



## RADIO-POWER INTERFACE

## INSTRUCTIONS

**Thank you for purchasing the Lynx Micro System.**

**IMPORTANT**

The following instructions have been prepared to provide users of the Lynx Micro Communications System with the necessary information to enable safe and correct use.

Please read this booklet carefully and take time to familiarise yourself with your new equipment and its mode of operation before attempting to use it during flight.

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# INTRODUCTION

The Lynx Micro System has been specifically developed for use in the high-noise environment of open-cockpit aviation where noise attenuation and microphone noise cancellation are primary concerns.

The Lynx Micro System Radio/Power Interface Unit is designed for use with Lynx Micro System Headsets and airband radio transceivers, to provide pilots with all the facilities necessary for high quality radio telephony.

## The Interface Unit

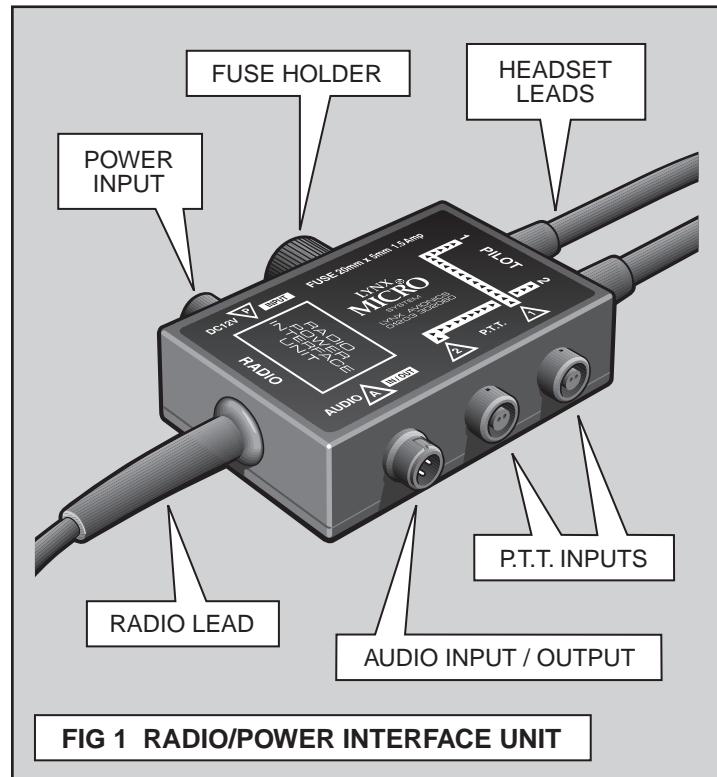
The interface is manufactured utilising the latest techniques in microcircuit design, and surface-mount component technology, to produce an exceptionally compact unit (fig 1).

Developed specifically for use in close proximity to engine ignition systems, the interface electronics are designed to be virtually immune to electrical interference. All electronic component parts of the unit, including the leads and connectors, are screened to prevent noise from electromagnetic radiation. In addition to passive shielding, the processor includes dedicated electronics to actively filter and remove interference from both audio and power supply inputs.

The unit uses very little electrical current, especially during standby, and has no noticeable effect on headset battery life when used with a Micro System Headset.

## Radio Configuration

The Radio/Power Interface is intended for direct connection to a hand-portable radio and can be supplied to work with all common types of radio transceiver.



**FIG 1 RADIO/POWER INTERFACE UNIT**

## **Headset Switching**

Headsets are connected to the interface using the flying leads and locking connectors built in to the unit (fig 1). To simplify operation, and to minimise the possibility of inadvertent battery drain, the unit only becomes energised when a headset is connected. All power switching is carried out automatically, by the internal power supply control circuit, when a headset is plugged in.

## **Power Supply**

The unit can be powered either directly from a Micro System Headset or can be connected to an external 12 Volt power supply such as the aircraft battery or a separate battery. Some specialist Lynx headsets do not contain an internal battery and must always be used with an external power supply when connected to the unit.

When powered from an external source the unit will also supply the radio with a filtered power supply through the radio connection. It is important to remember that all power switching is carried out automatically, by the unit, and the power supply to the radio only becomes available once a headset is plugged in. Disconnecting the headsets automatically switches off both the interface unit and the power supplied to the radio.

When using Micro System Headsets and an external battery the radio is powered via the unit and the headsets are also simultaneously trickle charged. When operating in this configuration the unit will automatically switch back to headset power, and the radio will revert to its own battery (if fitted), if the external power supply voltage falls below 10 Volts.

