OPERATIONAL DESCRIPTION

FCC ID: OEUPA882M180WS2

1. DESCRIPTION

a) Individual Stages

The Power Amplifier is divided into the following sections:

- Splitter / Driver Stage: divides into DC and RF sections. DC section covers DC supply regulation, display LEDs. RF section includes attenuators, RF splitters, RF input detector circuit and driver amplification.
- Amplification Stage: consists of two final amplifier pallets.
- Combiner Stage: consists of power monitor circuitries, combiner, circulator and low pass filter.
- PA Control: contains input signals, microprocessor and output signals sections.

b) Overall Lineup

The RF input is attenuated, split and routed to an input-power-detection circuit and a variable attenuator. The signal is further attenuated, amplified and passed to another splitter. The result is then fed to 2 final power amplifier pallets, combined and routed to a circulator and then a low pass filter before going out to the PA's output port.

There are sensors and couplers placed through out the PA to monitor the PA's input level, forward and reflected power output levels, as well as the ambient and heat sink temperature. These sensor and coupler voltages are utilized by the on-board HC11 microprocessor to provide various PA alarm and protection.

2. FEATURES

The 180W Power Series II PA provides numerous alarm monitor and protection features.

a) Fold Back Mode

The PA will go to the Fold Back Mode and reduce its power by 3dB (90W) when

- Load VSWR is between 2:1 to 3:1
- Ambient temperature is between 45 to 60°C

b) Alarm Indicators

Alarms	LED Status	Condition
DC Power	Solid Green LED	Between 25V-28V
	Flashing	Between 22-25V or 28V-30V
	Off	Less than 22V or Greater than 30V or No power at all
TX On	Solid Green LED	PA is transmitting
	Off	PA is not transmitting
RF Input	Solid Red LED	No input power
	Flashing	Over/Under limit specification
	Off	Input power is within limit
High VSWR	Solid Red LED	Greater than 2:1 VSWR
	Off	No alarm
Over Temp	Solid Red LED	Ambient Temp is greater than 60°C or
		Heat sink Temp is greater than 90°C
	Flashing	Ambient Temp is between 45 to 60°C
	Off	No alarm

Table 1. Alarms

3. ALARM CONNECTOR

Pin#	Signals		
1	Forward Power (0V-no fault, 5V-fault)		
2	Over temperature (0V-no fault, 5V-fault)		
3	Input Power (0V-no fault, 5V-fault)		
4	Relay (5V)		
5	Ground		
6	VSWR (0V-no fault, 5V-fault)		
7	External Reset		
8	Relay NC		
9	Relay COMMON		
10	Relay NO		

Table 2. DB9 Alarms Connector

TRL TECHNOLOGIES, INC.

FCC ID: OEUPA882M180WS2

INPUT FROM DRIVER

FORWARD_POWER
REVERSE_POWER
HS_TEMP
AMBIENT_TEMP_V
INPUT_PWR_DET_V
DUMP_LOAD
PA_CONTROL
REG_15V
5V

INPUT FROM FRONT PANEL

PWR OUT ADJUST

PS_VOLTAGE

PS_VOLTAGE

OUTPUT TO FRONT PANEL LEDS

DC PWR TX ON RF INPUT VSWR OVER TEMP

OUTPUT TO 9-PIN DB ON BACK

HEAT SINK TEMP FWD PWR RELAY CONTROL SIGNALS 5V DC FAN VOLTAGE

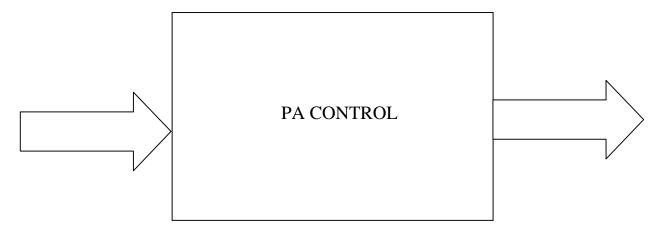


FIGURE 1. PA CONTROL DIAGRAM

TRL TECHNOLOGIES, INC. FCC ID: OEUPA882M180WS2

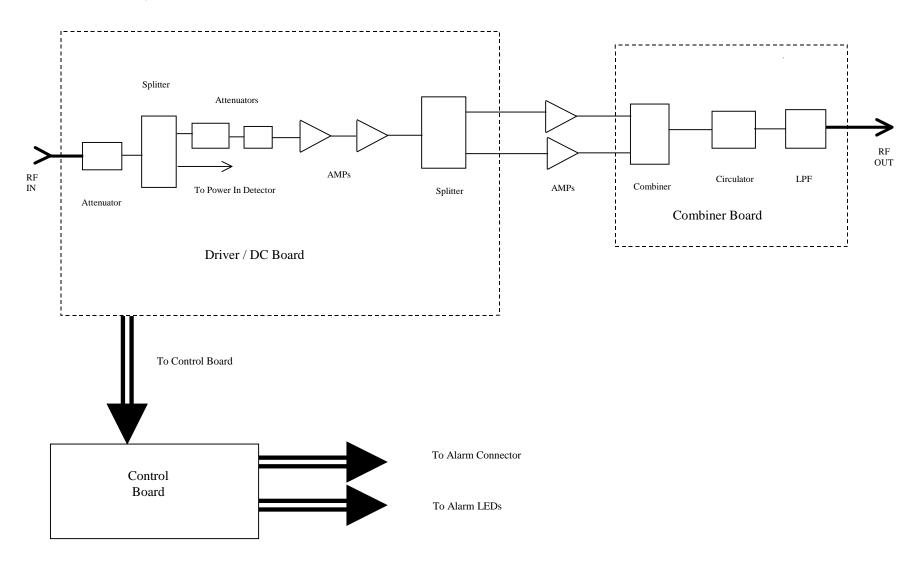


FIGURE 2. PA BLOCK DIAGRAM