

## ***DQAM – A C-QUAM AM Stereo Decoder***



### **ASPISYS DQAM AM Stereo Decoder**

This is a high-quality decoder board for converting regular AM radios to C-QUAM compatible stereo AM radios. You can now upgrade your radio to Stereo with this LOW COST but HIGH QUALITY stereo decoder that provides a "crystal-clear" stereo sound!!! And it's easy to install.

#### Specifications:

- ❑ Channel Separation: >32db
- ❑ Output audio impedance: 10K $\Omega$  Unbalanced
- ❑ Frequency response: 30Hz -15KHz
- ❑ IF Input level: -40dBm up to +13dBm
- ❑ Pilot Level: 5%
- ❑ Pilot Frequency: 25Hz
- ❑ Decoding system: C-QUAM
- ❑ Power supply: 8 - 15V DC @ 20mA

# DQAM-2

## AM C-QUAM STEREO DECODER

*Usage Instructions*

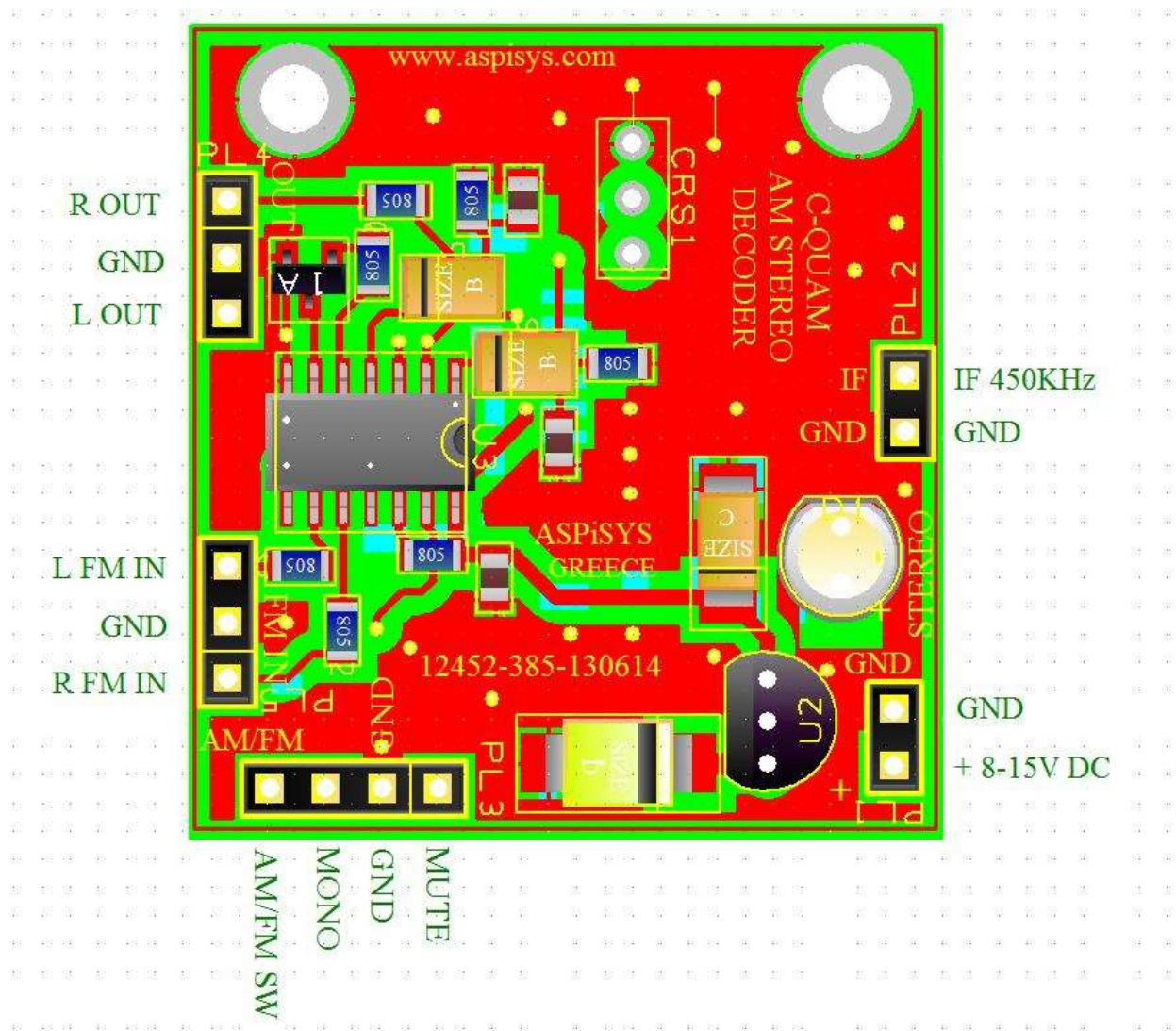
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## Description

