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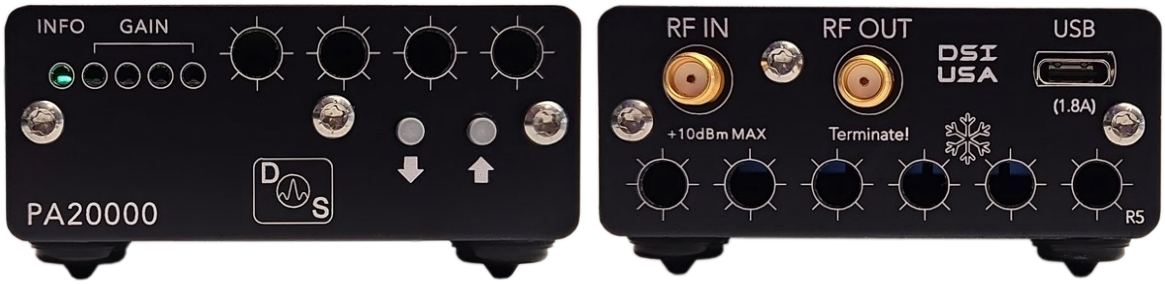
PA & GB SERIES Microwave Amplifier User Manual

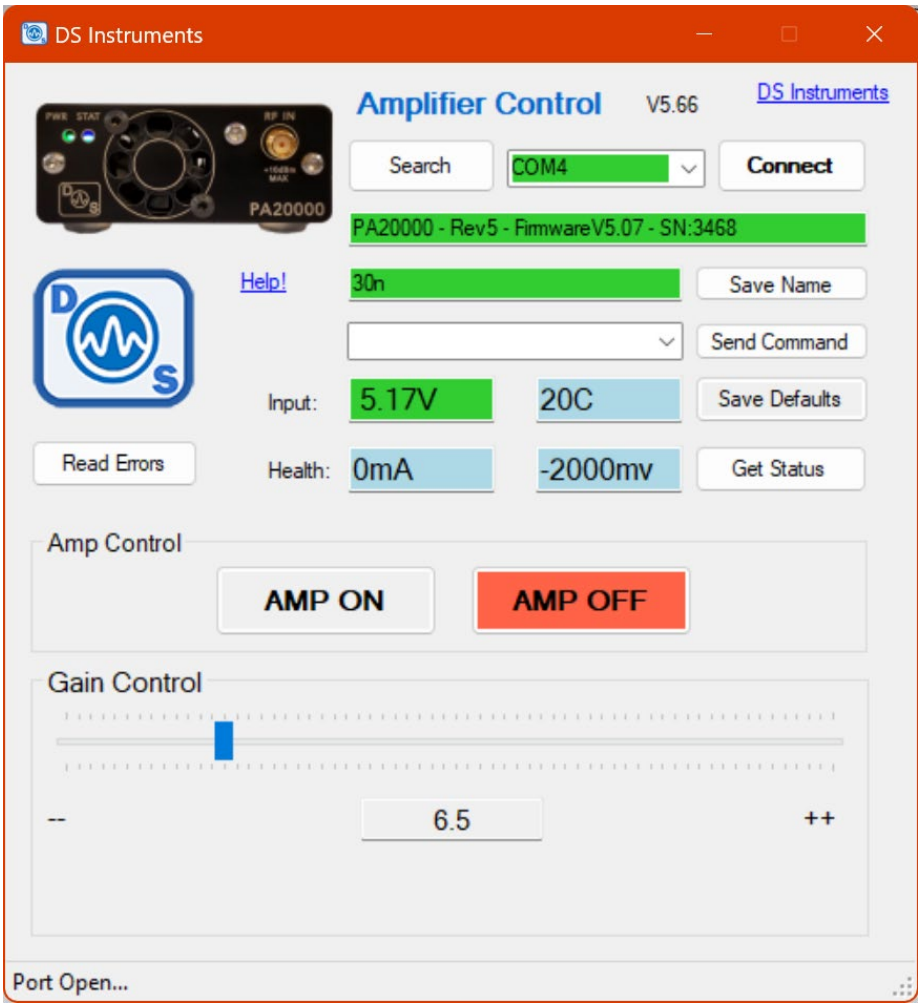


DS Instruments' various RF & microwave smart amplifier models are all designed to be as intuitive as possible, ether being controlled by the front panel, or from USB. **Button functionality is similar across all models.**

Microwave Smart Amplifier Quick Setup:

1. Please be mindful of **electrostatic discharge** risk, and take all appropriate precautions such as wearing a grounding strap and not touching the SMA ports when possible.
2. Never enable the amplifier output with a disconnected RF port, there must always be a ~50-ohm load for the RF energy to be dissipated into! Power amplifiers can be **destroyed** within seconds if the RF energy reflects back into the output.
3. Connect your signal source and destination devices to the RF input and output SMA ports on the rear of the smart amplifier.
4. Connect your amplifier to a standard USB power source using the included Type-C cable. A desktop, laptop computer, or smart-phone charger can work. The best source is a 12v powered USB 3.0 hub. Avoid using **unpowered** USB hubs or **long** USB cables. Many older USB ports will **not** be able to supply enough power.
5. The unit is now ready to accept commands from the front panel buttons or a data connection from the USB control software.
6. Pressing the UP or DOWN buttons changes the gain setting of the amplifier. Some models come with a LED indicator that represents the level of gain. This gain is typically in steps of 0.25dB or 0.5dB. The gain setting extends from roughly 0dB to 30dB depending on input frequency and the device model.
7. **Holding BOTH** buttons down together will toggle the amplifier output on and off. The Info/Status LED will change color when the amplifier output is enabled. The gain indicator will also become active.
8. For remote monitoring and control, connect to the smart amplifier with our lightweight PC control software via USB.

Control Software (GUI) Screenshot



PC Control Software Guide

- Search and Connect buttons – Search for and select a COM port from the list and attempt a connection
- Device information box - turns green if a suitable amplifier has been connected to
- Custom Name – Lets the user save a TAG ID, Name, or inventory number to non-volatile memory
- Custom Command – Type or select a custom SCPI serial command to send to the connected device
- Device heath monitor boxes - Shows device voltage, current usage, and temperature
- Save Defaults Button - Saves the current gain and RF enabled settings as boot-up defaults
- Error and Status Buttons - These request any pending debug messages or errors
- Amplifier ON-OFF – Enables or disables the microwave power amplifier output
- Gain Control – Adjusts the gain in 0.5dB steps. Range is approximately 0-30dB. Exact gain is frequency dependent.

Control Software Notes

- "Send Command" allows a user to send a raw SCPI command to the Signal Generator, the GUI will also display any response from the device in the message bar at the bottom.
- If any of the health monitoring boxes turn red it indicates that a parameter is outside of the safe operating range. Performance will be unpredictable or an error will be indicated by the device. Check for more information by clicking the Get Status and Read Errors buttons.

Hardware

- Warning: never exceed the maximum input power into your amplifier! Typically this is +10dBm!
- Please make sure to use ESD precautions when handling this device
- Please refer to the device information sheet or our website for your hardware specifications.
- Some models include internal fans, but good ventilation is always required for best performance. Hot amplifiers typically have less gain, so more cooling is optimal.

Notes

- A complete SCPI command list is located on the website (https://www.dsinstruments.com/downloads/)
- Tech support can be reached at **tech@dsinstruments.com**