

IRLP IO Interface Version 3.0 DTMF Led Modification

When using the AREG Audio Interface with the IRLP IO Interface Version 3.0 a modification is required before the DTMF Led will work on the AREG Audio Interface.

The purpose of the DTMF Led and front panel connector J5 on the AREG interface are only to provide an additional LED that can be mounted on the outside of the computer case. This may be useful if you need to fault find the system. The DTMF led and the associated circuits on the AREG Audio interface do not affect the operation of the IRLP node in any way. If you elect not to modify the IRLP IO Interface version 3.0 by adding an additional wire, the only thing that will not work is the LED on the AREG board.

The critical part is; if DTMF is being received by the radio, the led on the IRLP IO Interface lights up. The lighting up indicates that valid DTMF has been decoded.

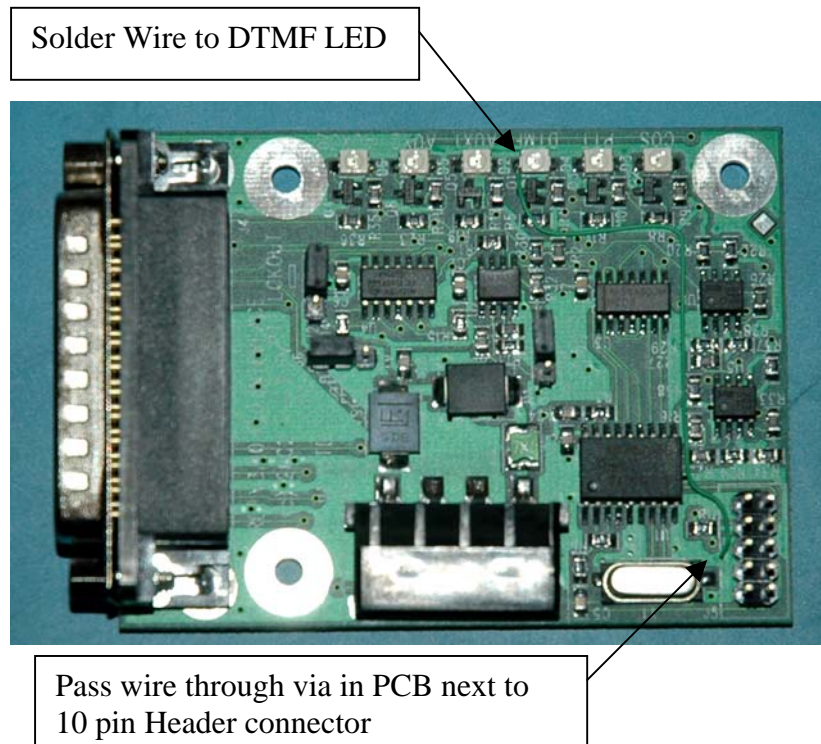
Modification Details

An additional wire needs to be installed between the DTMF LED on the IRLP IO Interface PCB and the 10 Pin header connector on the IRLP IO Interface PCB. Install a small 30 AWG wire between the points shown in the following photos of the PCB. Ensure all solder dabs are removed and not small bits of wire are left as they may cause the IRLP IO Interface to stop working.

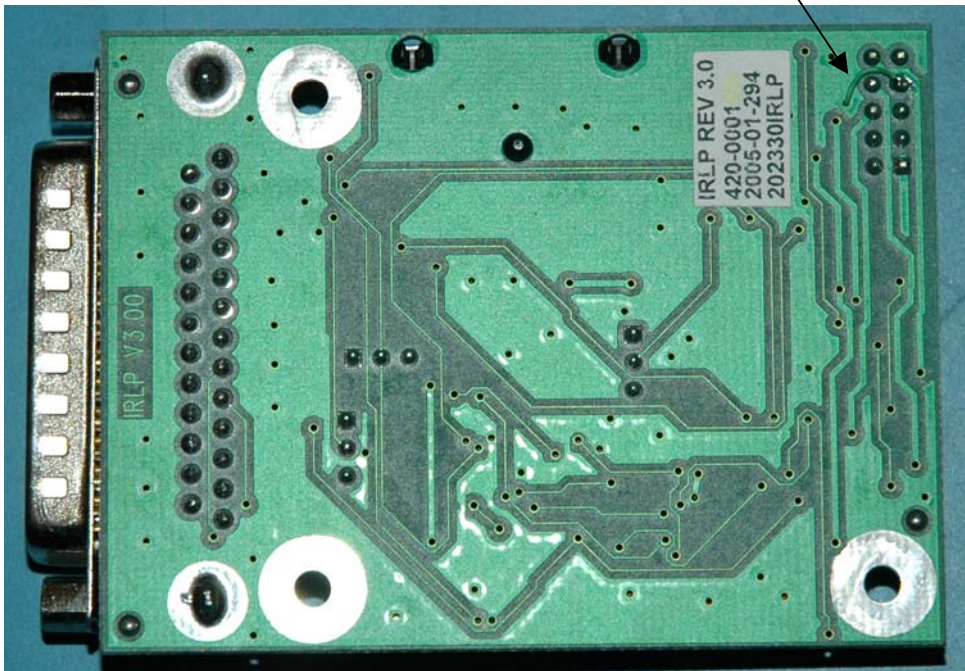
WARRANING

Persons qualified to conduct circuit board repair and surface mount soldering should only attempt this modification.

Modification of the IRLP IO Interface Version 3.0 is done so at your own risk, and the author of this document implies or accepts no warranty for the information provided.



