

# MGL Avionics

VHF Airband Transceiver  
Model V6



User & Installation Manual

PRELIMINARY - 9/2011

## General

Please read this manual before operating the V6 Transceiver  
Please include this manual if ownership of the V6 Transceiver changes

### Operational limitations, conditions and restrictions

Do not operate this unit outside of its specified temperature range – this may result in malfunction or damage to the unit.

Observe the installation wiring diagrams. Incorrect wiring may damage this unit.

Never operate this unit outside of its specified voltage range. Doing so may cause serious damage to this unit. At all times ensure that no reverse polarity power is applied to this unit. **Reverse polarity will destroy this unit.**

This Transceiver is designed to withstand the possible power surges that may occur in a correctly wired power supply system of a typical aircraft. For this reason the Transceiver may be left switched on when engines are started. Please note that the supply voltage may drop below minimum operating voltage during engine cranking. During this time operation of the radio will not be possible.

Do not operate the transmitter of this unit without connecting a correctly adjusted antenna. Doing so may result in damage to the unit.

The V6 Transceiver is not FAA type certified. This unit may only be used in aircraft where such a unit is permitted under local rules. Typically these rules permit operation in non-type certified aircraft such as home built and experimental or sport category aircraft. Limitations may exist on maximum altitudes above which a non-certified airband Transceiver may not be operated. Please check local rules with the relevant authorities.

Use of this radio may be subject to a radio station license. Please contact the local radio frequency spectrum governing body (such as the FCC) to inquire as to the procedures required to obtain a radio station license.

Operation of this Transceiver may only be allowed by persons holding a valid radio license (restricted or full).

Please do not operate this Transceiver illegally.

Please do not operate this Transceiver in an environment or in conditions where its transmissions may cause interference to other electronic equipment or systems.

Never operate an airband radio without the required qualifications to do so.

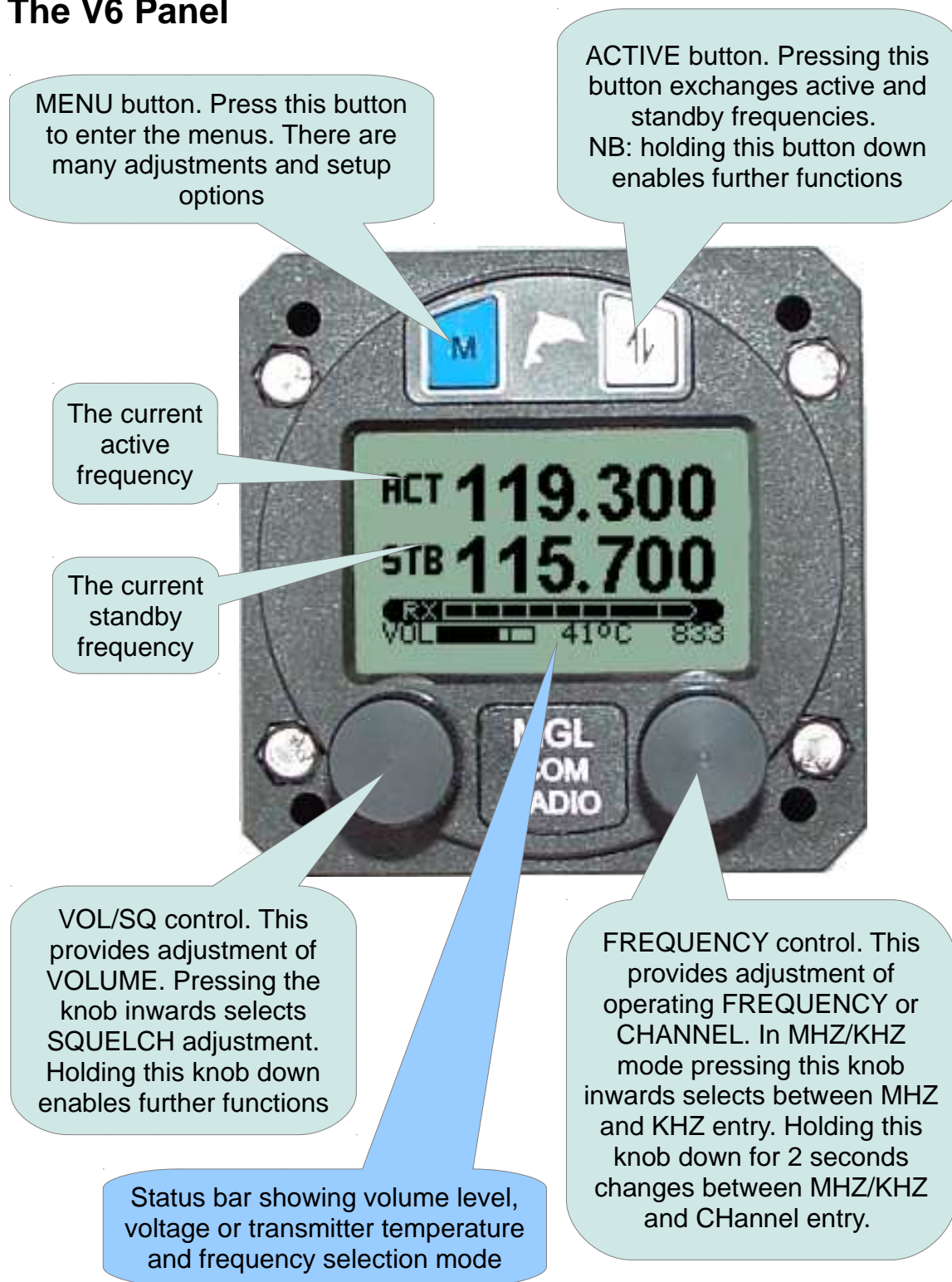
Never cause a nuisance to aircraft on the ground or in the air by misuse of this Transceiver in any way.

