AE4NY Enhanced Guppy-WaTTa-PiG Connections for Some QRP Rigs Ted Bruce, KX4OM

The AE4NY Enhanced Guppy-WaTTa-PiG includes the originally-installed features of power protection (PiG), forward and reverse power indication (NoGaWaTT) and transmit/receive switching (Guppy). Additional features that have been added include an antenna/external dummy load switch, and MFJ bandwidth-selectable audio filter, a sidetone that feeds into the audio circuit at the headphones output jack, and normally-open and normally-closed contact closures via an auxiliary relay on the Sidetone and Relay board.

Two typical hookups are provided in this document; one for the SWxx+ transceivers from Small Wonder Labs, and for the Vectronics transmitters and receivers in the VEC-1120/1130/1140/1180 (receivers) and 1220/1230/1240/1280 (transmitters) series. Also, a brief description of use other receivers with the G-W-P is described.

A diagram (Page 4) shows a top view of the panel connections and controls of the AE4NY G-W-P.

SW40+ Connection	Guppy-WaTTa-PiG Connection
DC Power In	DC Out jack (connects through PiG). The
	battery or DC power supply is of course
	connected to the DC In connection on the
	G-W-P
Antenna	XMTR BNC jack (Ant/DL Switch in
	"Ant" position)* (see text below)
	Connect the station antenna to the G-W-P
	"Ant" jack* (see text below)
Phones	Audio In jack (Connect headphones to G-
	W-P front panel "Phones" jack; routed via
	AF Filter)
Key Input	Key Out jack
	Connect paddles to front panel "Paddles"
	jack, or straight key to rear "Key In" jack
	The MODE switch on the front panel of
	the G-W-P must be in the XCVR (up)
	position. This bypasses the T/R switching
	of the Guppy. See the text in the below
	paragraph regarding the MODE switch.

SW40+

This configuration connects power to the SW40+ through the PiG circuit. The front panel MODE switch on the Guppy-WaTTa-PiG must be in the XCVR (up) position. The

RF connection bypasses the T/R circuitry of the G-W-P via a separate relay. This provides the following features, as opposed to connecting the station antenna directly to the SW40+:

- If an external dummy load is connected to the **DL** jack on the G-W-P, the transmitted output may be switched to the dummy load by placing the Ant/DL switch in the DL position. **Caution**: Always make sure that the **Ant/DL** switch stays in the Ant position unless a dummy load is connected.
- Audio to the headphones will be routed through the Sidetone Oscillator while transmitting, and through the AF Filter while receiving. The sidetone level is adjustable via an internal pot on the Sidetone and Relay board of the G-W-P to match the impedance of the headphones used and provide a comfortable listening level. When used alone, without the G-W-P, the SW40+ has a feed through of the transmitted RF signal to the receiver detector and audio stage, providing an internal "sidetone" function. The level is not adjustable without component changes to the SW40+ circuitry.
- The T/R relay contacts of the Guppy are bypassed by the XCVR position of the MODE switch (and its associated relay). This mode should provide QSK capability for the SW40+. The T/R delay will still energize on transmit, and its setting is adjustable using the front panel T/R Delay control; however, the sidetone generated by the Sidetone and Relay (receiver muting for the case of a separate receiver and transmitter configuration) Board are actuated from the keying line input, which actuates the Guppy's T/R relay. With the MODE switch in the XCVR position then the keying line drops (key or paddle contacts open), the sidetone turns off.

Other configurations can be used. For example, the SW40+ could be used with a standalone keyer or straight key connected directly to the SW40+ Key jack; the SW40+ could use only the PiG connection for power, with all other SW40+ connections straight to the rig; the SW40+ could be connected so only the audio filter features of the G-W-PiG are used.

Vectronics Transmitter	Guppy-WaTTa-PiG Connection
DC IN	DC Out jack (this uses the PiG). The
	battery or DC power supply is of course
	connected to the DC In connection on the
	G-W-P
ANTENNA	XMTR BNC jack (Ant/DL Switch in
	"Ant" position)* (see text below)
KEY	Key Out jack
RX ANT	No connection (T/R switching, receiver
	muting provided by the G-W-P, along with
	a sidetone

Vectronics Rigs

Vectronics Receiver	Guppy-WaTTa-PiG Connection
+12 VDC ⁽¹⁾ (added jack for external +12	DC Out ⁽¹⁾ jack (this uses the PiG). The

VDC)	battery or DC power supply is of course
	connected to the DC In connection on the
	G-W-P* (see text below)
ANT	RCVR jack
Phones	AUDIO IN jack, which enables the use of
	the Audio Filter. A Headphones jack is
	provided on the front panel of the G-W-P.
	MODE switch on the front panel in the
	XMTR-RCVR position. See the
	paragraph below regarding the MODE
	switch.

