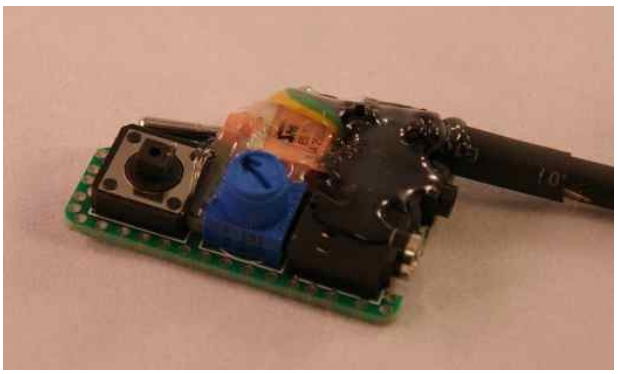
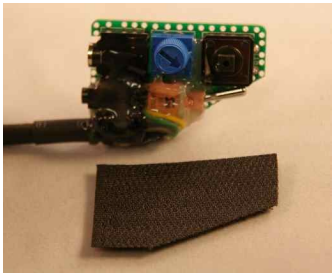
Electronic Design and Manufacturing Services.

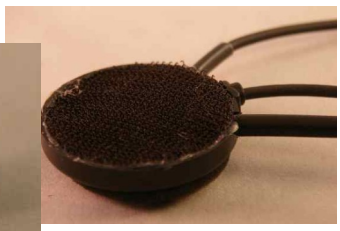
SENSAIR

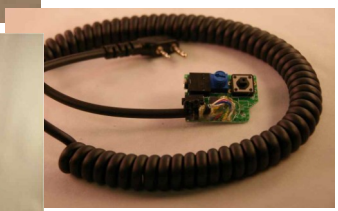
Headset system

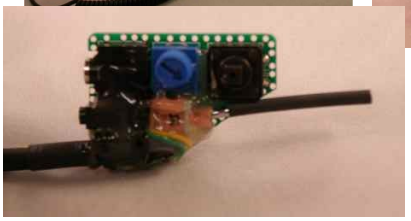
These components are intended for use with ICOM IC4x range of radios.
Also available for GME and Vertex brands.
(VHF version suits ICOM IC-A15).
Options include;
Single Radio
UHF – ICOM IC40/IC41, GME models(see note at end),
VHF – ICOM IC A15
Adapter to combine UHF and VHF above to helmet.











Helmet looms.
Full Face helmet, single radio single speaker.
Full Face helmet, single radio dual speaker.
Full Face helmet, dual radio dual speaker.
Open face helmet single radio single speaker hook backed with boom mic.
Open face helmet single radio dual speaker hook backed with boom mic.
Open face helmet dual radio dual speaker hook backed with boom mic.
Finger switch suitable all versions.

Helmet type	Single Radio Single Speaker	Single Radio Dual Speaker	Dual Radio Dual Speaker
Full face			
Open face			

Parts.
Full face Helmet loom. Available single speaker and dual speakers/radios.
Mic, Headphone and 3.5mm stereo plug, wired together to standard configuration.

- Mic signal to tip of 3.5mm Stereo plug.
- Mic Common to cable shield and Common sleeve of 3.5mm Stereo plug.
- Headphone signal to ring of 3.5mm Stereo plug.
- Mic Common to cable shield and Common sleeve of 3.5mm Stereo plug.
- Available with 2 speakers, same sound for clearer comms.

Note:
The Full face Helmet loom, is not intended to be used without first installing into a full face helmet. As it is, in itself, not very rugged. However once installed into the Helmet, it will provide years of service.

Open face helmet

- As above, but with boom mic, and speakers backed with hook for quick installation in the helmet
- For short, bike helmets or others with no covering over the ear, ask for the “V” pad that hooks onto the “Y” strap of the helmet to allow boom mic and speaker to be installed.

Switchbox, available UHF and VHF air band radios.
ICOM curly cord for connection to Radio jack.
Circuit board with;

- Lock-On transmit. (UHF version only)
- Push to Talk (PTT).
- Volume control.
- 2.5mm socket for connection of finger switch.
- 3.5mm socket for helmet loom.
- Straight connector for IC40S and right angle for IC41 and GME.

Finger switch.

2.5mm socket with ;

- PTT push button, with Hook.
- Hook and loop finger strap.

Dual radio usage.

For situations that required both a UHF and VHF airband radio to be used there are 3 options.

Two separate systems,

- Using both a VHF and a UHF headset system, complete with two independent helmet looms, ie 2 single speaker+mic combinations. Either radio headset system may be omitted when not required. This has the minor advantage of requiring the second set of helmet loom which can be a spare for the UHF if required.