Never compromise the safety of other aircraft with lengthy transmissions. Keep transmissions short and to the point following established air to air and air to ground rules and procedures.

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## The V6 Panel



The above graphic shows the V6 Transceiver in a default configuration with “Flip-Flop” frequency selection. The V6 Transceiver can be operated in other modes depending on setup and installation.

## The V6 controls

### *The “VOL/SQ” control*

Rotating the control knob will adjust headset volume. The Transceiver defaults to volume adjustment. The display will change to a large bargraph and number indicating volume level.



Pressing the knob inwards momentarily will switch to squelch adjustment (with a bargraph display and number) for setting a suitable squelch level.



Adjust the squelch level such that static noise from the receiver is just 'squelched' out. Too high an adjustment may result in weaker transmissions not being received. Too low an adjustment may result in static noise breaking through at times.

NB: Pressing the VOL/SQ knob is also used for a quick receiver check: Press the knob to show the squelch level and then again to return to show the volume level. This will open the squelch for about two seconds regardless of the squelch setting for a receiver 'static' test (an indication that the receiver is working).

Holding the VOL/SQ knob down for 1 second will reduce the volume level of the Radio only. This will allow easy conversation over the Intercom in the presence of heavy radio traffic. While 'MUTED' the screen flashes every five seconds.



The Radio volume may be returned to normal by again holding the knob down for 1 second.

### ***The “ACTIVE” button***

With a default setup, the display shows two frequencies – active and standby. When the ACTIVE button is pressed, the standby frequency becomes the active frequency and the active frequency becomes the standby frequency.

NB: Holding down the ACTIVE button for 1 second will enable or disable scanning (active and standby frequencies are scanned rapidly for incoming transmissions). Scanning is indicated by alternate flashing of the ACTIVE and STANDBY annunciators on the display.



A short burst of beeps gives an audible indication as scanning is activating or deactivating so that it is not necessary to look at the display. Three beeps indicate scanning has been enabled and two beeps that it has been disabled.

With scanning enabled, it is also possible to receive on the standby frequency.

**NB: Holding down this button for three seconds will automatically set the active frequency to the emergency channel on 121.500 MHz.**

It is possible for the Transceiver to operate with direct frequency entry. This configuration may be selected in the second level of the Menu system. Only a single frequency is shown on the display - the active frequency. This frequency is changed directly. There is no standby frequency and no scanning is possible.

### ***The “FREQUENCY” control***

This rotary control is used to set the operating frequency of the Transceiver. The setting acts on the standby frequency (or the active frequency if direct frequency entry is being used).

A frequency is set on the V6 Transceiver either by entering MHZ/KHZ or by selecting a memory Channel. Holding the FREQUENCY knob down for two seconds changes from one to the other.

An indication of whether the Transceiver operating frequency is to be set by MHZ/KHZ or CHAnnel selection is shown on the display as indicated.



The spacing between frequencies may be in steps of 25KHz or 8.33KHz. This is set in the second level Menu. A 'speed-up' function is provided for the FREQUENCY knob so that a new frequency or channel may be set up very quickly and easily.

### Setting frequencies

With the method of frequency entry set to MHZ/KHZ a frequency is set by pressing the FREQUENCY knob inwards momentarily until the desired part of the frequency entry is flashing on the display: The graphic below shows "set MHZ" (in default mode):



While the desired part of the entry is flashing, the setting may be changed by rotating the knob.

NB: KHZ rolls over without changing the MHZ value. Thus for example, increasing KHZ will change from a frequency display of 124.975 to 124.00. Likewise, decreasing KHZ from 124.000 will change the setting to 124.975. This may be used to speed up KHZ selection.

Pressing the FREQUENCY knob briefly switches between MHZ and KHZ entry.

### Changing channels

Switch to memory CHAnnel entry by holding down the FREQUENCY knob for two seconds. Memory Channels may then be selected by rotating the knob

NB: Channel selection rolls over from 100 to 1 or from 1 to 100.

NB: If an Airport frequency list has been uploaded from a compatible EFIS or GPS and activated by menu function (in the first level Menu), only 20 channels will be available from the currently active list (the list size is determined by the SL30 and SL40 communications protocol and may have from 1 to 20 entries).

## RX/TX bargraph

The V6 Transceiver display includes a bargraph showing the relative signal strength of a received signal (during RX). Due to good receiver sensitivity, signals of medium strength will fill the bargraph.



Receiving transmission of moderate strength

During TX the bargraph shows voice modulation of the actual transmit carrier. This is a visual form of side tone making it possible to judge how well the signal from the microphone is modulating the transmitted carrier. Note that this bargraph does not show the level from the microphone – this shows the actual modulation of the signal as it is transmitted.

Good modulation will cause the bargraph to just touch the right hand side of the display for the loudest parts of transmission. Often this is achieved with click “T” or “SHH” voice sounds. The normal parts of the voice during transmission should show about 50% to 75% of the bargraph.