This configuration connects power to the Vectronics transmitter and receiver⁽¹⁾ through the PiG circuit (**DC Out** jack). To power both transmitter and receiver at the same time, a Y-connection DC cable should be used (three 2.1mm DC plugs). **The receiver (or the G-W-P) should be powered from a battery; if powered from a DC power supply connected to the AC line, hum is likely to be heard in the direct conversion receiver.** That is why Vectronics designed the receiver to be powered by an internal 9 Volt battery. **Note (1):** The 30 meter receiver has been modified to accept +12 Volts externally by using a series of silicon diodes which drop the voltage down to 9 volts. Of course, the transmitter could be powered from the G-W-P, and the receiver separately from a 12 Volt battery. The easiest thing to do is to power both the transmitter and receiver from a 12 Volt battery, using the Y-connection power cable.

The RF and Audio connections are through the T/R circuitry of the G-W-P. This provides the following features, as opposed to connecting the station antenna directly to the Vectronics transmitter and the receiver through a jumper to the transmitter, as designed by Vectronics.

- The transmitter-receiver connection, as designed by Vectronics, and used without the G-W-P unit, does provide T/R switching; however, as opposed to adequate receiver muting, a loud "thump" can be heard in the earphones when the transmitter is keyed (QSK keying). No sidetone is provided in the standard hookup.
- If an external dummy load is connected to the **DL** jack on the G-W-P, the transmitted output may be switched to the dummy load by placing the **Ant/DL** switch in the **DL** position. **Caution**: Always make sure that the **Ant/DL** switch stays in the **Ant** position unless a dummy load is connected.
- Audio to the headphones will be routed through the Sidetone Oscillator while transmitting, and through the AF Filter while receiving. The sidetone level is adjustable via an internal pot on the Sidetone and Relay board of the G-W-P to match the impedance of the headphones used and provide a comfortable listening level.
- Using the G-W-P with the Vectronics rigs does not provide QSK capability. The transmit/receive delay is adjustable using the front panel **T/R Delay** control.
- The Vectronics transmitter can be used with any 30 meter receiver (or transceiver, used as a receiver, connected to the RCVR jack on the rear panel) when

connected through the G-W-P. For example, the IC-703 could be used as a receiver with the rig, or even the HQ-129 via the RF connections to the **RCVR** jack on the G-W-P. If using a receiver that has external mute connections, the **NO** or **NC** (normally open or normally closed) RCA jack connections on the G-W-P can provide a mute capability, using the aux relay on the Sidetone and Relay board. For example, the Drake R-4B has a normally closed mute connection in the form of an RCA jack with a shorted plug. To provide muting for this receiver, the shorting plug would be removed from the Drake, and a cable with an RCA plug on both ends would be connected to the Drake and to the **NC** RCA jack on the G-W-P. While keying the transmitter, the mute circuit would open, muting the Drake. Audio would be fed from the receiver low impedance headphone jack to the G-W-P Audio In connection. The AF Filter and Sidetone features of the G-W-P would be provided by this connection.

Any QRP transceiver should be able use the features of the NoGaWaTT, Sidetone, and Audio Filter by connecting the transceiver RF out jack to the **XMTR** jack input on the G-W-P, and by placing the G-W-P front panel **MODE** switch in the **XCVR** position. This switch actuates a relay that bypasses the T/R feature of the Guppy. Without the **MODE** switch and its relay, a transceiver connected to the XMTR jack on the G-W-P would not be connected to the antenna in the transceiver's receive condition, and no band signals would be heard, since the Guppy's normally-deenergized relay connects the **RCVR** input to the antenna jack on the G-W-P. Separate transmitter and receiver units use the **XMTR-RCVR** position of the **MODE** switch. The relay that this switch controls is deenergized in the **XCVR** (up) position of the switch. The relay draws about 13 mA when energized. When the **AE4NY Guppy-WaTTa-PiG multifunction unit is not being used, but is left connected to a power supply via the rear panel jack, the MODE** switch should be kept in the **XCVR** (up) position to prevent constant current **drain, especially if the unit is powered from a battery.**



Mode Switch Up: XCVR Mode Switch Down: XMTR/RCVR