Use a dual radio adapter,

- Two independent junction curly cords one VHF the other UHF with an adaptor to the Dual Radio helmet loom. This has the advantage that either radio headset system may be omitted when not required. But only a single helmet loom is required with only one lead coming from the helmet.

Installation.

Full face Helmet Loom.

Standard installation should be straight forward.

Move the helmet lining far enough from the outer case, to allow the insertion of the microphone into the chin guard of the helmet. Running the wire attached, along under the lining to the side of the helmet, adjacent to the ear.

Locate the headphone, if necessary with a small amount of adhesive.

Run the lead to the plug, to the lower edge of the helmet, with the lead running along the inside edge of the outer case, glue in place, to afford a good mechanical bond.

This is the point that will take all the stress of those times when the helmet is removed, without first disconnecting the switch box!

Allow enough of the lead to the plug to be free of the helmet, so that it may reach the mounting point of the switch box with spare, for movement of your head in flight and on the ground. Reseat the inner lining of the helmet.

Note:

- ***Do not alter the outer case of the helmet.***
- ***Do not remove excessive inner lining of the helmet.***

If a longer leaded loom is required, please contact SENSAIR for a replacement loom, with the appropriate length wires.

Open face Helmet Loom. (Real easy!)

For helmets with hook and loop ear padding attachment, lift ear pad, press hook backed speaker in place press ear padding back in place. For others, press hoop backed speaker in place. Make sure the mic is rotated to a comfortable location.

Switch Box.

This is supplied with a lose piece of Hook and loop. Around the edge of the circuit board there are small holes for sewing onto this Hook and Loop, or other cloth such as some part of the harness, shoulder strap etc.

The switch box may be located anywhere within reach of the radio to the limit of the ICOM curly cord, the helmet loom and the finger switch, if used.
The Helmet loom plugs into the 3.5mm stereo jack, along side the 2.5mm connector to the finger switch.
If using full gloves and the lock-on switch is difficult to switch on, place a small piece of heatshrink tubing (Supplied) over the switch arm and heat shrink into place. It may be necessary to use a VERY small drop of super glue to keep it there. This heat shrink should allow intentional operation by grabbing the lose end and pulling gently, but should be floppy enough not to allow bumping it on. (If a suitable heat shrink tube is not available contact Sensair.)

Finger switch.
This is a small diameter curly cord with a small PTT button at one end, and a 2.5mm plug at the other.
Installation of the lead is on a "per flight" basis. It is often easiest to put the switch on the finger, and then put on your flying suit, speed sleeves etc, over the top. Allow enough slack, for full hand movement.
Plug into the switch box after it's arranged under your sleeve comfortably.
Alternatively semi-permanently install you your flying suit or Speed Sleeves. (I have a small hole in the collar for the plug to come out and then before I take them off I trap the plug inside the hook and loop strap of the button.)

Operation.

The controls on the switch box are,

- Push To Talk button.
- Transmit Lock-On switch.
- Headphone volume.

The push to talk is wired in parallel with the finger switch, and so both will work with the finger switch plugged in.
The Transmit Lock-On switch is intended for towing operations. To switch on, pull the switch away from the body of the board. To switch off grab hold of the Board, the switch lever is then moved within the board outline and should be very had to accidentally switch on again. (Generally know as ABS, Anti Beer Switch, as, in the group I fly with, it's 1 round of beers for every minute of lock-on, once off the tow.!!)

The headphone volume control works in series with the volume control of the radio, for normal operation it is recommended to have this control at full, and adjust the volume to a high level with the radio volume control. Then reduce a little to a comfortable loudness with the switch box volume control.

Dual radio usage.
This works by simple sharing mic on the helmet loom with both radios via a “Y” splitter lead. This works only with a dual radio helmet loom, as the speakers must be wired independently. And the use of one curly for each radio, usually UHF and VHF. As noted above the VHF junction is quite different from the UHF.

GME UHF Radio usage.

There is only a small electrical difference between the ICOM and GME UHF speaker mic requirements. That is the PTT detection. On the ICOM this needs to be a 33,000 Ohm resistor (marked as 333), whereas on the GME it should be 2200 Ohm (marked as 222).
Physically the radio connector has been very similar, enough at least for the leads used in these headsets to be compatible.
Recently GME has developed a waterproof radio, an example is the TX6160. To maintain the water proof rating, the connector was changed, making the connectors no longer compatible.

This can be corrected by trimming off a little of the inside radius corner of the connector. As illustrated here.
Use of the standard, unmodified connector will not work and may damage the radio's speaker amplifier.