The modulator for V6 transmitter is under direct microprocessor control. The audio signal to be transmitted is processed using digital signal processing algorithms before being sent to the modulator.

Software control of the modulator allows the system to control modulation under varying power supply and temperature conditions. It also allows wide range control of the audio signal amplitude at the modulator. This prevents over-modulation while still allowing deep and rich modulation of the carrier. This results in excellent audio quality of the transmitted signal and extends the effective range of the transmitter.

The modulation level should be adjusted using the microphone level adjustment in the first level menu. If a headset is changed to another type, check the microphone level first before using it. The microphone level adjustment menu function has a very convenient readout of the level, making adjustment easy and precise.



Transmitting with good modulation on louder parts of voice

Visit [www.MGLAvionics.co.za](http://www.MGLAvionics.co.za) to download the latest version of this User and Installation Manual




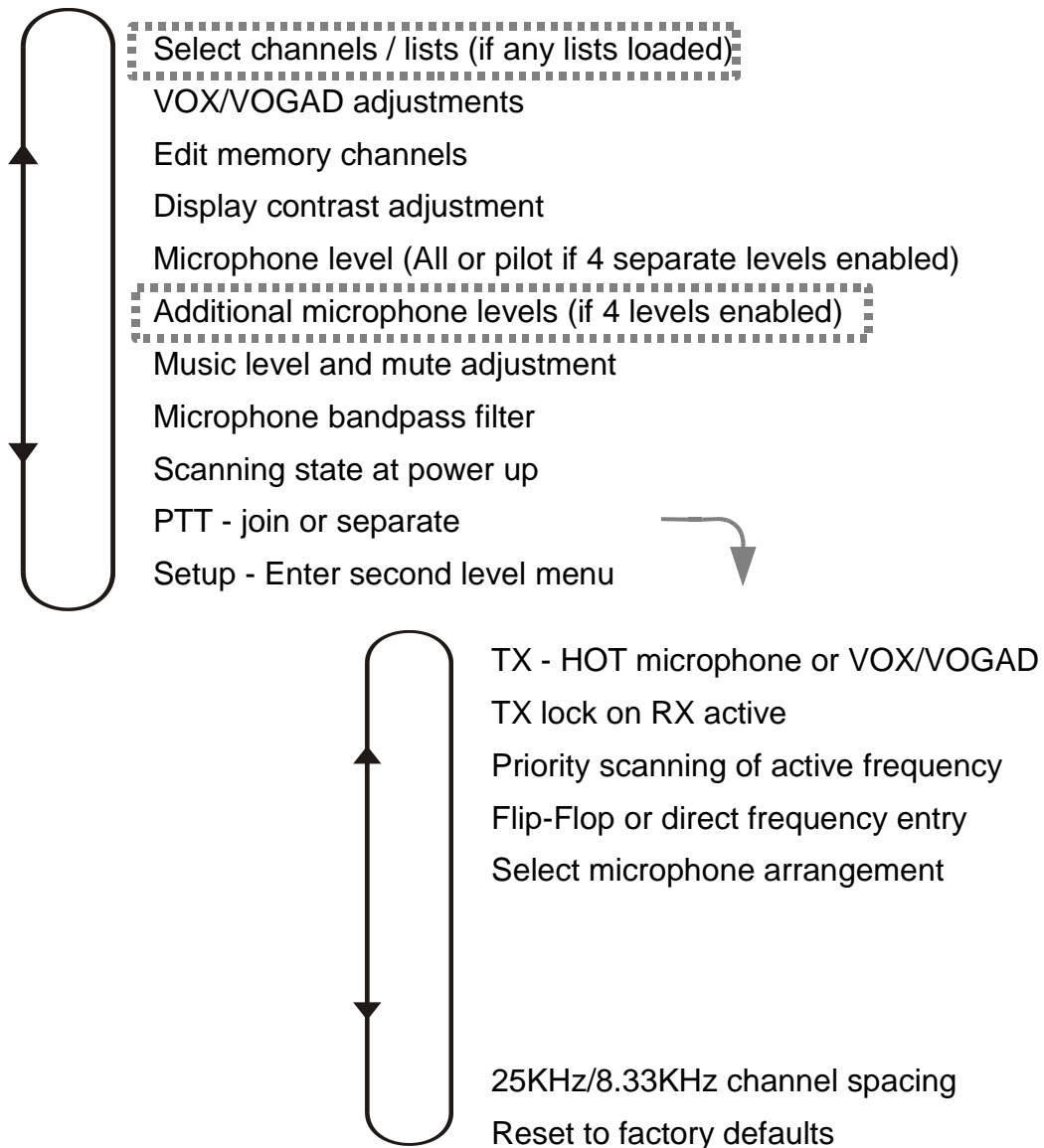
## The 'MENU' button

The MENU button allows entry to the two level menu system at any time. The menus provide access to options and adjustments such as setting intercom, VOX, and audio levels, and many others.