## **Power Supply Fuse**

The interface unit is fitted with a 1.5 Amp fuse (fig 1). The fuse protects the unit, and the lead to the radio, in the event of a short circuit at the radio connector or damage to the radio lead. The fuse does not protect the unit, or the radio, from connection to unsuitable voltage inputs.

## **Push-To-Transmit**

In order to provide the greatest flexibility of operation the interface unit is fitted with two 'Push-To-Transmit' (P.T.T.) input sockets (fig 1).

The two P.T.T. inputs allow switches to be connected to the unit to control radio transmissions from the two separate headsets. During the operation of a P.T.T. switch, one of the headset microphones is opened, for radio transmission, while the microphone of the second headset is muted. A single P.T.T. switch may be connected in either socket to select a master headset, or two switches can be fitted to allow both headsets to transmit alternately.

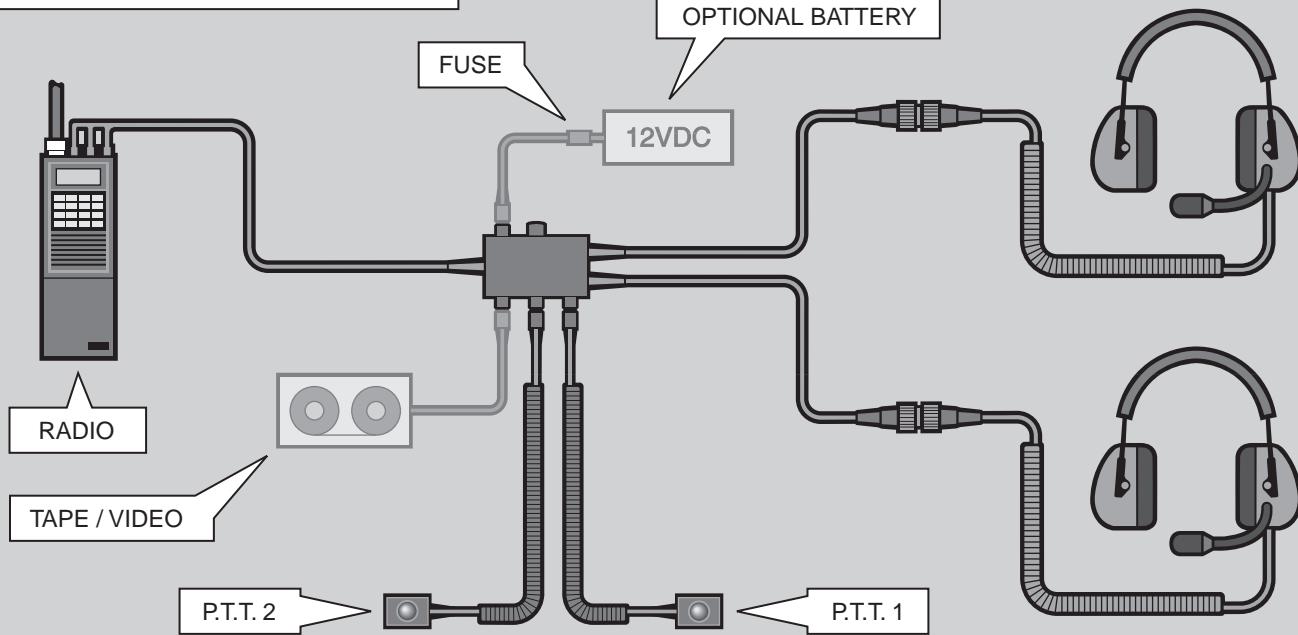
## **Audio Input/Output**

The Audio Input/Output socket (fig 1) is provided on the unit to allow external devices, such as tape players, to be connected to the system. Using this facility, music or other sound can be played directly into the headsets and transmitted over the radio.

Tape recorders or video recorders can also be connected to the unit, using the same socket, to record the intercom audio, radio reception and radio transmissions.



**FIG 2 INTERFACE CONFIGURATION**



# SYSTEM CONFIGURATION

The Lynx Micro System concept is intended to simplify considerably the configuration and operation of radio interface equipment within the open-cockpit environment.

## Solo Operation

For solo applications a single headset and P.T.T. switch may be connected to the unit. It is important to note that the two P.T.T. inputs each control a separate headset, and care must be taken to ensure that the P.T.T. switch is correctly fitted to select the active headset.

All the connections to the unit should be bayonet locked, and correct operation of the equipment should always be established, by a radio check, before flight.

## Dual Operation

For intercom and radio use, two headsets can be connected to the unit with the option of one or two P.T.T. switches. Again it is important to note that the individual switches must be correctly fitted to the unit, and positioned in the aircraft, in relation to the relevant headset.

Correct operation of the equipment should be established by a radio check before flight, and again always make sure that the bayonet locks, on all of the connections to the unit, are properly engaged.

