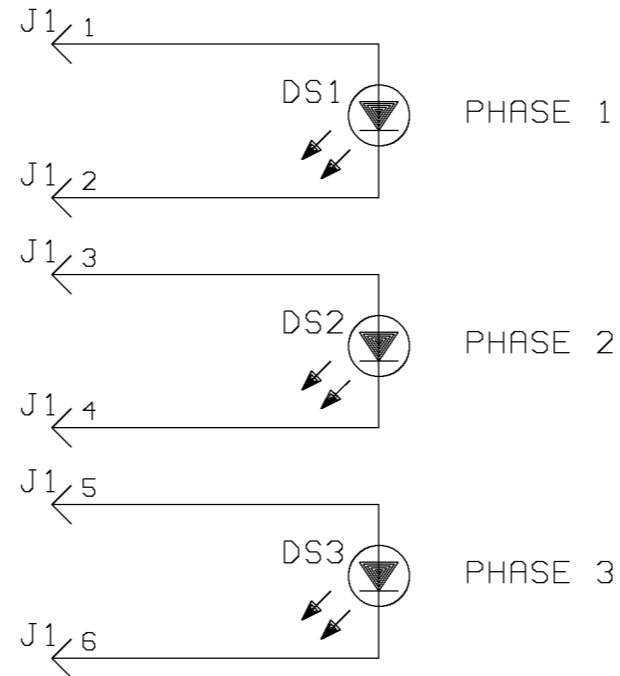
MARTI ELECTRONICS INC.
421 MARTI DRIVE, CLEBURNE, TX 76031
817/645-9163 FAX 817/641-3869

TITLE
COMBINER

TYPE	SIZE	DWG No.	REV
A	A	919-0494	4

MODEL PNP-1K SCALE 1/1 SHEET 1 OF 1

REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	11-10-00	PROTOTYPE RELEASE	KT		----
A	5-9-01	ADDED -100: ENGINEERING RELEASE	KT		----



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DWN. BY
KT 11-10-00

DESIGNER(S)

PROJ. LEADER

MFG.

MATERIAL
SEE BOMS
919-0524
919-0524-100

FINISH

NEXT ASSY.

BE® BROADCAST ELECTRONICS INC.
4100 N. 24TH ST., P.O. BOX 3606 QUINCY, IL. 62305
217/224-9600 FAX 217/224-9607

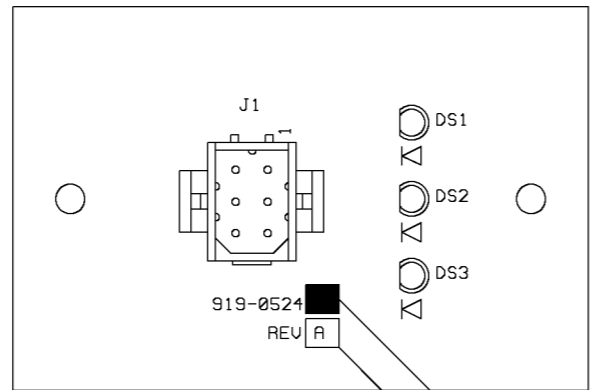
TITLE AC LINE FAULT INDICATOR/
PS VOLTAGE STATUS

TYPE	SIZE	DWG. NO.	REV
S	A	919-0524/-100	A

MODEL FM-10S/PNP-1K	SCALE NONE	SHEET 1 OF 1
---------------------	------------	--------------

TOLERANCE (DECIMAL) U.O.S.
.x ± .030 .xxx ± .005
.xx ± .015 ANGLES ± 1°

REVISIONS					
REV	DATE	DESCRIPTION	DRAFTER	APPROVED	ECN
1	11-20-00	PROTOTYPE RELEASE	KT		----
A	5-9-01	ADDED -100; ENGINEERING RELEASE	KT		----



WRITE -100 IN BOX FOR 919-0524-100
 LEAVE BLANK FOR 919-0524
 WRITE REV LEVEL IN BOX

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	DESIGNER(S)	FINISH	TITLE AC LINE FAULT INDICATOR/ PS VOLTAGE STATUS		
	PROJ. LEADER	NEXT ASSY.	TYPE A	SIZE A	DWG No. 919-0524/-100
	MFG.	TOLERANCE (DECIMAL) U.O.S. .X ± .030 .XXX ± .005 .XX ± .015 ANGLES + 1°	MODEL FM-10S/PNP-1K	SCALE 1/1	REV A SHEET 1 OF 1