## Menu structure

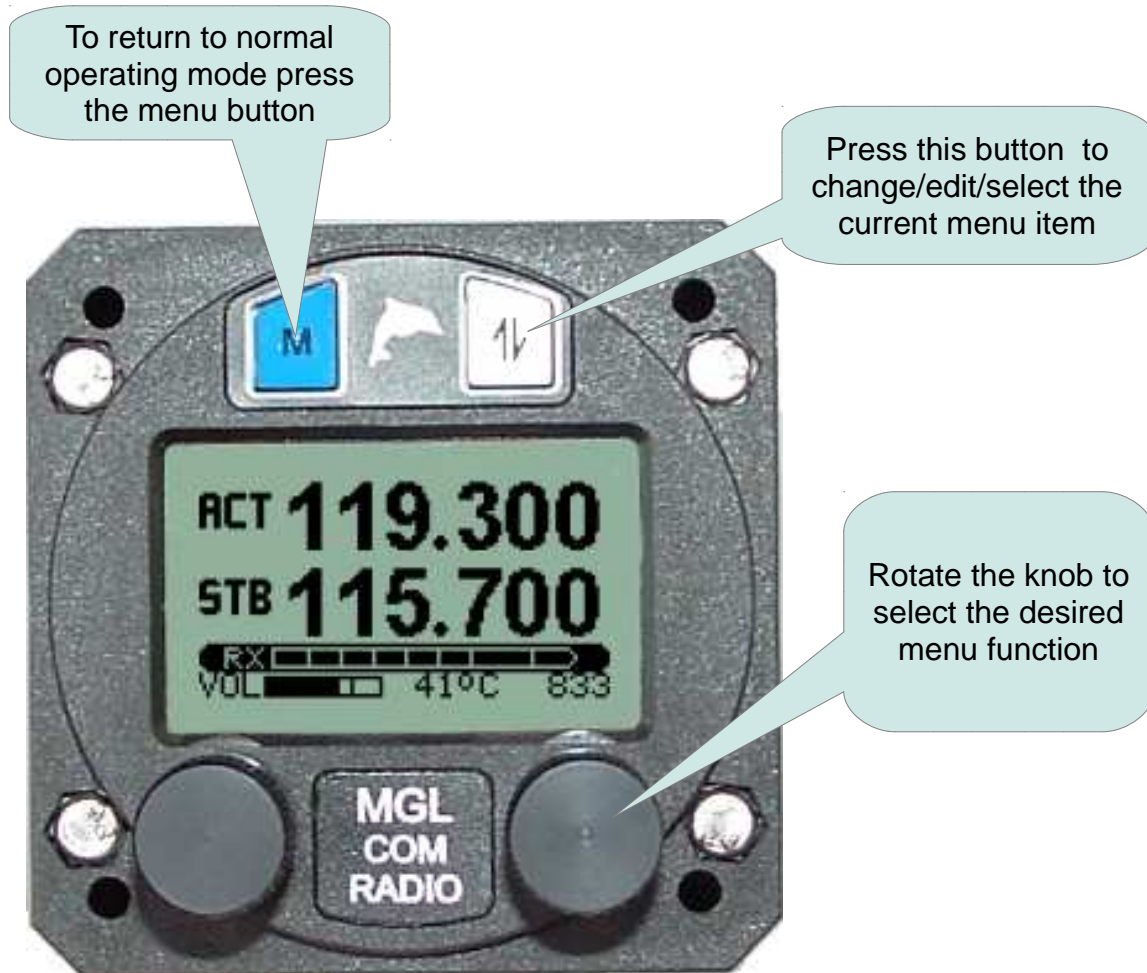
The V6 Transceiver provides setup options and adjustments on two menu levels. The first level is accessed by pressing the "MENU" button. The second level with options that are typically only used during installation, is accessed via the "Setup" option in the first level menu.

Menu functions shown inside  are only available if enabled or required data is present.



The menu system has two levels. Common adjustments and options are concentrated in a first level while less used options are found in a second level accessed via the "Setup" option in the first level.

Visit [www.MGLAvionics.co.za](http://www.MGLAvionics.co.za) for the latest version of this manual.



Once a menu function has been selected, the display will change according to available functionality.

As an example, here is the ambient noise suppression system option allowing selection of the type of system to be used and adjustment of the level/'strength' of the selected system.



## First level menu

### Ambient noise suppression

The V6 Transceiver provides four different ambient noise suppression systems. These are selected using 'Type'.



The UP and DOWN arrow buttons are used to adjust the level or 'strength' of the selected type



- **VOGAD (three types)**

This is a proprietary VOGAD system developed by MGL Avionics. It uses gain shaping with digital processing of the audio signal from the microphone. The voice signal envelope is detected and used to modulate microphone gain. Three types are provided – LOW, MED(ium) and HIGH. The type should be selected depending on noise level in the aircraft. Most general aviation aircraft will use a medium setting. Each VOGAD type has up to 8 levels. As the level is increased, gain falls more sharply below the noise threshold (as set by VOGAD type).

It is important not to set the microphone gain too high. The gain must be correctly matched to the selected type. If gain is too high ambient noise may exceed the noise threshold for that type.

With a correctly setup VOGAD system the microphone seem to be highly directional so that it must be placed directly in front of the mouth.

A suggested starting point is VOGAD MED(ium) level 2.

- **VOX**

This type simply switches off the microphone if sound is below a preset level. Switching is done in a digitally controlled “soft” manner so no sharp clicks are audible. Adjust the level so that ambient noise is just below that required to open the microphone. If the level is set too high, parts of the first syllable will be 'lost'.

## Program channels

This function supports memory channel programming.

