



X-Link MK2 Interface

Technical Specification



Jan 16, 2023

This paper describes the technical part of the Mimer X-Link MK2 Interface.

Please also refer to the web page: www.lse.se/x-link.

Setup manual is available from www.lse.se/x-link/x2-download

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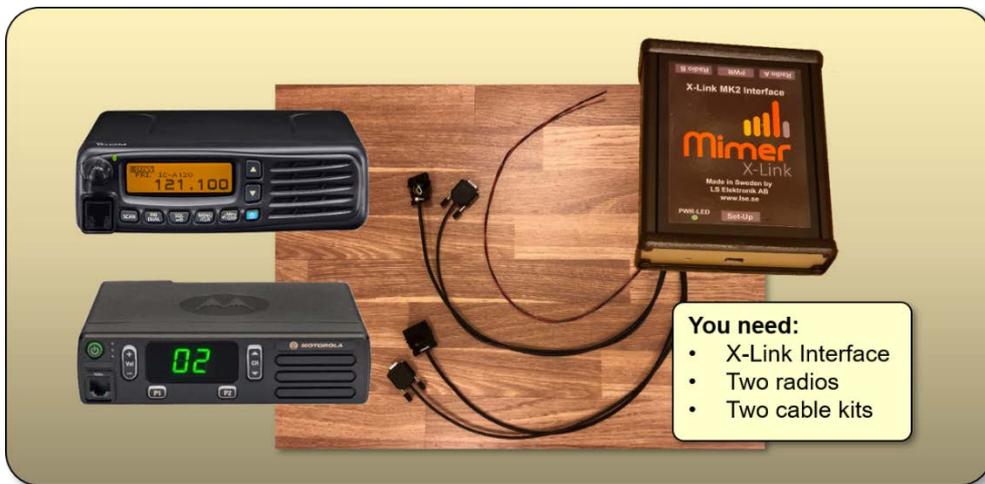
2 Mimer X-Link

The Mimer X-Link Interface patches together almost any two types of radios so that radio users in two different types of radio systems can talk to each other. Also, other audio sources can be patched, for example PA systems.

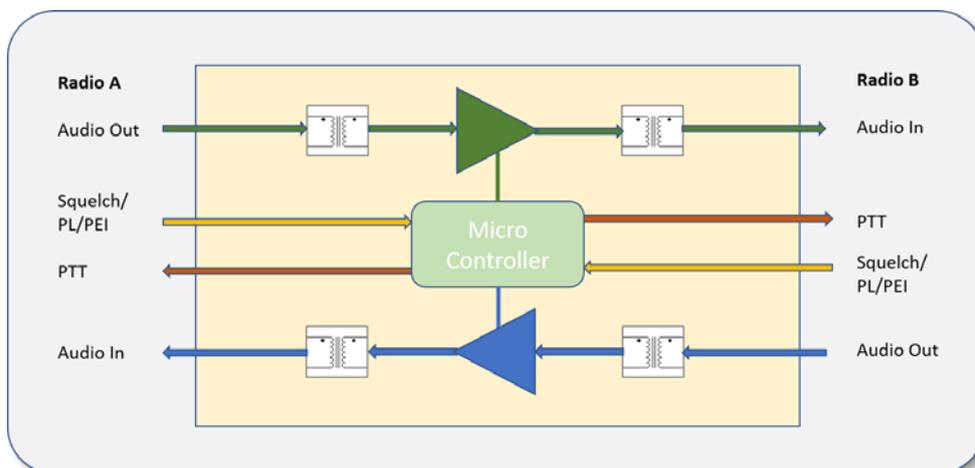
The interface has an embedded microprocessor with purpose designed firmware that handles all communication between the radios.

The audio is handled in analogue mode and the gain can be adjusted to fit almost all radio types.

A complete system consists of the Interface box and two cable kits that fits the two radios.



Needed parts for a setup: Interface, cable kits and radios



Simplified system drawing of the interface

3 The X-Link Interface

The purpose of the X-Link Interface is to be a patch between two radios, thereby bridging two radio systems together.

