



VI. BPUD2.5K6S158-J MASK FILTER



THE INFORMATION PROVIDED HEREIN IS PINEAPPLE TECHNOLOGY INCORPORATED PROPRIETARY INFORMATION AND CANNOT BE COPIED OR DISTRIBUTED WITHOUT PRIOR AUTHORIZATION



VI. – BPL5KU-KK HARMONIC FILTER

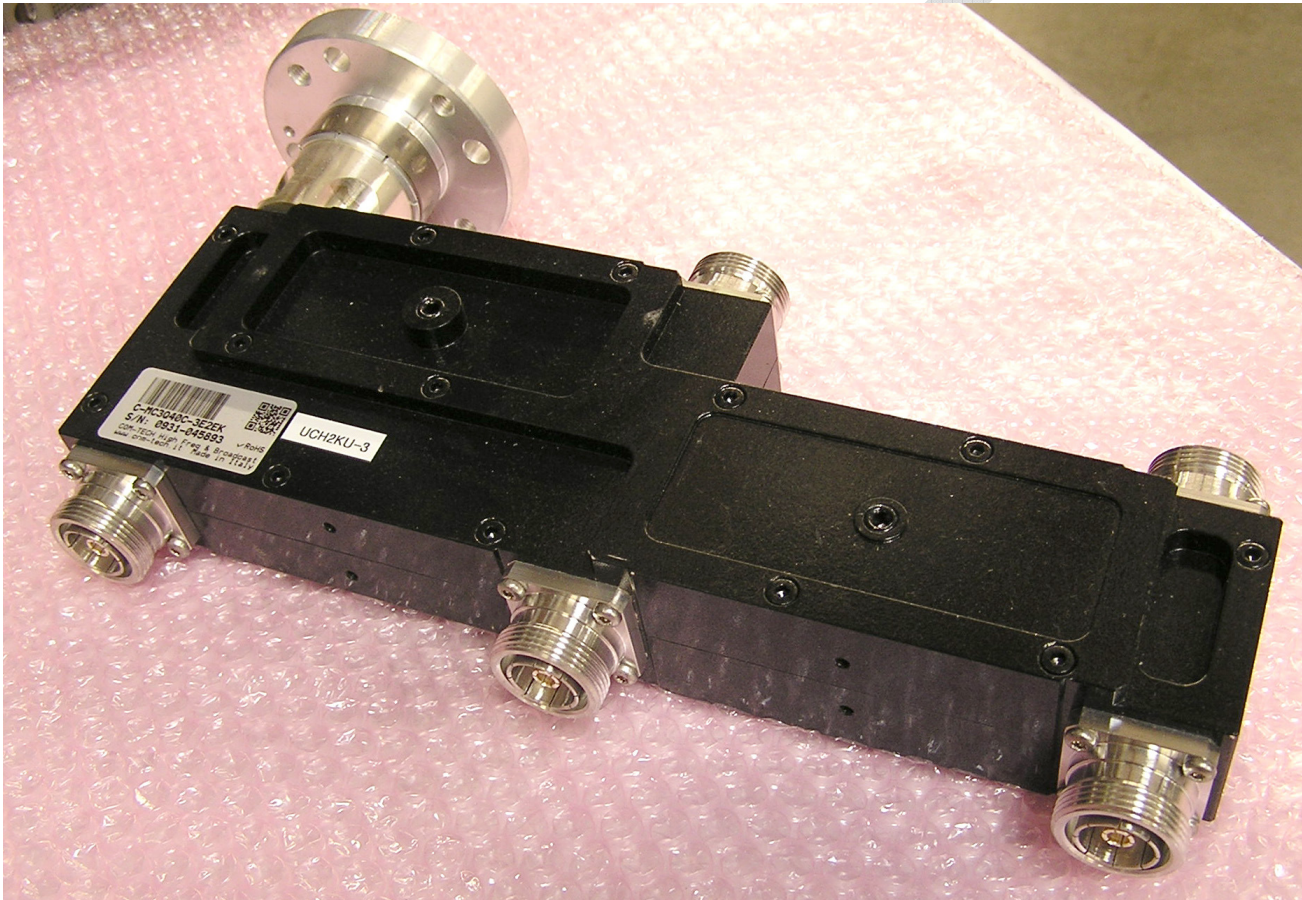


DRAFT

THE INFORMATION PROVIDED HEREIN IS PINEAPPLE TECHNOLOGY INCORPORATED PROPRIETARY INFORMATION AND CANNOT BE COPIED OR DISTRIBUTED WITHOUT PRIOR AUTHORIZATION