Memory channels may be programmed using this function or they may be downloaded from a PC using software available from [www.MGLAvionics.co.za](http://www.MGLAvionics.co.za)



The V6 provides 99 memory channels for user programmed frequencies. Each channel has a frequency, name for the frequency (for example airport name) and type for the frequency (for example "TOWER").

Name and type can be up to 6 characters long.



Use the ACTIVE button to move the highlight (inverted part of the display) between lines for editing.

### Channel selected:

Rotate the FREQUENCY knob to select the channel to edit.

### Frequency selected:

Press the FREQUENCY knob to select between the MHZ or KHZ part of the frequency setting (the MHz or KHz part will flash to indicate which is selected). Rotate the FREQUENCY knob to change the frequency.

### Name or Type selected:

Press the FREQUENCY knob to select the character position to edit. Rotate the FREQUENCY knob to change the character.

Press the "MENU" button to return to the first level menu when finished with editing channels.

## Contrast

This function is for adjusting display contrast as required. A value between 30 and 40 is suitable for most environments. A lower value results in a lighter display while a higher value results in a darker display. Adjust the contrast so that dark areas are fully saturated while light areas do not show any darkening.



## Microphone level

This function allows adjustment of microphone gain. A bargraph is provided to assist in adjustment to the correct value. The correct level is such that the bargraph remains between about  $\frac{1}{2}$  and  $\frac{3}{4}$  of the range while speaking normally into the microphone, with excursions all the way to the right only during the loudest parts of speech or “click” sounds.



NB: The level shown by the bargraph is for the Pilot microphone input ONLY. No level is shown for the passenger microphone.

For a single microphone gain setting, this adjustment affects all microphones.

**Correct adjustment of this level is important. It affects operation of the ambient noise suppression systems and modulation level of the transmitter.**

NB: By design the transmitter cannot be over-modulated if levels are set too high. However, sound quality may suffer.

## Using independent level settings for pilot and passenger microphone circuits:

A second level menu option is available to enable independent level adjustments for all four microphone circuits.

If enabled, four independent gain adjustments are available:



## Microphone bandpass filter

For operation with high ambient noise levels an additional voice bandpass filter can be added for the microphone circuits.

This can help reduce the effects of unwanted noise, in particular at very low and very high frequencies. This filter has a sharp cutoff for frequencies below 500 Hz and above 2.4KHz.



## PTT Mode

The V6 Transceiver has two PTT inputs, one for the pilot circuit and one for the passenger circuit (Pax). These may be operated independently or together.

With “Join” selected, both microphone circuits are active during transmit and either PTT may be used.

With “Separate” selected, only the microphone circuit associated with its own PTT is active during transmission – the other microphone is muted.



## Auxiliary input level

An EFIS voice alert or other sound system (music) may be connected to the auxiliary input.

Two adjustable levels are provided for this input.

Open: This level applies if no sound is received from the microphones.

Mute: This level applies if sound is received on either of the microphone circuits.



In particular, with the Mute level set lower than the Open level the auxiliary input fades to a lower level when the intercom is in use and returns when input from the microphones ceases. With the Mute level set to OFF, the auxiliary input is muted during use of the intercom.

The auxiliary input is not switched between levels but is faded between levels (slow, pleasant fading in and out).

## Scanning state at power up

Select scanning enabled or disabled when the V10 Transceiver is switched on.

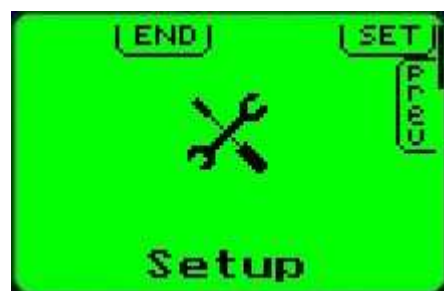
Scanning is only applicable for a single unit in active/standby mode with direct frequency entry disabled.

Scanning continuously checks reception on both active and standby frequencies.



## Setup

This is the entry point to the second level menu with rarely used options and adjustments. These are usually only required when first installing a V10 Transceiver.



## **Second level menu**

The second level menu is accessed by selecting “Setup” in the first level menu.



### **TX MIC VOX / TX MIC HOT**

While transmitting the ambient noise suppression system may remain active - “TX MIC VOX” - or the microphone may be continuously live - “hot” - during the time of transmission - “TX MIC HOT”.

### **TX LOCK ON / TX LOCK OFF**

Transmission may be prevented while a signal is being received on the active frequency.

With “LOCK ON” selected the PTT is disabled while there is a signal being received (the squelch is 'open') on the active frequency.

### **P-scan ON / P-scan OFF**

Enable or disable Priority scanning. Priority scanning only applies to systems set for Flip-Flop frequency selection.

With Priority scanning ON and scanning enabled (enable/disable by holding the

ACTIVE button down for 1 second), if reception is on the standby frequency, there is a brief interruption once every second while the radio checks the active frequency for a signal. If the active frequency detects a signal above the squelch threshold, reception switches to the active channel unconditionally. Once reception on the active channel ends, reception returns to the standby frequency or scanning resumes.

## **Direct FS / Flip-Flop FS**

Selects between Direct Frequency Selection or active/standby “Flip-Flop” Frequency Selection.

With Direct Frequency Selection only one frequency is displayed – that of the active channel. There is no standby channel and no scanning is possible.

## **1 MIC Level / 4 MIC Level**

For '1 MIC Level' a single gain is used for all microphones. '4 MIC Level' provides independent control of gain for each of the four microphones. Microphone gain is set in the first level menu.