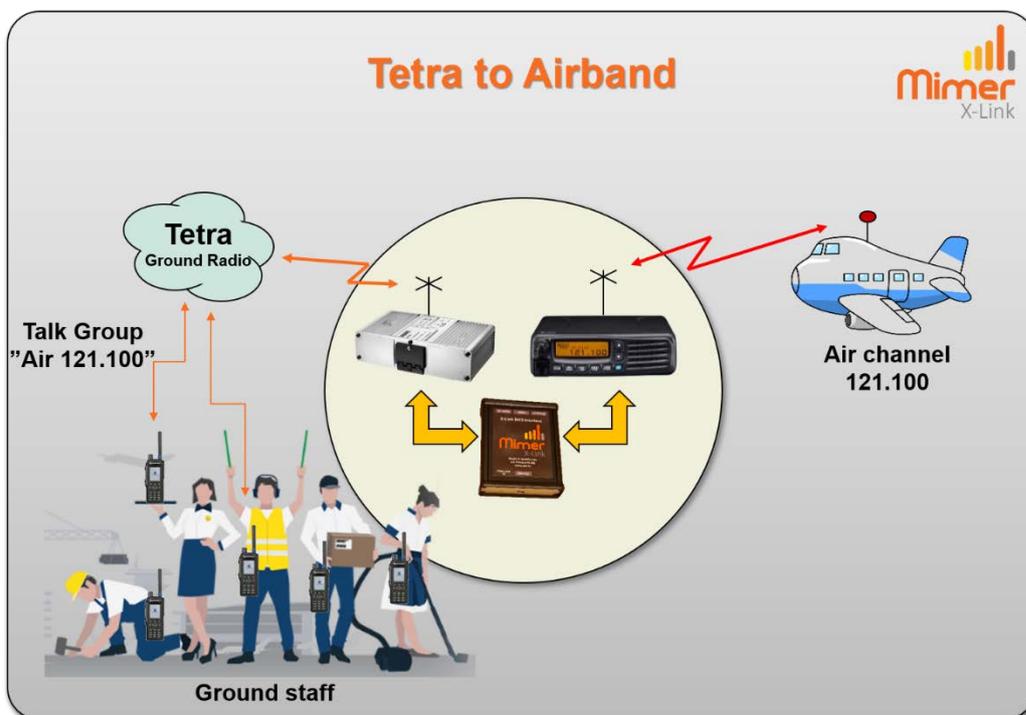
The X-Link Interface has a very flexible design so the audio and the I/O signals can be configured to fit almost any radio on the market, both Mobile Radios and Base Stations. Also other sources of audio can be connected for example PA-systems.

The X-Link Interface has connections for audio input and output, I/O control signals like Squelch and PTT and also data signals through serial data (for example Tetra-PEI).

3.1 Setup

The X-Link Interface is set up using a small Windows utility, described in a separate manual. In the setup utility all audio levels in/out are set and the way the interface shall detect reception and do PTT are defined.

The X-Link Interface runs on 12VDC just as most radios and is therefore easy to power from the same source as the radio, and to feed with backup power. If power is lost, the X-Link Interface will restart itself in a matter of seconds when the power comes back.



A Tetra radio cross patched together with an airband radio

3.2 Audio detection and PTT

The way the interface detects incoming traffic on a radio, and the way it triggers PTT on the other radio is different for each radio type. This must be correctly configured for the system to work.

Many radios provide information that they are receiving voice traffic. This can be an I/O output signal on an analogue radio, or a data message like a PEI message from a Tetra radio. Other radios don't have this I/O and the interface will then use the level of the incoming audio (VOX) to detect reception.

On radios with an I/O output the trigger can be for example squelch detect, PL detect or talkgroup detect.

3.3 Audio delay

The X-Link Interface has no delays on the audio path since all audio through the interface is analogue.

Delays may on the other hand be encountered on the timing that each of the radios have in their call detect and call setup. This is specific to each radio type and to the radio systems they work in.

4 Specifications

Specifications for the standard version of the Mimer X-Link MK2 Interface.

4.1 Mechanical

| | |
|--------------|---|
| Size | 130 x 120 x 30 mm |
| Weight | 230g |
| Power supply | Nom: 12V / 250mA Min: 8V Max: 18V |
| Temp range | -10 - +50 °C |
| Connectors | <i>2 x D-sub for audio, I/O and data Separate Power connector USB micro for programming</i> |

4.2 Audio

| | |
|-------------------------------------|---|
| 2 x Input (from radio speaker) | Max: 10Vpp (3.5Vrms) |
| Input impedance | AC coupled transformer: 2200 ohm. (Optional 600 ohm) |
| Adjustable Gain | -35dB ... +25dB |
| 2 x Output (to radio microphone) | Max: 4.0Vpp (1.4Vrms) @ RL: 600 ohm Max: 7.8Vpp (2.7Vrms) @ RL: Hi Z |
| Output impedance | AC coupled transformer: 560 ohm. (Optional 30dB attenuator) |

4.3 I/O's

| | |
|----------------------------|---|
| 2 inputs | High = 2.5-30V / Low = 0-0.8V, 47kohm impedance to ground 5.6kohm pull-up to +5V or optional to +12V |
| 2 open collector outputs | Max 30V / Max 50mA. |
| Data I/O for radio control | RS232, TTL and other manufacturer-specific protocols |



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