

 <p><b>MicroAvionics</b> The Clear Communication</p>	<p><b>POWERED RADIO INTERFACE V3</b></p>
<p><b>USER MANUAL V3.1</b> March 2019</p>	<p><b>Part #: MM005 / MM005A MM005BT/ MM005ABT</b></p>
<p>www.microavionics.com</p>	<p><b>Radio Type:</b> <b>Other info:</b></p>

**Please read manual in full before use. Red text denotes important information that may cause damage if not used correctly.**

**MicroAvionics Powered Radio Interface.**

Thank you for buying a MicroAvionics MK3 Powered Radio Interface. Our interface uses advanced circuit design to provide the very best operation with minute power consumption, while giving universal connectivity between Microlight Aircraft Headsets and any Radio Transceiver. It also allows connection with a Secondary Radio, Voice Recorder, Mobile Phone, and two audio/ Music Source and LED control indicator. It has Remote Press-to-Talk connections for both headsets and a transmit. Status indicator LED's allow the user to visually check Battery Status, Transmitter On, Receiver Active, and Power Connection. External RX /TX LED indicator can also be fitted to the CONTROL output jack.

The interface is fully user configurable to suit your preferences. The user should read these instructions carefully before connecting the interface or making any alterations. There are several settings that can be altered by the user, however when you purchase the unit it should be set by the dealer to match your radio type. You may also fine-tune the interfaces' Audio gain, and set the Music muting control and Mobile Phone levels.

**Note:**

*Gain settings should be left reasonably high, but if the setting is too high you may hear a high pitch squeal on the intercom or on the receiving radio. Take time to optimise these settings but if you do not want to alter the interface, your system will still provide most functionality providing your dealer has set the system for your radio.*

**Included:**

- 1 **MM005 Radio Interface**
- 1 **MM007 Power Lead**
- 1 **MM010 Audio lead (blue plug)**
- 1 **Fixing kit: 2 off M5x12 screws, 2 Tie rap clips, 2 tie raps**

**Functions.**

A typical, fully loaded system may be connected as follows:

An Airband radio is connected as the main radio. A second radio (such as a PMR type) is connected for talking to other users while in flight. (This avoids unwanted chat on the airband frequency). Also a Mobile phone may be connected and a music source added for background music. *GPS or PCAS audio may also be connected.* A camcorder or dictating recorder may be connected and this will record everything the user hears on the headsets. Remote LED can be connected to CONTROL jack socket for dash board RX/ TX indication. *(Music second radio and Phone is muted when the main radio receives a signal allowing you to hear ATC instructions, the mute circuit fades in music etc. after main radio activity has finished).*

You may also connect a 12 – 14V volt battery supply to the system. *Note:* you do not have to connect an external voltage as the headset batteries will power the system. If the supply is connected then this will trickle charge the batteries, power the hand held radio and power the radio interface.

If the interface is used without an external power source it will operate in "Micropower" mode consuming only 3mA from each headset, in this situation the LED's are not operational so as to extend battery life.

There are five LED indicators that show:

- 1. External Power On
- 2. RX (receive) Receive

3. TX (transmit) Transmission
4. Headset 1 Batteries fully charged- green light
5. Headset 2 Batteries fully charged- green light

\*\* When the Headset Battery LED shows green the headset batteries are at full voltage. The charging circuit switches off when fully charged. The charging circuit will monitor the battery charge, and will start charging the battery when the voltage in the battery reduces.

Two PTT's may be connected. When P1 transmits the microphone of P2 will mute and vice-versa. This will enable the pilot to talk over the passenger if required to TX immediately without hearing the passenger.

External Control LEDs can be connected to the CONTROL jack socket. This is a Bi colour LED which indicated TX and RX.

#### Inputs / Outputs.

Master radio input.

Second radio input.

Cellular telephone input.

Music input.

GPS / PCAS audio input.

Stereo sound record output.

Remote Control Output: RX/ TX LED Two PTT inputs. 12volt ignition supply input (interface does not require this to work).

#### Features.

12 volt ignition supply input, if connected will power the interface and radio's DC input.

Headset charging if ignition supply is connected

Switch-able 10 volt stabilised or 12 volt power output to power radio.

Configurable for most radio type, Microphone gain, Radio power supply voltage(10v or 12v), Adjustable transmitter microphone gain setting, Adjustable headset volume level gain setting.

LED's for: Power ON, RX, TX and Headset fully charged.

#### Installation tips.

- Keep cable runs to a minimum.
- Do not coil spare cable.
- Keep the audio cables away from any other mains cables, especially strobe and ignition cables.
- Use the aircraft's bodywork to shield the cables from other cables. Running the audio cables along opposite side of the aircraft keel or fuselage.
- Do not mount the interface near any other form of interference like a transponder antenna, radio, engine cables, strobe or strobe driver box & GPS.