## **CHANNEL spacing**

This allows selection of either 25KHz or 8.33KHz steps when setting operating frequencies. The 8.33KHz setting allows operation in areas using these channel allocations. All frequency definitions are in accordance with ICAO standards (ref ICAO Annex 10 Vol 5 § 4.1.2.4)

## **Default**

This function allows the Transceiver to be reset to 'factory default' settings. Confirmation is required before the reset.

Items **NOT** affected are memory channels and current active and standby frequencies



## Installation

This chapter describes basic installation options for the V10 Transceiver.

For additional information refer to the User and Installation Manual. This may be downloaded from [www.MGLAvionics.co.za](http://www.MGLAvionics.co.za)

### General installation notes

Installation should be performed by a qualified aircraft electronics technician.

All wiring external to the V6 Transceiver to conform to relevant aircraft standards. Flame proof or flame retardant insulation to be used on all wiring.

Installations must conform to local regulations.

All soldering to use acceptable electronic fluxed solder wire. Solder joints are required to be of high quality to acceptable standards.

It is recommended that shielded cables are used for all audio signal connections and digital communications links. Using unshielded cables may result in interference or audio feedback.

Choose suitable power cable of sufficient diameter to carry the maximum expected current to the V6 Transceiver (1.5A maximum).

It is mandatory to install a 2.5A-5A slow blow fuse or equivalent circuit breaker in line to the supply of the V6 Transceiver.

Never share power to a Radio Frequency device with sensitive equipment such as GPS receivers and EFIS systems. Route separate grounds and power supply wiring to the V6 Transceiver.

Use good quality coaxial cable - RG400 or equivalent. Choose a low loss cable if the antenna mount far away from the Radio.

Ensure that the antenna cable has a correctly fitted BNC connector. Ensure in particular that no short exists either inside the BNC connector or at the antenna side of the cable. A shorted cable may result in poor performance and may damage the transmitter.

Never route the antenna cable in a bundle with other wires. Never bend the antenna cable sharply as this degrades its function as a transmission line.

After installation verify proper operation of the V6 transmitter using a suitable RF power meter with SWR readout. Ensure that the antenna is well matched and is able to radiate the available RF power generated by the V6. Reflected power due to poor antenna match may enter the aircraft ground system and cause interference with other systems.

Before operating the transmitter of the V6 Transceiver, ensure that microphones are operational and levels have been setup correctly (in the first level menu – microphone level setup).

## ***Planning***

The V6 Transceiver is a complex combination of Radio and Intercom and may be installed with many possible combinations of features. Careful planning of the installation is necessary based on the configuration of the aircraft and personal operating preferences.

Choose a position on the instrument panel where the Radio may be clearly seen and easily reached to operate the controls. Where space behind the panel is limited, it may be necessary to use special arrangements or fittings for the connectors. A dimension as small as 150mm/6inches behind the panel is possible.

The antenna is critical to getting the best performance from the Radio. Look at similar aircraft to help in choosing a suitable position to mount the antenna.

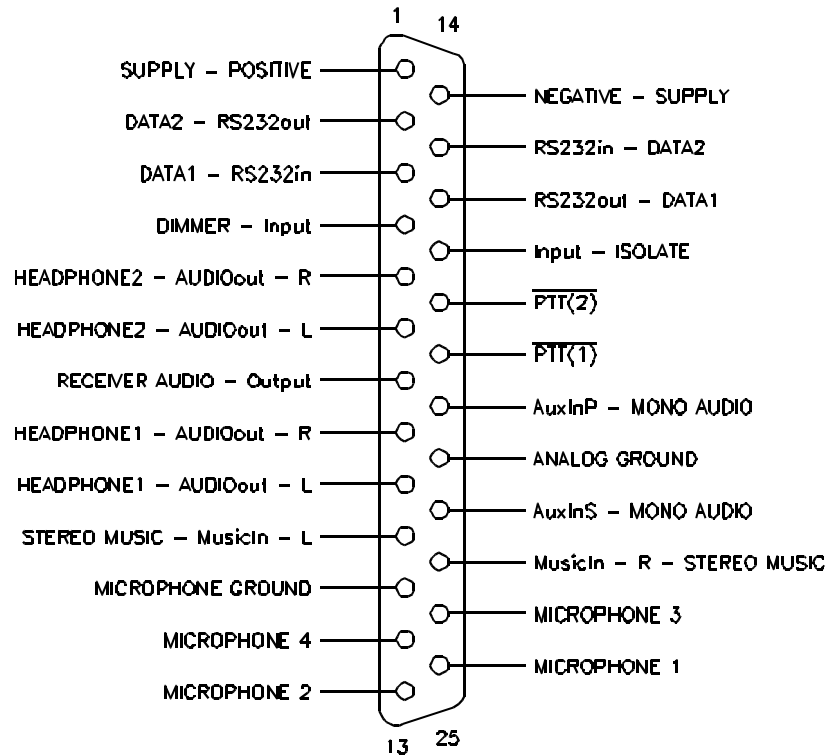
The V6 Transceiver has two PTT inputs. Some aircraft have two control yokes or sticks, so that two PTT switches may be installed, one for each position. With two switches installed and the PTT configuration in the second level menu set to 'Separate', only MICROPHONE 1 will be 'live' when transmitting with PTT 1 and similarly only MICROPHONE 2 with PTT 2. Wiring must be arranged accordingly. For this arrangement, MICROPHONE 1 has priority. This means that PTT 1/MICROPHONE 1 will 'take over' transmission if PTT 1 is activated, even if PTT 2/MICROPHONE 2 is transmitting. For an aircraft having a single stick and the PTT configuration set to 'Join', a single PTT switch may be connected to either PTT input and both MICROPHONE 1 and MICROPHONE 2 will be 'live' when transmitting.