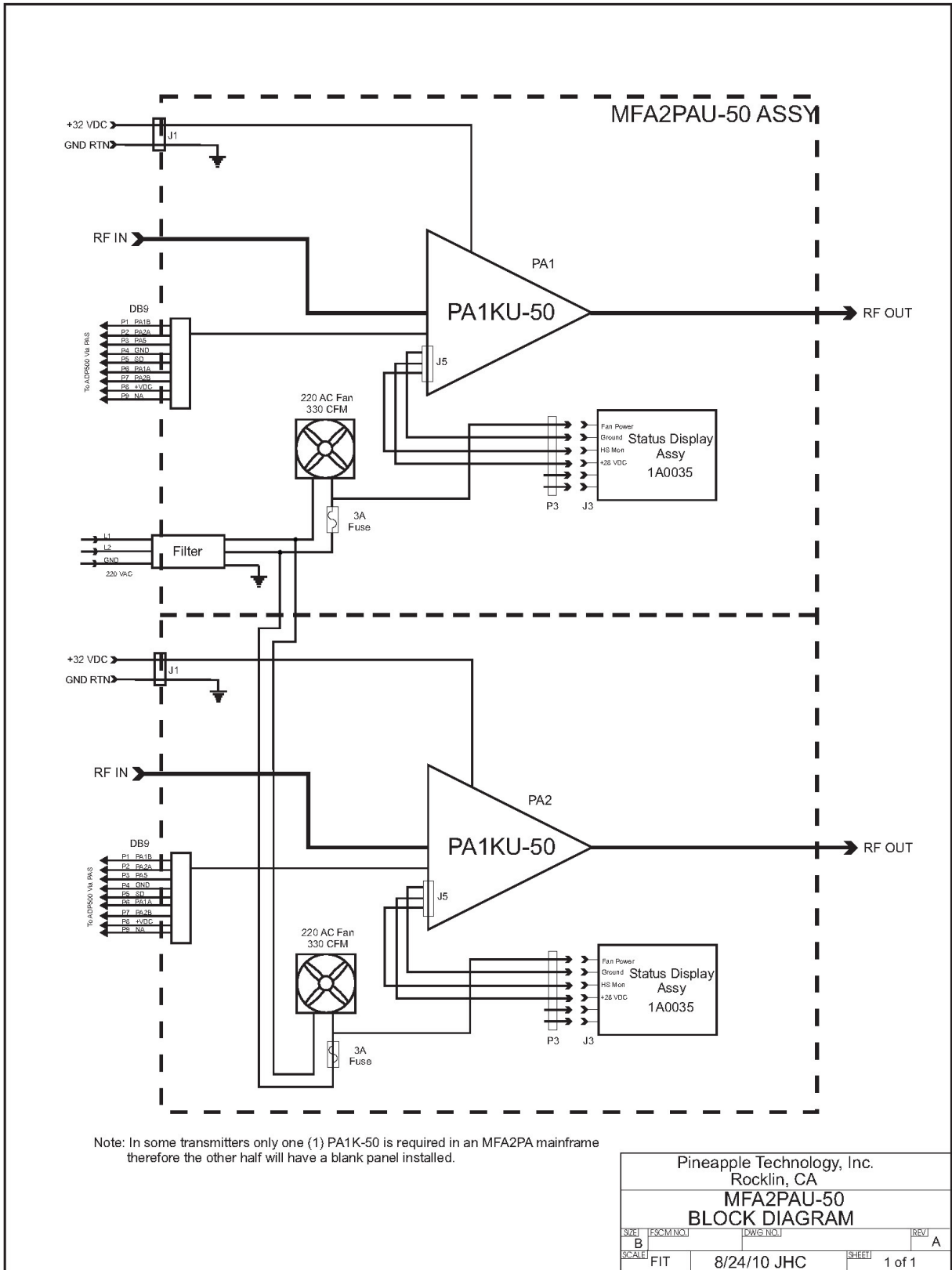
VI. – UCH2KU-3 THREE-WAY HYBRID COMBINER



THE INFORMATION PROVIDED HEREIN IS PINEAPPLE TECHNOLOGY INCORPORATED PROPRIETARY INFORMATION AND CANNOT BE COPIED OR DISTRIBUTED WITHOUT PRIOR AUTHORIZATION