#### Installation.

Match the radio interface type to the radio you are connecting to (see chart 'A'). Plan your installation and make sure the cables are long enough to reach the desired positions (extension leads are available).

- Secure the interface unit to the aircraft by using the 2 x 5mm threaded inserts in the bottom of the interface. You can either bolt onto a bracket or use the cable tie fixings included. You may wish to mount the interface in a position so that the indicator LED's can be easily seen.
- You can connect a 12 volt ignition supply to the interface. Please note you do not have to connect an external voltage source as the headset batteries will drive the whole system. Connecting the supply will trickle charge and power some radios types. Run the power cable supplied to an ignition supply by the shortest connection.
- Run any other music or cellular telephone cables.
- Once all cables are installed you must fasten the cables to the aircraft. We suggest cable ties, but you must install to your countries regulations.

Chart 'A' Radio Interface Type & Adapters Required

Radio Type	Radio	Radio lead	Power connection	Radio adapter.	Lead
Alinco DJ-193, DJ-195. Many other 2 metre band	Type 'A'	2.5 & 3.5mm mono or stereo connector	•	•	
Becker AR 4201/ 6201	Type 'H'	25 pin 'D' type with lock	•	•	
Filser ATR500	Type 'Y'	'D' type connector	Red & Black wire on 'D' connector.	•	
Filser ATR600	Type 'U'	'D' type connector	Red & Black wire on 'D' connector.	•	
Flightline FL760	Type 'F'	'D' type 15 way Female	•	•	
Icom A2, A20, A21	Type 'A'	2.5 & 3.5mm stereo jack connector	2.1mm DC connector	•	
Icom A3, A22, A14,A15	Type 'B'	2.5 & 3.5mm stereo jack connector	2.1mm DC connector	•	
Icom A4	Type 'B'	2.5 & 3.5mm stereo jack connector	Requires 2.1mm to 1.7mm power adapter.	•	
Icom A5, A23	Type 'BA'	2.5 & 3.5mm stereo jack connector	1.7mm DC connector	MM014	
Icom A6, A24, A16	Type 'BB'	2.5 & 3.5mm stereo jack connector	1.7mm DC connector	•	
Kenwood, Intek (note, for Intek, Turn Switch 1 ON)	Type K	2.5 & 3.5 12mm lead – **Special order.		•	
JRC JHP 500 JRC JHP 520	Type 'A'	2.5 & 3.5mm stereo jack connector	1.7mm DC connector. Polarity reversed.	•	
Microair 760	Type 'H'	Bare ended wire lead	•	•	
	Type 'D'	'D' type connector	Red & Black wire on 'D' connector.	•	

Win 747	Type 'C'	2.5 & 3.5mm stereo jack connector	No Power	•
XCOM 760	Type 'X'	'D' type connector	Red & Black wire on 'D' connector.	•
	Type 'H'	Bare wires	•	•
Yaesu / Vertex Standard FT-10R FT-40R FT-50R VX-1R VX-2R VX-5R VX-110 VX-150	Type 'A'	2.5 & 3.5mm stereo jack connector. CT44 converts to single jack	Requires power connector changing	MM014
Yaesu / Vertex Standard VXA-100 VXA-120 VXA-150 VXA-200 VXA-210	Type 'B'	2.5 & 3.5mm stereo jack connector. LA44 converts to single jack.	Requires MM014B	MM014A
	Type 'M'	2.5 & 3.5mm stereo jack connector. CT44 converts to single jack	Requires MM014B	MM014
Yaesu / Vertex VXA 220,300,700	Type B	2.5 & 3.5mm stereo jack connector. CT91A converts to single jack.	Requires MM014B	MM014DD
	Type M	2.5 & 3.5mm stereo jack connector. CT91 converts to single jack.	Requires MM014B	MM014D
	Type L	GA jack plugs as radio lead	Requires MM014B.	MM014C

Factory Settings.