The Intercom of the V6 Transceiver is provided with an 'Isolate' facility. When activated, this allows the two stereo audio output circuits to be separated or 'Isolated'. When isolated, microphones are associated with outputs according to the arrangement set in the second level menu. Thus MICROPHONE 2 may be associated with either OUTPUT 1 or OUTPUT 2 depending on whether 'Mic 1+3' or 'Mic 2+2' is selected respectively. If it is required that the pilot is 'on his own' when 'Isolate' is activated then the headphones associated with MICROPHONE 2 must be wired to OUTPUT 2 and 'Mic 1+3' is selected. With this arrangement, when 'Isolated', PTT 2 is deactivated. Alternatively if the microphones are to be separated two and two, then the headphones for MICROPHONE 2 are wired to OUTPUT 1 and 'Mic 2+2' is selected.

The V6 has two mono auxiliary audio inputs, shown as AuxInP and AuxInS on the connector pin-out below. These inputs are prioritized. Thus if an audio input on AuxInS (Secondary) is being passed through to the audio outputs and an input is applied to AuxInP (Prietary) input, this passes through instead and AuxInS is muted completely. AuxInP has priority over AuxInS. Thus AuxInP might be used for more important alarms or voice alerts (such as Terrain Warning) with others (such Oil Pressure) relegated to AuxInS.

## DB-25 connector pin out

A 25 pin female SubD connector on the rear panel provides all low frequency signal and power connections to the V6 Transceiver. The wiring harness in the aircraft requires a male DB-25 connector.



A clean DC supply of 12V or 24V nominal is required. Internal protection will cause the Radio to be switched off if the DC voltage exceeds 32V. The negative supply lead to the Radio should be terminated at a separate connection point as close as possible to the negative terminal of the battery. This will help to reduce interference from other electrically noisy equipment in the aircraft.

A four circuit intercom circuit is provided. One circuit (MICROPHONE 1) is intended for the pilot and the others for passengers. It is possible to connect several microphones to each circuit in parallel. In this case it is recommended that identical headsets be used.

A stereo music input is provided. A suitable jack, such as a 3.5mm stereo audio jack, should be provided if this input is to be used. An MP3 player may then easily be connected. For best results, the jack should be insulated from the airframe and its ground connected to the analog ground pin on the Radio.

Two mono auxiliary audio inputs are provided. These inputs can be used to connect alarms, EFIS voice alerts and the like.

Two stereo audio outputs are provided. These are capable of driving 8 ohm speakers or multiple (up to 8) standard aviation headsets. The pilot's headset

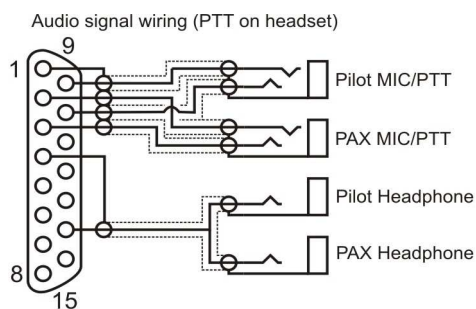
should be connected to HEADPHONE 1. The installation may be wired for mono headsets. In this case, headphone connections should use only one 'side' of the stereo outputs – all connected to the same side. The corresponding 'side' of the stereo input can then be used for music.

Separate analog and microphone grounds are provided. They should not be connected to supply ground or the airframe as this may introduce audio interference. Insulating washers or an insulating panel should be used to mount headset and microphone jacks so that these may be connected back to the analog and microphone grounds respectively without connecting to the airframe. Screened cable should be used for microphone connections.

Two PTT inputs are provided. A PTT is activated by connecting the input to power supply ground or audio ground. Airframe ground may also be acceptable.

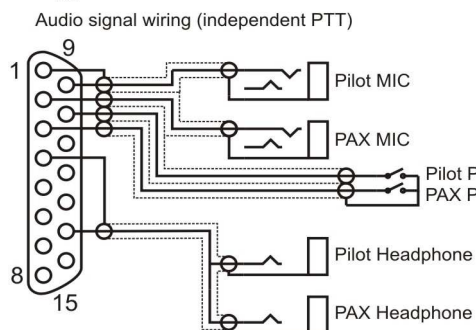
Two independent RS232 serial communications ports are provided. These may be used to connect to two independent EFIS systems for remote control of the V6 Transceiver. These ports are equivalent and interchangeable.

### **Principal wiring diagrams**



Use this diagram for headsets that provide built in PTT buttons.

Please note use of shielded audio cable



Use this diagram for independent PTT switches. Here both pilot and passenger PTT are shown. The passenger PTT is optional.

Please note use of shielded audio cable. It is recommended to use shielded cable on PTT as well, particularly if long cables are required.

A 2.5A – 5A circuit breaker or fuse must be installed. This is mandatory.