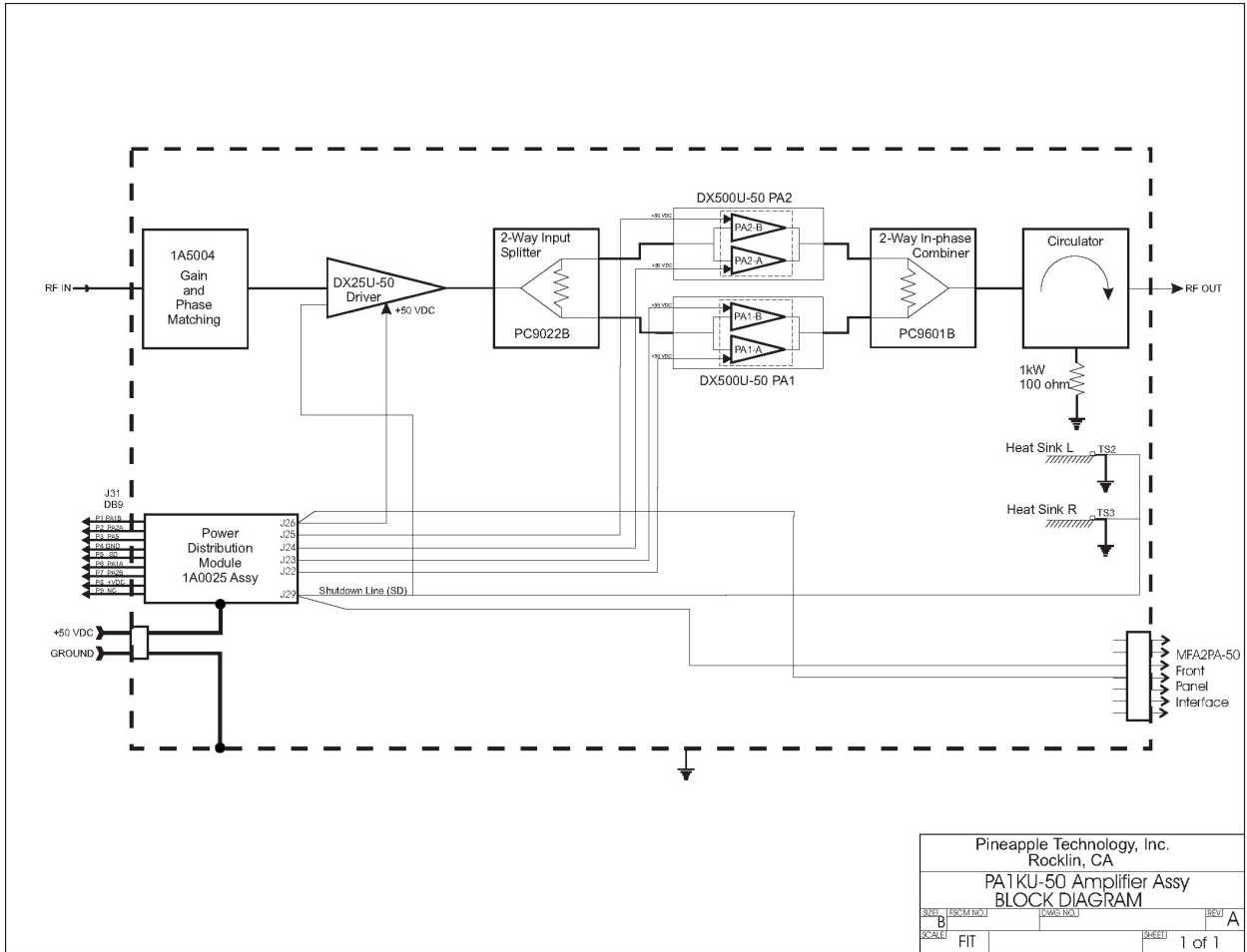
VI. MFA2PA



THE INFORMATION PROVIDED HEREIN IS PINEAPPLE TECHNOLOGY INCORPORATED PROPRIETARY INFORMATION AND CANNOT BE COPIED OR DISTRIBUTED WITHOUT PRIOR AUTHORIZATION

