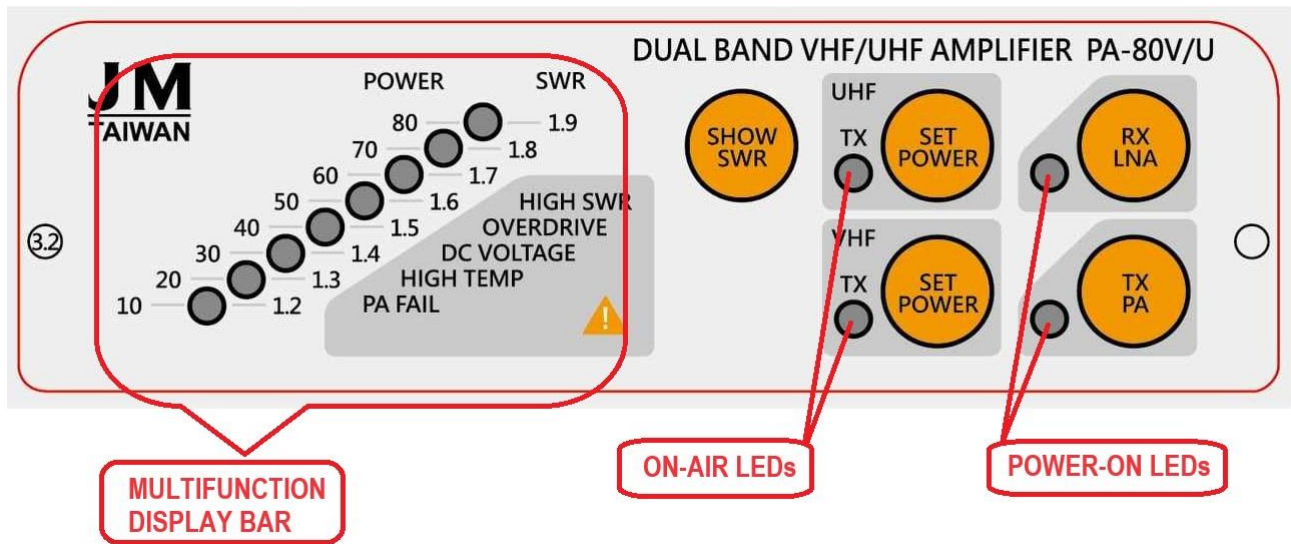


DUAL BAND VHF/UHF POWER AMPLIFIER PA-80V/U



User guide

Ver 1.0



<i>Multifunction display bar - operating modes</i>				
<i>Mode</i>	<i>Color</i>	<i>Type</i>	<i>Blink</i>	<i>Function</i>
Power measurement	Green	Bar-graph	No	Measures output power, 10Watt increments
Power setting display	Green	Bar-graph	Yes	Indicates actual power limit
SWR measurement	Green	Dot	No*	Shows VSWR
Error indicator	Red	Dot(s)	No	Indicates error condition

* Blinks when under/overrange

<i>Pushbuttons function</i>	
<i>Name</i>	<i>Function</i>
RX LNA	Toggles operation of receiver pre-amplifier (LNA)
TX PA	Toggles operation of transmit power amplifier
SET POWER (UHF)	Displays/changes UHF transmit power limit
SET POWER (VHF)	Displays/changes VHF transmit power limit
SHOW SWR	Enables SWR display

<i>LEDs</i>		
<i>Name</i>	<i>Color</i>	<i>Function</i>
ON-AIR	Yellow	Signals transmission for VHF or UHF independently
POWER-ON	Green	Signals power on state of PA, LNA

General description

PA-80V/U is dual band power amplifier, primarily intended for use with dual band handheld FM transceivers. Amplifier automatically recognizes transmitting frequency and enables appropriate signal path. User can set output power level independently for VHF and UHF (built in ALC loop).

Turning amplifier on and off

Transmit power amplifier and receiver preamplifier functions are independent on each other. They can be toggled on/off by pressing the respective pushbuttons: RX LNA and TX PA. Once a function is enabled, the LED associated with the pushbutton will light up.

