

Special Features – KAA & KAW Series RF Power Amplifiers

Described here are the features and operating controls of most AR Modular RF single band RF power amplifiers in the KAA and KAW series.

Over-Temperature Protection: Amplifier module(s) are protected by thermostats. Indication: Red blinking LED. Off = safe, red = temperature >160°F. Amplifier shuts down as indicated by BLANKING LED being lit. Returns to normal operation at temperature <130°F.

Overdrive Protection: Function of ALC circuit. At about 10% over rated power output, ALC limits further increase in output. Indication: Red LED [ALC]. Off = safe, red = with ALC control in the OFF, full clockwise position, the system is being overdriven. Reduce input signal to safe level.

VSWR Protection: Amplifier protected against all load mismatch conditions by proportional power sensing/limiting control circuit. Automatically limits reflected power to a level equivalent to that realized with rated power output when the output VSWR ratio exceeds a preset level, 3:1 for most models. The amplifier may be programmed to shut down when this ratio is exceeded. Indication: Red, blinking LED. Off = safe, red = reflected power exceeds pre-set level or amplifier has shut down. Control: [VSWR][RESET]AUTO/MAN alternate action push button switch. AUTO position = automatic reflected power/output power limiting. MAN position = amplifier shuts down when reflected power exceeds set limit. Button must be depressed twice to reset system to manual operation.

Automatic Level Control: Amplifier output level may be set to fixed level ± 0.5 dB, with input variation of up to 20 dB. Selectable response time, fast or slow. Indication: red LED. Off = no ALC action, red = ALC active. If the indicator is lit with the ALC control in the full clockwise position (ALC OFF) the amplifier is being overdriven, reduce input level. Controls: [ALC]-[MODE]-FAST/SLOW alternate action push button switch. [RF OUTPUT POWER]-LEVEL SET linear potentiometer marked ALC OFF in full clockwise position.

Input Blanking: Input to the amplifier may be blanked by pushbutton operation. Indication: red LED. Off = input active, red = input blanked. Control: [RF CONTROL]BLANKING on/off. Alternate action pushbutton, in = blanked.

RF Power Meter: The amplifier has a front panel-mounted, dual scale, analog power meter with a single marked indication for rated WATTS forward power (top scale) and %limit reflected power set-point (bottom scale). Control: [OUTPUT LEVEL][MODE]FWD/REF, alternate action pushbutton switch. In = forward power.

Remote Control: All control functions may be remotely controlled either with connections made through the 25-pin, D-subminiature connector mounted on the rear panel or via the optional integral IEEE-488.2/RS232 interface controller. Indication: yellow LED. May be lit from remote control panel to indicate that unit is under remote control. Local RF gain and ALC controls as well as VSWR mode selection, ALC mode selection and blanking are disabled under remote control operation.

Door Interlock: The amplifier may be blanked as a function of interrupting a contact loop by means of a SPST switch operated by the door mechanism of the shielded testing area. A contact closure enables the

amplifier; open disables the amplifier. Input is via a BNC connector on the rear panel. A BNC shorting cap is chained to the rear panel next to it to override this function if not used. Indication: red LED (BLANKING). Off = input active, red = input blanked.