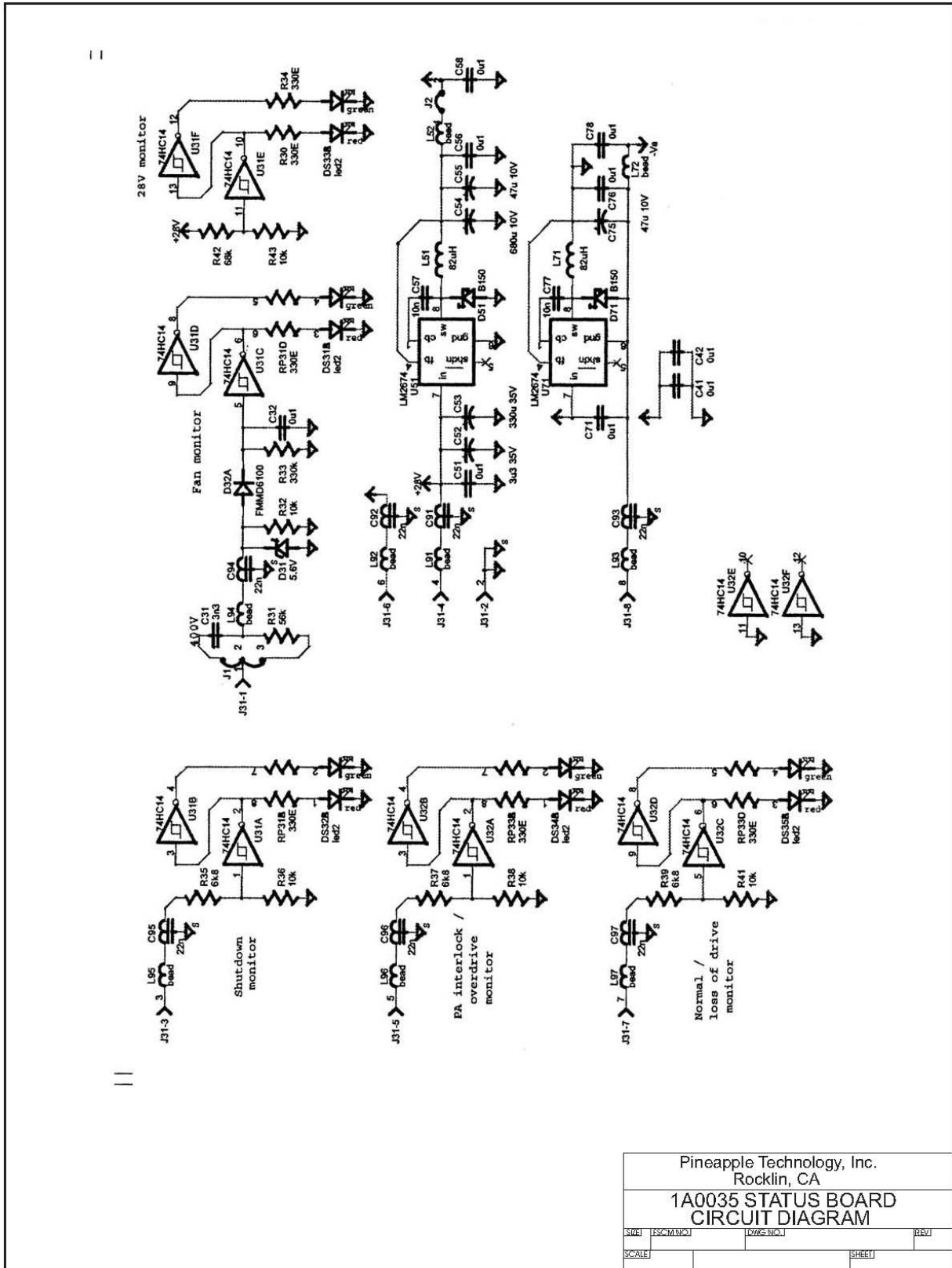


VI. PA1KU-50 AMPLIFIER ASSEMBLY





VI. – 1A0035 – STATUS BOARD

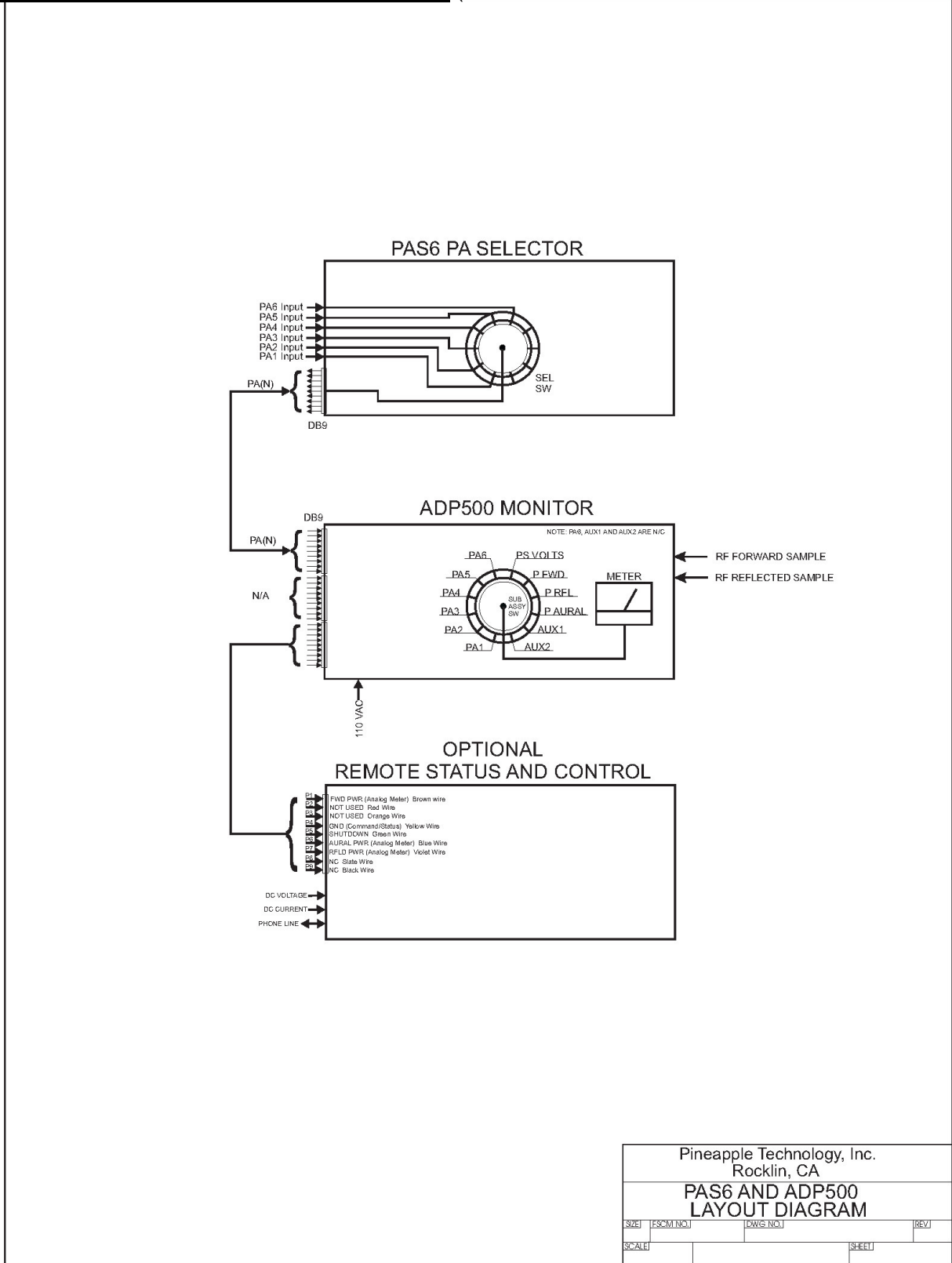


Pineapple Technology, Inc. Rocklin, CA			
1A0035 STATUS BOARD CIRCUIT DIAGRAM			
DATE	DESIGNED BY	DRAWN BY	REV
SCALE		SHEET	

CANNOT BE COPIED OR DISTRIBUTED WITHOUT PRIOR AUTHORIZATION



VI. - DC5KC – 1 DIRECTIONAL COUPLER (Includes PAS6 – PA Selector and ADP500 Monitor)



Pineapple Technology, Inc. Rocklin, CA			
PAS6 AND ADP500 LAYOUT DIAGRAM			
SIZE	ESC/M/NO	DWS/NO	REV
SCALE			SHEET

THE INFORMATION PROVIDED HEREIN IS PINEAPPLE TECHNOLOGY INCORPORATED PROPRIETARY INFORMATION AND CANNOT BE COPIED OR DISTRIBUTED WITHOUT PRIOR AUTHORIZATION



VI. PARTS LIST

PA1KU-50

QUANTITY	PTI PART NUMBER	DESCRIPTION
1 each	DX25U-50	power pallets
2 each	DX500U-50	power pallets
1 each	1A5004	Phase and gain matching circuit
1 each	PC9022B	2-Way gain & in-phase splitter
1 each	PC9601B	2-Way in-phase combiner
1 each	Dependent upon channel number	Circulator
1 each	1A0025	Power distribution module
3 each	310013	Thermal sensors
1 each	481250	Remote monitor port (DB9)
1 each	480401	Front panel status port (Molex)
1 each	451051	Filtered DC input port
1 each	CCA102	Type N Panel mounted RF Input port
1 each	CCA4002	DIN 7/16 Panel mounted RF Output port