Internal user switch settings.	a. Mobile TX	b. Mobile TX	c. Mobile RX	d. Mobile RX	1 Hard PTT	2 TX gain & EQ	3 Microphone Gain	4 Microphone Gain	5 Radio 10v	6 Radio 12v	7 RAD	8 TX Tone	9 RX	10 RX	11 Audio tip	12 Audio ring
Becker AR4201	On	On	Off	On	Off	Off	Off	Off	Off	Off	Off	On	Off	Off	Off	On
Icom A6, A24 ** Vertex FTA250, 450,750	On	On	Off	On	Off	On	On	On	On	Off	Off	On	Off	Off	Off	On
Icom A3, A22, A14	On	On	Off	On	Off	Off	Off	On	Off	On	Off	On	Off	Off	Off	On
Icom A5, A23	On	On	Off	On	Off	Off	On	On	Off	On	Off	On	Off	Off	Off	On
Icom A2, A20	On	On	Off	On	Off	On	On	On	Off	On	Off	On	Off	Off	On	Off
Alinco, 2 metre band	On	On	Off	On	Off	On	On	On	On	Off	Off	On	Off	Off	On	Off
Microair 760	On	On	Off	On	On	Off	On	On	Off	Off	Off	On	Off	Off	Off	On
Filser ATR500	On	On	Off	On	On	On	Off	On	Off	Off	Off	On	Off	Off	Off	On
Flightline FL760	On	On	Off	On	On	Off	On	On	Off	Off	Off	On	Off	Off	Off	On
Win 747	On	On	Off	On	Off	Off	On	On	On	Off	Off	On	Off	Off	Off	On
Vertex. VXA-100,120, 150, 200, 210	On	On	Off	On	On	Off	On	Off	Off	On	Off	On	Off	Off	Off	On
Vertex VXA220, 300, 700	On	On	Off	On	Off	Off	On	On	Off	On	Off	On	Off	Off	Off	On

**WARNING – CONTROL JACK SOCKET.** Only connect MicroAvionics LED indicator to this socket. Voltage exists on this socket and may cause damage to MP3 players or similar if connected to this output.

**WARNING –** Damage can be done to your radio and intercom equipment if you set the wrong switch setting. Switch 5&6 must be either 'off/on' or 'on/off' DO NOT PUT BOTH ON or damage may be caused, for panel mount radios switch 5 & 6 should be 'off'.

\*If your radio accepts 12volts power input then switch 5 is 'Off & switch 6 is 'On'.

\* If your radio accepts between 9 and 11 volts then switch 5 is 'On & switch 6 is 'Off'.

\*\* For Icom A5, A6, A24. The side tone on the radio must be turned off (See Icom radio instructions). If side tone is left on you may hear a squeal feed back noise whilst transmitting.

**User Settings & Fine-Tuning:**

This radio interface will work with many different radios. You can change the following:

**Switch a, b, c & d:** Adjust the RX and TX audio level to telephone. See table 2.

**Switch 1:** Hard PTT to ground = 'On', Resistive PTT = 'Off'.

**Switch 2:** Audio Transmit and EQ gain, low gain = 'On', high gain = 'Off'. This sets the audio and correct EQ level to the radio.

**Switch 3 & 4:** Microphone gain. This will adjust overall microphone volume level of the system and will also effect the level to the radio's microphone input. See table 3 for more information.

**Switch 5 & 6: Radio supply power lead. WARNING. This sets the voltage that is supplied to the radio lead power jack. The voltage required will be different for each radio. Do not have both switches in the 'On' position. The voltage required is listed in your radio user manual.**

**Switch 7:** .

**Switch 8:** Transmit tone is heard in the headsets momentarily on press of PTT. Switch On = active, switch Off= deactivated.

**Switch 9 & 10:** Adjust audio level from master radio to headsets.

**Switch 11:** Sets audio on 2.5mm tip (only if interface has twin moulded jack plug).

**Switch12:** Sets audio on 2.5mm ring (possibly used if interface has single? jack plug).

**Cellular telephone & second radio set-up.**

The telephone lead is terminated to a 2.5mm stereo jack plug, the red plug is the telephone plug. You can plug this directly into some telephones, others require a 'base adapter'. Most Nokia telephones require a base adapter, even though the 2.5mm jack plug will plug into some Nokia telephones. A MicroAvioncs Bluetooth telephone adapter can also be used to connect any telephone to your radio interface.

There are many different telephones on the market and each may require slightly stronger or weaker audio levels to the telephones' microphone. Equally the interface may require adjustment to accommodate different speaker levels produced by different phones. We have included an adjustment for the microphone strength being sent to the telephone and an adjustment for the signal being received.

The user should listen to a telephone conversation IN FLIGHT. Note the audio level being transmitted and received.

The audio levels can be adjusted using the below table.

**Table2.**

Telephone transmit audio level				
	Low	Medium	High	Very High
a.	Off	On	Off	On
b.	Off	Off	On	On
Telephone receive audio level				
	Low	Medium	High	Very High
c.	On	Off	On	Off
d.	On	On	Off	Off

**Table 3.**

Headset Microphone Gain				
	Low	Medium	High	Very High
3	On	Off	On	Off
4	On	On	Off	Off

**Table 4.**

Master Radio RX audio level				
9	On	On	Off	Off
10	On	Off	On	Off
	Min	→	→	Max