Front Panel Controls and Indicators

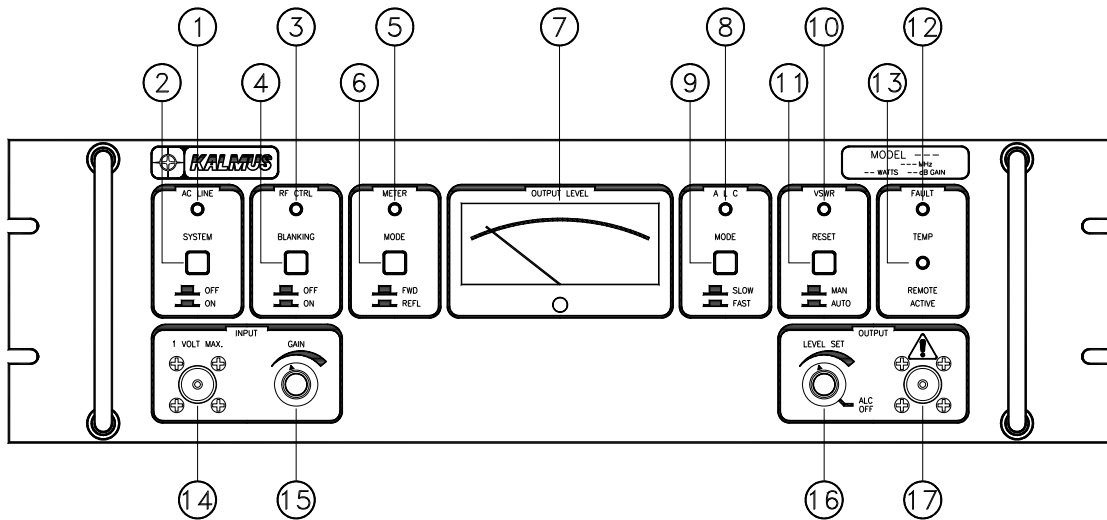
The following front panel controls and indicators are standard (refer to figure on next page):

- (1) [AC LINE]SYSTEM – Green LED. Indicates system power.
- (2) [AC LINE]ON/OFF – Alternate action push-button switch. Turns equipment on and off.
- (3) [RF CONTROL][BLANKING] – Red LED. Indicator is on when amplifier is being blanked; off amplifier is operating.
- (4) [RF CONTROL][BLANKING]ON/OFF – Alternate action push-button switch. Inhibits the RF input to the amplifier. Switch action is indicated by the red LED above it.
- (5) [METER][MODE] – Red LED. Indicates meter function. When indicator is off, forward power is indicated on top scale. When indicator is on, relative reflected power is indicated on the bottom scale. For a properly adjusted amplifier the SET point indicates 10-20% reflected power.
- (6) [METER][MODE]FWD/REFL – Alternate action push-button switch to select forward or reflected power to be indicated on the front panel meter. Selected mode is indicated by red LED above it; off - forward power selected; on - reflected power selected.
- (7) [METER] – Dual scale power meter for relative power measurements into a 50-Ohm load (top scale). Accuracy $\pm 10\%$ typically. The bottom scale has a SET point that is used in calibrating the VSWR protection circuit. This point, when the circuitry is properly adjusted, is equivalent to 10-20% of reflected power.
- (8) [ALC][MODE] – Red LED. Indicates when ALC action is taking place. When this LED comes on with the ALC control in the OFF position the system is being over driven and the ALC is limiting the output power to about 10% over the rated power of the amplifier. Reduce input drive.
- (9) [ALC][MODE]SLOW/FAST – Alternate action push-button switch to select either the slow or fast response of the ALC action to incoming signal level changes.
- (10) [VSWR] – Red, blinking LED. Indicates red when load VSWR exceeds 2:1.
- (11) [VSWR][RESET]AUTO/MAN – Alternate action push-button switch to select automatic or manual mode for the operation of the power control circuitry. When the system operates in the manual mode, this push-button performs the RESET function after a VSWR trip condition. The button must be depressed twice for reset and return to the manual mode.
- (12) [FAULT]TEMP – Red, blinking LED. Indicates when the amplifier heatsink temperature reaches 160°F. The amplifier shuts down. Operation will resume when the temperature returns to normal, approximately 130°F, and if no failure has occurred.
- (13) [REMOTE ACTIVE] – Yellow LED. May be turned on from a remote location to signal that the amplifier is under remote control and local controls are inactive.
- (14) [INPUT] – N-type female connector. Front panel installation is standard, but may have been installed on rear panel upon user request.

(15) [INPUT]GAIN – Linear potentiometer control providing approximately 0 - 30 dB attenuation on the input signal. The maximum amount of attenuation possible is somewhat frequency dependent, less at higher frequencies.

(16) [RF OUTPUT POWER]LEVEL SET – Linear potentiometer control. Controls the ALC action and allows the output to be adjusted to a desired constant level. Full clockwise position, ALC OFF, removes ALC action.

[OUTPUT] – N-type female connector. Front panel installation is standard, but may have been installed on rear panel upon user request.



Front Panel Controls and Indicators