MFA2PA

QUANTITY	PTI PART NUMBER	DESCRIPTION
2 each	851025B	470 CFM cooling fans
2 each	990199	Air filter assemblies
2 each	1A0035	Front panel status PC boards
1 each	MF9100E	Main chassis
2 each	MF9139	Mechanical slide assemblies
1 each	MF9310	AC Inlet filter

SECTION VII

Routine Maintenance



VII --- ROUTINE MAINTENANCE

The following KEY MAINTENANCE AND PERFORMANCE CHECKS should be made monthly or more frequently in some environments where dust and rodents are problems. Pineapple Technology, Inc. recommends that the station provide a data log book to maintain these records.

DANGER: SOME OF THE RECOMMENDED TESTS REQUIRE THAT THE TRANSMITTER BE OPERATING IN NORMAL MODE. THIS PROCEDURE MUST BE PERFORMED BY A BROADCAST ENGINEER. MORE THAN ONE PERSON SHOULD BE PRESENT IN CASE OF AN ACCIDENT REQUIRING ASSISTANCE. COMMUNICATIONS TO EMERGENCY SERVICES SHOULD BE AVAILABLE.

TRANSMITTER

- This is an integrated 1.2 KW digital transmitter and is built around three (3) PA1K-50 amplifier assemblies located in two (2) MFA2PA-50 mainframes.
- Record the transmitter forward and reflected power. These readings should be compared to previous readings to insure normal operation.
- Using the ADP500 record currents for each power LDMOS device in the transmitter.
- Carefully inspect RF Output coaxial cables for excessive heating or discoloration.
- Check DC Power connections on shunt panels and power supplies for over-heating which could indicate the hardware needs attention.
- Check DC Connections on the PA rear panel.
- Remove and clean the air filters located on the front panel of each MFA2PA-50 mainframe assembly. It is safe to remove the filter while the transmitter is operating. The filters may be cleaned with a light detergent and dried completely before re-installing. Spare filters are available from Pineapple Technology, Inc. Request Part Number P/N 990199 when ordering.

FACILITIES

- Clean all air inlet filters and exhaust outlets to ensure that the transmitter is getting clean unobstructed airflow.
- Perform recommended service on air condition systems.
- Rodent traps or baits should be renewed to keep the facilities clear of these pests which can cause damage to the transmitter.

SECTION VIII

Adjustments and Tuning



VIII --- ADJUSTMENTS AND TUNING

The DTXPRO-1.2KU is a new series of transmitters offered by Pineapple Technology, Inc. The latest in LDMOS device and circuit technology are employed to ensure reliable and serviceable operation for many years.

There are very few adjustments necessary to maintain full service condition. The following will give the technician a general overview of locations for locating these adjustments:

1. MODULATOR - See details for all adjustments in the DXDPRO-10U Instruction Manual provided on a CD with your transmitter. Should you have any questions, contact the Pineapple Technology, Inc Engineering staff for assistance.
2. BPUD2.5K6S158-J - The ATSC digital mask filter provided with your transmitter has been tuned at the factory and adjustments should not be necessary and are not recommended. Any attempt to tune or modify this filter will void manufacturer's warranty.
3. DX500A - This is the main PA board in the transmitter. Under normal operation, no adjustments are necessary. In the unlikely event that a power transistor has to be replaced, the bias adjustments should be reset to insure optimum operation of the transmitter. The following procedure should be followed when making bias adjustments:
 - a. Remove the PA1K-50 amplifier assembly from the transmitter and set it up on a sturdy work bench. The bench should be equipped with a 50 VDC power supply with current capacity of 10 Amps. A VOM will be required to measure the voltage drop across the precision resistors located on the monitor board.
 - b. Attach 50 ohm load resistors to the input port and one to the output port. **If this is not done, severe damage to the PA is possible resulting in costly repair.**
 - c. Connect the 50 VDC supply to the DC \pm terminals. **DO NOT TURN THE POWER SUPPLY ON AT THIS TIME.**
 - d. Locate the circuits where bias adjustments are necessary. Adjust only those circuits where service was performed. Turn the bias adjustment POT's fully counter clockwise You will find two (2) POT's for each power device with one on each gate. These are small SMT components and require **gentle handling**.
 - e. Locate the current sense resistors on the monitor board. This is a 2 watt .01 ohm precision resistor. There is one for each device.
 - f. Turn the power supply on and measure the +DC to ensure that it reads +50 VDC.
 - g. Measure the voltage drop across the precision resistor. This should read zero (0) VDC. Increase one of the bias POT's slowly till the meter reads 0.009 volts. Increase the second POT until the reading is 0.018 volts. This completes the adjustment.