Amplifier is completely off when both LEDs are dark.

Changing power level

Transmit power amplifier is equipped with Automatic Level Control (ALC) loop. Power adjustment is independent for VHF and UHF bands. Preset power can be adjusted in 4 steps: 25W, 45W, 65W, 85W. The first pressing of the SET POWER button switches the amplifier into power setting mode. The display bar will blink, showing preset power level. The first pressing of the SET POWER button does not change the power level, but displays the actual setting. Subsequent pressing of the SET POWER button changes the power setting. Amplifier will exit the power setting mode if the SET POWER button is not pressed again within 2 seconds.

Measuring VSWR

This function allows to accurately measure antenna's VSWR. To enable VSWR measurement, press SHOW SWR button **while transmitting**. This mode will last as long as the amplifier is in transmit mode. The display will return to power measurement mode after releasing transceiver's PTT button.

The actual VSWR is represented by a single „moving dot”. The lowest reading is 1.20, below this value a respective LED will start blinking, indicating underrange.

The highest reading is 1.90 and with a reading past 2.00 a different respective LED will begin to blink, signaling overrange.

Built in VSWR meter is of good quality, compensating for detector's nonlinearities. This makes measurement results fairly independent on output power. It also offers exceptional directivity with the residual VSWR reading around 1.10.

Error signalling

To signal an error in amplifier's operation, the LEDs on the display bar will change their color to red. Appearance of any error will deny the transmitting operation of the amplifier.

<i>Error LED</i>	<i>Meaning</i>	<i>Amplifier reaction</i>
HIGH SWR	Excessive VSWR (over 2.1) detected. Typically caused by a faulty antenna.	Deny transmitting, resume after PTT release
OVERDRIVE	Excessive input power	Deny transmitting, resume after PTT release
DC VOLTAGE	DC supply voltage out of permissible range	Deny transmitting, resume after PTT release and voltage restoration
HIGH TEMP	Chassis temperature too high	Deny transmitting, resume after cooling down
PA FAIL	Amplifier electrical failure	Deny transmitting, resume after PTT release

<i>Specifications: Power amplifier</i>				
<i>Parameter</i>	<i>Min.</i>	<i>Typ.</i>	<i>Max.</i>	<i>Remarks</i>
Frequency range (VHF)	138 MHz		174 MHz	
Frequency range (UHF)	430 MHz		470 MHz	
Maximum output power	75Watt	80 Watt	85Watt	ALC limited
Input power range	1 Watt		10 Watt	Between carrier detect and overdrive thresholds
Input power for full output		5 Watt		Frequency dependent
Bypass power			50 Watt	
Harmonics suppression	60 dBc			
Modulation	FM, AM*			
Circuit type	Twin MOSFET, PUSH-PULL, two independet amplifier for VHF and UHF			
<i>Specifications: Receiver preamplifier</i>				
In-band gain VHF	20 dB	21 dB	22 dB	138 MHz - 174 MHz
In-band gain UHF	10 dB	12 dB	14 dB	430 MHz - 470 MHz
Out of band gain			-40 dB	@ 30 MHz
Noise figure		2.4 dB		

*) AM can be used with caution, setting ALC power to maximum, and adjusting drive power to obtain approximately 20-30 Watt output power. That will leave required headroom for modulation. ALC must not get engaged during modulation peaks.

<i>Specifications: General</i>				
DC supply voltage	10.5 V	13.6 V	14.8 V	Operation at the low end of range will not yield specified maximum power
Transmit supply current		10 A	13 A	Transmitting at maximum power. Frequency dependent.
Standby supply current		8 mA		All functions OFF
		35 mA		TX PA enabled
		80 mA		RX LNA enabled
		88 mA		TX PA and RX LNA enabled
RF connectors	N-50			
Weight		1.15 kG		
Dimensions	H=50mm, W=125mm, L=210mm			

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