## Radio Connection

The interface unit is normally fitted with a standard radio connector which will connect directly to most available transceivers. The interface electronics, however, are always configured to work with the specific make and model of radio specified when ordering the unit.

Before using an interface with a radio, it is important to establish that the unit is correctly configured, as connecting and using an interface which does not match the radio may damage the unit or the radio.

## Power Connection

An optional colour-coded Power Lead is available to enable an external battery to be connected to the interface unit.

The lead should be fitted and bayonet-locked to the unit, with the red cable attached to the positive terminal and the black cable to the negative terminal of the battery. When connecting the power supply lead, a fuse must also be installed in-line (fig 2) to protect the lead in the event of a short circuit (3 Amp fuse maximum).

The unit is polarity protected and will only charge the headsets, and supply power to the radio, if correctly connected to the battery. It is also important to remember that power is only available to the radio when a headset is plugged into the unit.

For information on suitable power sources, refer to Section 4 on page 7 of this booklet.

## Audio Connection

An optional Audio lead and Adapter are available for use with items such as tape players or video cameras. The lead should be fitted and bayonet-locked to the unit, and the connection made to the relevant device. Remember that sound which is played through the system will also broadcast over the radio when a P.T.T. switch is pressed.



## INSTALLATION

The Radio/Power Interface Unit should be permanently fitted to the aircraft, with the headset input leads and radio connection lead conveniently attached to the airframe.

During installation it is important to ensure that the unit and leads do not interfere in any way with the aircraft control systems. When connecting the unit to an aircraft battery, it is also important to check that the operation of the aircraft's electrical equipment is not affected.

Depending on the type of aircraft a specialist or licensed engineer may be required by law to fit the equipment or inspect the installation.

### Screw Fitting

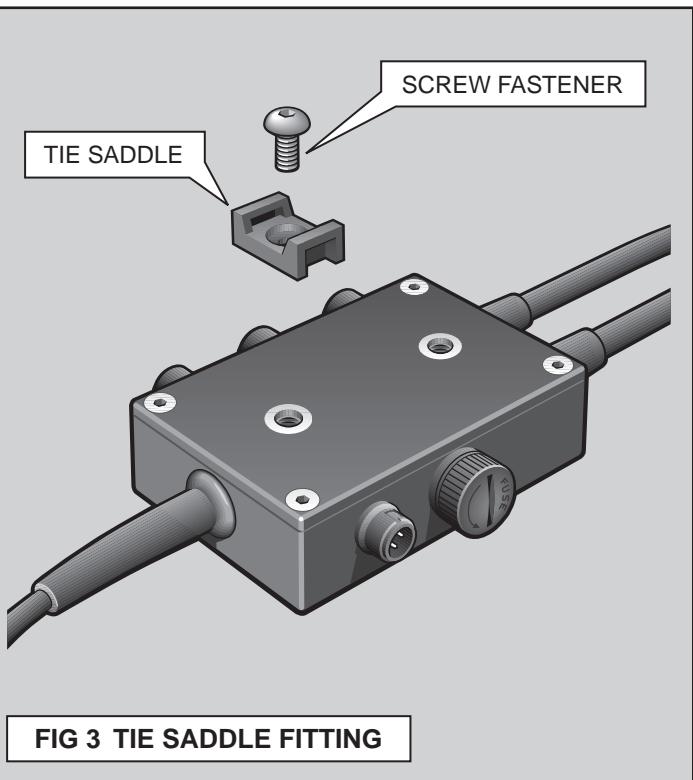
The interface has two threaded inserts built into the back of the unit for mounting purposes. The threads accept M4 x 1.0 metric machine screws and allow the body of the interface to be screwed directly to a panel or bulkhead.

When mounting the unit using screw fasteners it is also important to fit the locking washers: to prevent the screws working loose due to vibration.

### Velcro Attachment

As an alternative to screw fixing, the unit may be attached to a panel or bulkhead using the Velcro pads supplied.

The two separate pads are adhesive-backed, and are easily fitted to both the unit and a suitable flat surface. Before applying the pads to the unit or aircraft, make sure that both the surfaces are clean and dry and free from grease. Providing that good adhesive bonding is achieved the Velcro pads offer a secure and flexible method of fixing.



**FIG 3 TIE SADDLE FITTING**

## Plastic Tie Fitting

As an alternative to panel mounting it is also possible to fix the unit in position using plastic ties and tie-saddles. This method of mounting is useful to attach the unit to tubular structures and avoids the need to drill fixing holes.

Suitable ties, tie-saddles and screw fasteners are supplied in the fixing kit. In order to use the ties for mounting, the tie-saddles must first be securely screwed in position on the back of the unit (fig 3).