VIII --- ADJUSTMENTS AND TUNING (Continued)

3. **DX500A** (Continued)

- h. Repeat the adjustment above as necessary to set all circuit that have been serviced.

NOTICE: DO NOT USE THE BIAS CURRENT INDICATED ON THE MONITOR PANEL OF THE ADP1000 TO MAKE BIAS ADJUSTMENTS.

1. PA PALLETS - These circuits are "FIXED TURNED" and do not require any field adjustment. Any questions regarding pallet adjustments should be referred to the factory.
6. PHASE MATCHED CABLES - If it becomes necessary to replace one of the phase matched cables, contact Pineapple Technology, Inc. for replacements. These cables are the ones connected to the input and output ports on the PA1K-50.
7. OUTPUT POWER - The transmitter output power measurement is made using a calibrated RF POWER MONITORING DEVICE. No adjustments are necessary here.
8. GAIN & PHASE MATCHING - Under normal conditions it is not necessary to make any gain or phase adjustments in the transmitter. This transmitter is equipped with provision to adjust phase and gain to ensure minimum power loss in the dump load and maximum forward transfer power to the antenna. Contact Pineapple Technology, Inc. for details if this becomes necessary.

SECTION IX

Problem Solving and Troubleshooting



IX - PROBLEM SOLVING AND TROUBLE SHOOTING

The DTXPRO-1.2KU is a "MODULAR ASSEMBLY" where most of the sub-assemblies can be removed and or replaced as necessary to maintain full service. To service this transmitter, it is best to become familiar with the various sub-assemblies by reviewing the transmitter block diagram and its associated subs shown in the introduction. Any work performed on a transmitter licensed by the FCC must be performed by qualified personnel.

FAILURE ANALYSIS STARTS WITH THE FOLLOWING ASSUMPTIONS:

1. The transmitter is connected to an AC source which is within the specified voltage range and has ample power to run the transmitter.
2. The antenna has been checked out and a proper match has been verified.
3. The room temperature is $< +35$ degrees Celsius ($+95$ degrees Fahrenheit)
4. There are no restrictions in the air flow in or out of the building.
5. The video and aural signals to the modulator comply with stated specifications.

CHECKING THE WARNING LIGHTS

There are several warning signals visible on the front of the transmitter that will alert the technician of possible problems. When viewed from the front, all the lights should be GREEN indicating normal operation. An alert signal is indicated by a RED light. We will focus on RED alert signals in this section.

MFA2PA ASSEMBLY

FAN FAULT RED indicates that the fuse supplying AC to the fan has failed. The fuses located just inside the front panel near the top.

CHECK: FUSE AND/OR FAN

DC SUPPLY RED indicates a loss of +50 VDC to PA

CHECK: DC supply voltage to the rear of the PA1K-50

CHECK: DC supply fuse located on the Fuse panel located at the bottom of the rack in the rear.

CHECK: AUX panel location in the bottom half of the rack being checked for proper voltage and current readings

NOTE: If all the ALERT lights are on in a given rack, this could indicate that a breaker has tripped.

CHECK: Circuit breakers located on the front of the ACDIS2 or the sub-panel breaker located at the MAIN AC supply.



IX - PROBLEM SOLVING AND TROUBLE SHOOTING (Continued)

SHUTDOWN RED indicates that the PA has been "SHUTDOWN". There are two possible reasons for this:

1. Heat Sink over temperature thermostat has tripped protecting the PA

CHECK: Air inlet filter for possible restrictions to air flow

CHECK: Fan air flow for possible fan fault

CHECK: Room temperature

Note: Heat sink over temperature fault is indicated by the RED alert light going ON/OFF in cycles varying in duration depending on air flow. The PA returns to normal operation automatically when the problem is corrected.

2. Remote Shutdown by external signals coming from other protection circuits.

CHECK: Transmitter global protection circuits.

ADP500 MONITOR

The ADP500 is a general purpose test instrument used to display PA status and measure voltage, and current. When combined with the PAS it is possible to measure the current being drawn by each PA RF Device. The ADP500 is a diagnostic tool for troubleshooting the transmitter.

With normal operating conditions, all the LED's on the front panel are GREEN. Red LED's could indicate a fault in the transmitter that requires attention.