Solder wire to PIN of 10 pin header connector



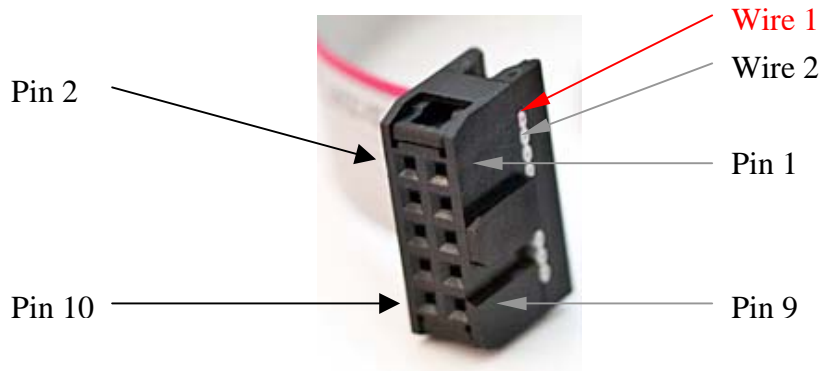
Connecting the IRLP IO Interface to AREG Audio Interface

The problem with the IRLP IO Interface is the 10 Pin header connector does not follow standard IDC pin outs, and only the standard cable that comes with the board or a cable that has been wired correctly will work between the IRLP IO Interface and the AREG Audio Interface (AAI)

Standard IDC Connector Layout

An IDC connector with ribbon cable terminated on it, has a small arrow denoting pin 1. The first conductor of the ribbon cable is usually denoted by a red strip, and the subsequent conductors are grey in colour, for multicoloured ribbon cable the wire on the out side nearest the arrow denoting pin one.

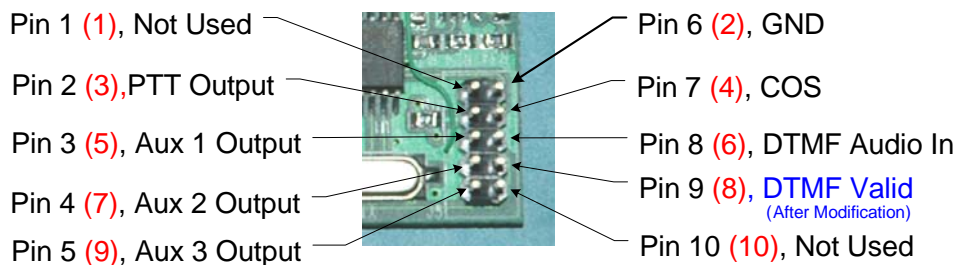
As an example in a 10 pin IDC connector that has two rows of 5 pins. The second conductor in the ribbon cable, that is the wire next to first conductor has a corresponding pin directly across from pin one.



IRLP IO Interface Header Connector

The IRLP IO Interface Header Connector has been designed differently, and if you consult the documentation that comes with the board, the pin layout is very different.

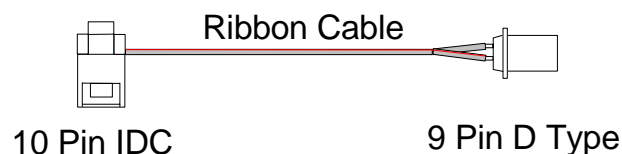
IRLP IO Interface Ver 3.0



IRLP IO Interface Connector Pin x
Standard IDC connector Pin (n)

Cable - IRLP IO Interface Version 3.0 to AREG Audio Interface Version 0.4

Interconnection Cable



IRLP IO Interface J5 to
AREG Audio Interface J4

Until the next version of the AREG Audio Interface has been designed, a special cable will be required. The following table shows the pins as layout on the IRLP IO Interface and how they correspond to a standard IDC connector and finally to the 9 Pin connector used on the AREG Audio Interface.

IRLP IO Interface J5 – 10 Pin Header	Standard IDC Connector	AREG Audio Interface J4 - 9 Pin D Connector
1 (Not Used)	1 (Not Used)	(Not Connected)
2 (PTT Output)	3	2 (PTT Input)
3 (AUX 1 Output)	5	3 (AUX 1 Input)
4 (AUX 2 Output)	7	4 (AUX 2 Input)
5 (AUX 3 Output)	9	5 (AUX 3 Input)
6 (GND)	2	6 (GND)
7 (COS Input)	4	7 (COS Output)
8 (DTMF Audio Input)	6	8 (DTMF Audio Output)
9 (DTMF Valid – Active Low Signal, only after mod has been completed)	8	9 (DTMF Valid Input)
10 (Not Used)	10 (Not Used)	(Not Connected)

AREG Audio Interface (AAI)

The 9 Pin D Type connector required on the cable is a male type, and the pin numbers are usually printed on the connector.

Testing the operation of the MOD

The modification can be easily tested by using a pull up resistor (1K ohm ¼ Watt) and LED with the one end of the resistor connected to +5 Volts using a spare hard disk power connector. The other end of the resistor connected to the Anode of a LED and the Kathode of the LED connected to pin 9 of the IRLP IO Interface 10 pin header, see previous image for pin configurations. An audio signal will need to be feed into pin 3 at a suitable level so the DTMF decoder on the IRLP IO Interface detects valid DTMF and thus turns the led on the PCB.

This testing can also be conducted using the radio connected to the AREG Audio Interface, and an other transmitter, generate a RF signal with DTMF tone on it. The LED should turn on once enough audio level is being received by the DTMF decoder IC.