## Tube Clip Fitting

The unit is also supplied with two tube clips, which offer an alternative to the plastic tie method, for fixing to tubular structures.

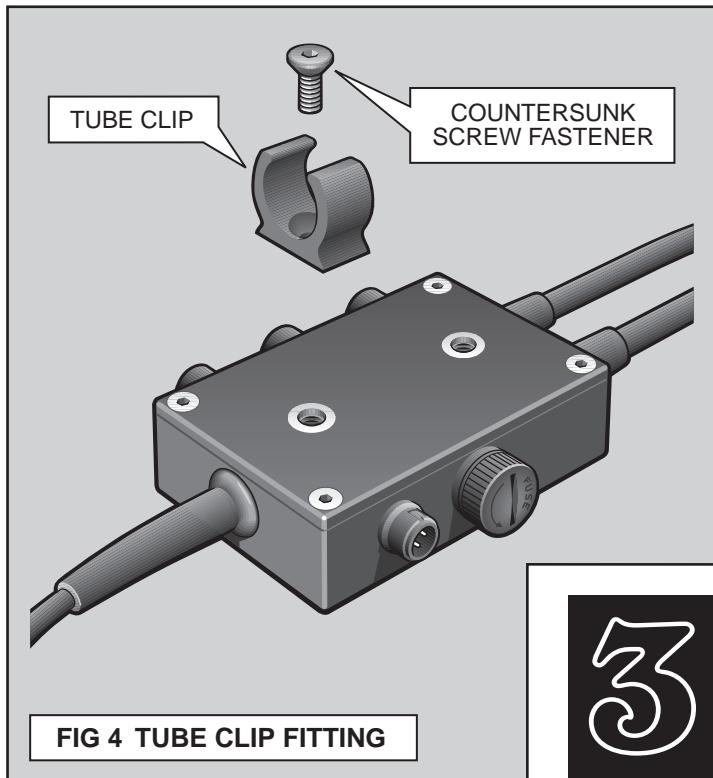
The tube clips are only suitable for use with 25mm diameter tube but do allow the unit to be easily fitted or removed. The clips should be securely attached to the unit using the screws supplied (fig 4).

## Cable Routing

All cables connected to the interface should be carefully routed around the airframe and attached in position using the cable ties supplied.

Avoid fitting the cables in close proximity to possible sources of interference such as strobe lights or the aircraft antenna. Headset leads should be fitted with the headset connector in an easily-accessible location next to the relevant seat. The P.T.T. switches and leads must be positioned in the aircraft, in relation to their respective headsets, to avoid possible confusion during operation.

Always check after installation that the interface unit and leads do not interfere in any way with the operation of the aircraft.



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# SPECIFICATION

Technical information is provided in this section which may be useful during the installation of the interface unit. Additional information can be obtained directly from Lynx Avionics.

## TECHNICAL INFORMATION

Unit size .....	<i>25 x 70 x 80 millimetres</i>
Fitting area required .....	<i>25 x 145 x 120 millimetres</i>
Radio Lead length .....	<i>2 Metres</i>
Headset Lead length .....	<i>2 Metres</i>
Fuse .....	<i>1.5 Amp</i>
Fuse type .....	<i>20mm x 5mm Quick Blow</i>
Power supply input .....	<i>12 Volt DC</i>
Stand-by power consumption .....	<i>&lt; 100 µAmp</i>
Transmit power consumption .....	<i>&lt; 30 mAmp</i>
P.T.T. Input .....	<i>Normally-Open Contact</i>
Audio Input impedance .....	<i>1000 Ω</i>
Audio Output impedance .....	<i>1000 Ω</i>

### Radio Type

Each interface is configured to work with a specific make and model of radio transceiver; the individual radio type configuration is marked on the back of each unit.

### Power Input

The interface should only be connected to a 12 Volt battery and must never be connected directly to a voltage regulator.

It is possible to connect the unit to a battery which is being charged by a regulator but the voltage across the battery must never exceed 16 Volts when charging. It is important to note that if a regulator is faulty, and supplies more than 16 Volts, it will damage both the battery and any electronic equipment which is connected to it.

### P.T.T. Input

Several types of 'Push-To-Transmit' switch are available from Lynx for direct connection to the interface unit and for use in different applications. Connectors are also available which allow any 'Normally-Open Contact' switch to be used to key a radio transmission.

### Audio Input/Output

The line voltage of the Input/Output socket is compatible with most common tape and video recorders. The Input/Output Lead is supplied with both a 2.5mm and 3.5mm jack plug for equipment connection.

**FIG 5 MOUNTING HOLE DIMENSIONS**