IX - PROBLEM SOLVING AND TROUBLE SHOOTING (Continued)

PA1 - PA5 LED's are RED This will indicate that the PA Pallet currents are below the 500 ma set point. This can occur when the PA Power device has failed.

CHECK 1: Select the PA device in question for current display on the multi-meter. Compare the reading to the station log. If abnormal, it is possible that a power transistor has failed.

NOTICE: PA5 will go RED when the INHIBIT SWITCH is actuated.

CHECK2: To confirm a failed device, it is necessary to shutdown the transmitter and remove the PA1K power amplifier assembly and check the device in question. Use a VOM to check the resistance from the gate of each 1/2 of the device to ground. If either reading is below 1K ohm it is likely that the device has failed.

POWER SUPPLY MODULE LED RED

The Power Supply Module has two warning LED's located on the front panel. Normally these LED's are GREEN indicating that the AC Line voltage and the OVER VOLTAGE circuits are operating properly. If either LED turns RED the module in question will be turned off and is no longer supplying power to the transmitter. These modules are "HOT PLUGGABLE" and can be removed from active service by simply removing it from the main frame. Pineapple Technology, Inc., does not recommend any attempt to service these modules. Any attempt to service may void factory warranties. Return the module to Pineapple Technology, Inc., or to the manufacturer for service.

NOTICE: If it becomes necessary to operate the transmitter with a missing supply module, very little if any performance degrading will be experienced. Check the AUX volt meter for any indication of a drop in voltage (normally 50 VDC). This drop is caused by the power supply modules going into "CURRENT LIMIT". It is important that the voltage be around 50 volts ± 0.5 . If the voltage falls below this point, it can be recovered by reducing the RF Drive level a small amount in most cases.

SECTION X

Warranty

X -- WARRANTY

The WARRANTY provided by Pineapple Technology, Inc. (PTI) on this transmitter is detailed below. It should be noted that some of the equipment sub-systems have warranty coverage by the original manufacture that differs from the standard warranty provided by PTI. Warranty details on equipment falling into this category may be found in the Manufacturers instruction manual provided with the transmitter. In all cases, replacement units of this equipment are normally in stock at PTI for quick turn service support to our customers during the PTI Standard Warranty period.

STANDARD WARRANTY

Seller warrants that each Product sold by it is free of defects in materials and workmanship. Seller's obligation under said warranty continues for a period of one (1) year from date of shipment. Repairs or replacement of defective parts shall be the sole and exclusive remedy under warranty, at Seller option, provided that Seller may, as an alternative, elect to refund an equitable portion of the purchase price of the product. THIS WARRANTY IS EXPRESSLY IN LIEU OF AND EXCLUDES ALL OTHER EXPRESS OR IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE, USE, OR APPLICATION, AND ALL OTHER OBLIGATIONS OR LIABILITIES ON THE PART OF THE SELLER, UNLESS SUCH OTHER WARRANTIES OBLIGATIONS OR LIABILITIES ARE EXPRESSLY AGREED TO IN WRITING BY SELLER.

WARRANTY REPLACEMENT AND REPAIRS

All claims under warranty must be made promptly after occurrence of circumstances giving rise to thereto and must be received within the applicable warranty period by seller or its authorized representatives. Such claims must be documented on a PTI* Field Failure Report with a full description of the circumstances giving rise to the claim. Before any products are returned for repair and/or adjustment, written authorization from seller or its authorized representative for the return and instructions as to how and where these products should be shipped must be obtained. This is to include a Return Authorization (RA) number provided by the seller or authorized representative, this must accompany ALL returns. Any product returned to the seller for the examination shall be sent prepaid via the means of transportation indicated as acceptable by seller. Seller reserves the right to reject any warranty claim not promptly reported and any claim on any item that has been altered, i.e. circuit modifications, components removed, or has been shipped by non acceptable means of transportation. When a product has been returned for examination and inspection, or for any other reason, customer shall be responsible for all damage resulting from improper packaging or handling, and for loss in transit, notwithstanding any defect or nonconformity in the product. In all cases the seller has sole responsibility for determining the cause and nature of the failure, and the Seller's determination with regard thereto shall be final. If it is found that Seller's Product has been returned without cause and is still serviceable, customer will be notified and the Product returned at its expense, in addition, a charge for testing and examination may, in Sellers sole discretion be made on Products so returned.

A field Failure Report is included at the end of this manual - Additional Field Failure Reports can be obtained by calling Pineapple Technology, Inc. at (916) 652-1116 or you