### **Single Transceiver installation**

This is the minimum installation. Connect the following:

- Power supply (typically 12VDC)
- Pilot headset - microphone and headphones
- Pilot PTT switch
- Antenna tuned to the VHF airband connected via RG400 or equivalent

50 ohm coaxial cable

These optional items may also be connected:

- Up to three additional separate headsets
- One additional PTT switch
- Stereo music source
- One or two auxiliary audio sources
- One or two RS232 connections to EFIS systems (if used)

For more information visit [www.MGLAvionics.co.za](http://www.MGLAvionics.co.za)

## **Specifications** – Subject to change without notification

### **General**

Frequency range RX:	108.000-136.975MHz
Frequency range TX:	118.000-136.975MHz
Frequency control:	High resolution fully digital PLL (DPLL) with precision reference oscillator and CORTEX M3 microcontoller
Tuning steps:	1MHz, 25KHz, 8.33KHz
Display:	Graphic LCD with green backlight – 46 x 30mm
Memories:	100 + 10 x 20 SL30/SL40 compatible frequency lists

### **Physical**

Configuration:	Front mount - standard Ø57mm / 2¼" cutout
Overall dimensions:	W61mm x H61mm x D120mm W3.35" x H3.35" x D3.43"
Installed depth:	120mm / 4.8" (excl. connectors and wiring)
Operating temperature range:	-20°C ... +55°C
Weight:	250 grams

### **Transmitter**

Configuration:	LDMOS output stage with digital modulator
Output power TX:	6.5W ±10% at 13.8V (specified power rating) 5W at 12V (typical) 3.5W at 10V (typical - low voltage operation)
Frequency tolerance:	<5ppm (-20°C ... +55°C)
Modulation:	AM (6K00A3E)
Spurious output:	< -60 dBc
PTT timeout	35 secs (may be restarted)

### **Receiver**

Configuration:	Double conversion super heterodyne 1 <sup>st</sup> IF 45MHz 2 <sup>nd</sup> IF 455KHz
Sensitivity:	< 2uV (-101dBm / 50Ω) for 6dB S+N/N (m=30% 1KHz)
Spurious response:	>10mV (-27dBm / 50Ω) – AGC method

Audio output power: >0.5W into 8Ω, 600Ω compatible (up to 8 headsets)

## Other

Microphone: Electret  
Microphone bias: 8.2V low noise / 1KΩ load  
Audio subsystem: Digital with 24bit CODEC, 12KS/s, and DSP  
Intercom: Four circuit with adjustable ambient noise suppression  
a) Conventional VOX  
b) MGL Avionics propriety digital VOGAD  
Music & Auxiliary Inputs: 2Vp-p (max) / 10KΩ load  
Serial communications: 2 x RS232, Garmin SL30/SL40 compatible, MGL EFIS compatible, full remote control

## Power

Voltage: Nominal 13.8VDC Negative ground  
Voltage limits: 10.0 ... 32.0VDC (continuous operation, no damage)  
Current RX: <250mA / 13.8VDC (no signal, squelch closed)  
Current TX: <1.5A / 13.8VDC (50Ω load)

## RF Exposure

This Transceiver generates RF electromagnetic energy while transmitting. For compliance with RF exposure limits, the antenna gain should not exceed 0dBd (dipole antenna) and any persons should maintain a distance of at least 0.75m/2.5' during operation.

Do not operate this Transceiver in an explosive atmosphere

## FCC Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the condition that this device does not cause harmful interference,

This Transceiver has been tested for compliance with CFR 47 parts 2, 15, and 87 as applicable and is registered accordingly. Any changes or modifications not expressly approved may void the user's authority to operate the equipment.

FCC ID: **WSJV6**

# REFERENCE

## **ADJUST VOLUME OR SQUELCH**

Press VOL/SQ to select volume or squelch level adjustment as required.  
Use UP/DOWN arrow buttons to adjust. Switching from squelch to volume briefly opens squelch (for a receiver 'static' test)

## **INTERCOM SETUP** - Refer to first level Menu

Suggested starting point: VOX level 7 or VOGAD MED level 2

Microphone level needs to be set correctly

Select PTT Join/ISeparate as required

## **SWITCH ACTIVE AND STANDBY FREQUENCY**

Press ACTIVE button.

## **FREQUENCY ENTRY**

### **SET STANDBY FREQUENCY**

Press MHZ/KHZ/CH button. Standby frequency selection changes between MHz and KHz. Use UP/DOWN arrow buttons to set frequency

### **SELECT 50KHZ OR 25 KHZ TUNING STEPS**

Press and hold MHZ/KHZ/CH button for one second

### **CHANGE TO CHANNEL ENTRY**

Press and hold MHZ/KHZ/CH button for two seconds

## **CHANNEL ENTRY**

### **SELECT CHANNEL**

Press MHZ/KHZ/CH button to change between setting of channel number 10's and channel number 1's. Use UP/DOWN arrow buttons to set channel

### **CHANGE TO FREQUENCY ENTRY**

Press and hold MHZ/KHZ/CH button for two seconds

## **SELECT SCANNING ON/OFF**

Press and hold ACTIVE button for one second. Flashing "S" in header bar signifies scanning "on"

NB: A "priority scan" setup is available in the second level Menu

## **SET 121.5 MHz EMERGENCY CHANNEL**

Press and hold ACTIVE button for three seconds. Active frequency will change to 121.500 MHz