OPERATIONAL DESCRIPTION

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

INPUT FROM DRIVER
FORWARD_POWER
REVERSE_POWER
HS_TEMP
AMBIENT_TEMP_V
INPUT_PWR_DET_V
DUMP_LOAD
PA_CONTROL
REG_15V
5V
PS_VOLTAGE
PS_VOLTAGE

INPUT FROM FRONT PANEL
PWR OUT ADJUST

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

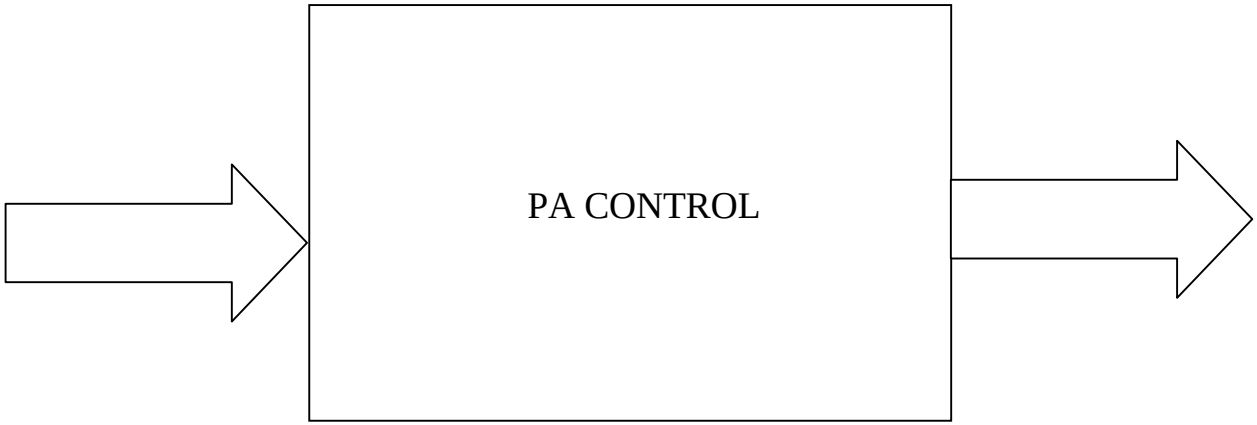

FIGURE 1. PA CONTROL DIAGRAM

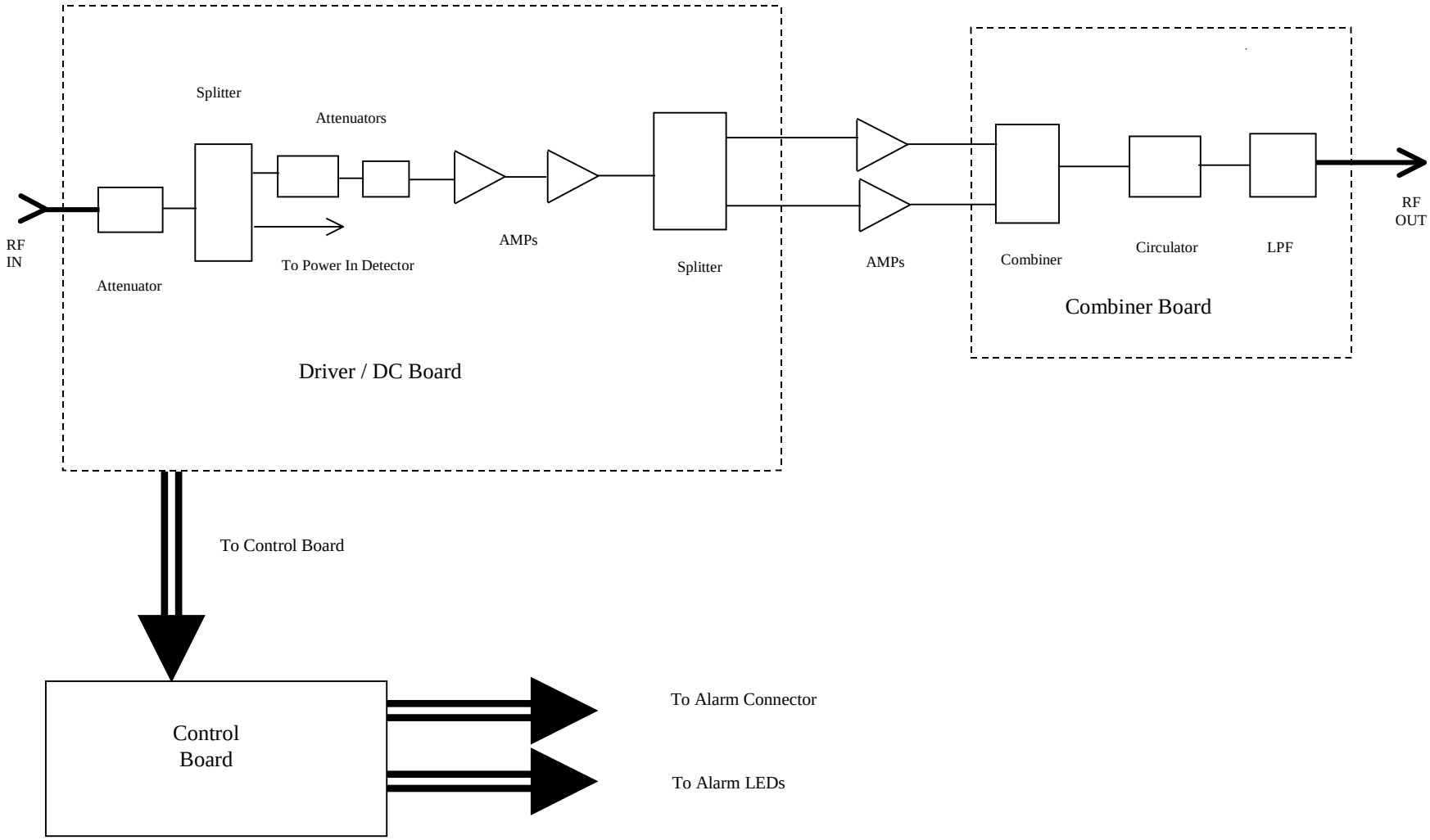

FIGURE 2. PA BLOCK DIAGRAM