

fied by a preamp and coupled to an attenuator and phase shifter in the first feed-forward loop. The main signal is phase shifted by 180 degrees and amplified in the premain amplifier. The output from the premain amplifier is fed to the class AB main amplifier. The output from the main amplifier is typically 220 watts. The signal is output to several couplers and a delay structure.

The signal output from the main amplifier is sampled using a coupler, and the sample signal is combined with the main input signal and input to the second feed-forward loop. The error signal is attenuated, phase shifted 180 degrees, then fed to the error amplifier where it is amplified to a level identical to the sampled output from the main amplifier. The output from the error amplifier is then coupled back and added to the output from the main amplifier. The control loops continuously make adjustments to cancel out any distortion in the final output signals.

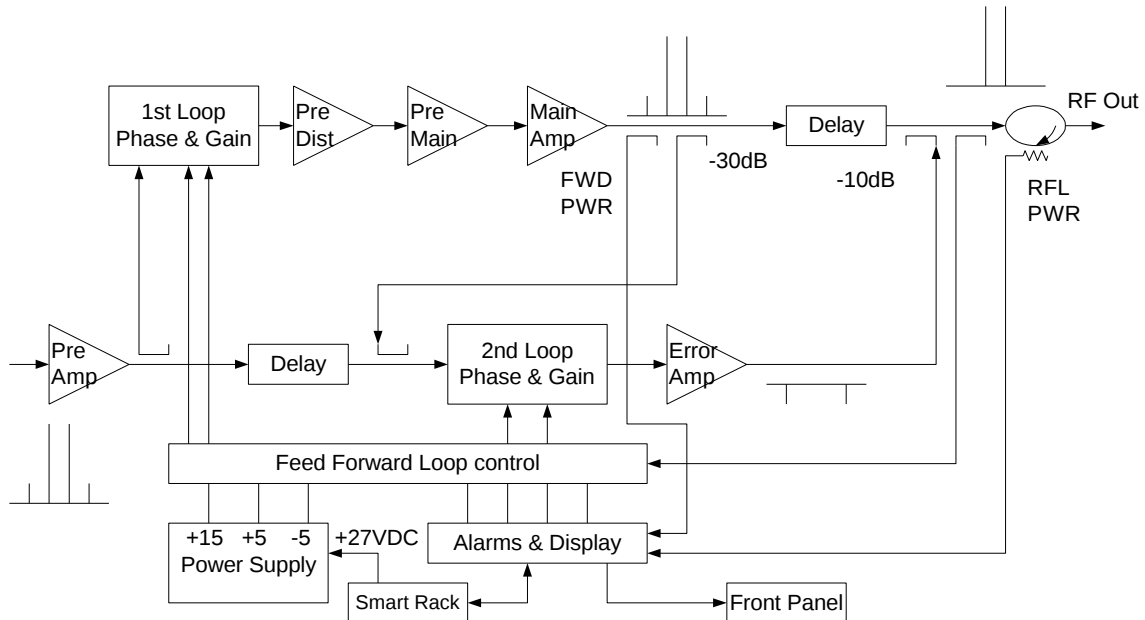


Figure 4-1 G3S-800-180-029 Power Amplifier Module Functional Block Diagram

4-4.1 Main Amplifier

The input and output of the amplifier employ two-stage, class AB amplifiers which provide approximately 32 dB of gain in the 25 MHz frequency band from 869 to 894 MHz. The amplifier operates on +27 Vdc, and a bias voltage of +5 Vdc, and is mounted directly on a heat sink that is temperature monitored by a thermostat. If the heat sink temperature exceeds 90° C, a high temperature fault occurs. The alarm logic controls the +5 Vdc bias voltage that shuts down the amplifier.

4-4.2 Error Amplifier

The main function of the error amplifier is to amplify the distortion signal generated by the 1st Loop, to a level that cancels out the distortion and IMD when the error signal is coupled onto the main signal at the amplifier output. The error amplifier is a balanced multistage, class AB amplifier.

4-4.3 Amplifier Monitoring

In the main and error amplifier modules, all normal variations are automatically compensated for by the feedforward loop control. However, when large variations occur beyond the adjustment range of the loop control, a loop fault will occur. The alarms are displayed on the front panel indicators and output via a 21-pin connector on the rear of the module to the subrack summary board