**DQAM** accepts IF 450 KHz (or 455 KHz) from AM radio receivers and decodes stereo transmissions using the C-QUAM system. Mono transmissions pass through unaffected. The module provides two outputs, analog audio L & R channels at standard line level commonly used with home audio equipment. These outputs can be connected to the auxilliary/tuner/etc. input of a stereo amplifier.

Connections presume a minimum level of skill pertaining to the understanding of electronic circuits related to AM radio, and the use of a soldering iron for connecting patch cables from the receiver PCB to the DQAM PCB. See the schematic below:



To connect to a radio receiver, first you need to identify within the receiver's circuit the ceramic filter which is at the IF of 450 KHz or 455 KHz. This component (a small plastic cube, usually orange blue or black) usually bears on one of its sides the frequency on it as a number followed by one or two letters.

At the bottom side, this filter has three pins (legs). Facing the letters on the case of the component, the left pin is 1 (input), the middle pin is 2 (usually ground), and the right pin is 3 (output).

With a small coaxial cable connect the filter's output pin to the "IF 450 KHz" PCB input using the center conductor. Using the shield, connect the ground pin of the receiver to the ground (GND) of the DQAM PCB.

Using a voltmeter locate a point at the power supply of the receiver which gives any constant voltage from +8 to +15 VDC. Use a patch cable to connect to the PL1 "+8-15VDC" marked pin.

You will find a left and right output from the DQAM PCB, as shown on the above diagram.

The LED marked as “Stereo” will light when there is stereo reception. It can drive in parallel the same LED used for FM stereo indication. If you want to use this to drive an external LED, simply remove it and connect its pins to the external LED in parallel. **IMPORTANT:** Please note the polarity of the LED.

Some later model receivers use a microcontroller to control the FM Stereo LED. In this case, you will not be able to do this parallel LED connection. You can optionally add a small extra LED connected in parallel with both wires of the on-board LED keeping the same polarity, and place it wherever it is convenient for your use.

There are two inputs (MUTE and MONO) which when they become high TTL level (+5V) they will mute the audio output, or switch to mono output, accordingly. It is up to you whether and how to use them. You will also notice an AM/FM switch (SW) pin. When this is connected ‘high’, it selects AM decoder output, and when ‘low’, it allows passing through the signals from the FM decoder. It is used especially when the board is installed in an AM/FM tuner, and we want to automatically – by the internal band switching signal of the tuner – to change the output signal of the board. In case we need to have a permanent AM stereo decoding output, this pin should be connected to high TTL level (+5V).

### **Adjustments**

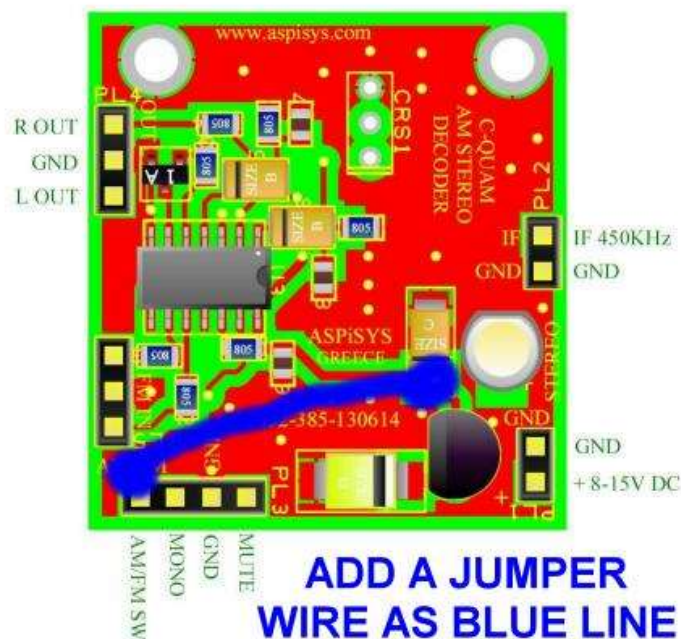
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There are no possible adjustments.

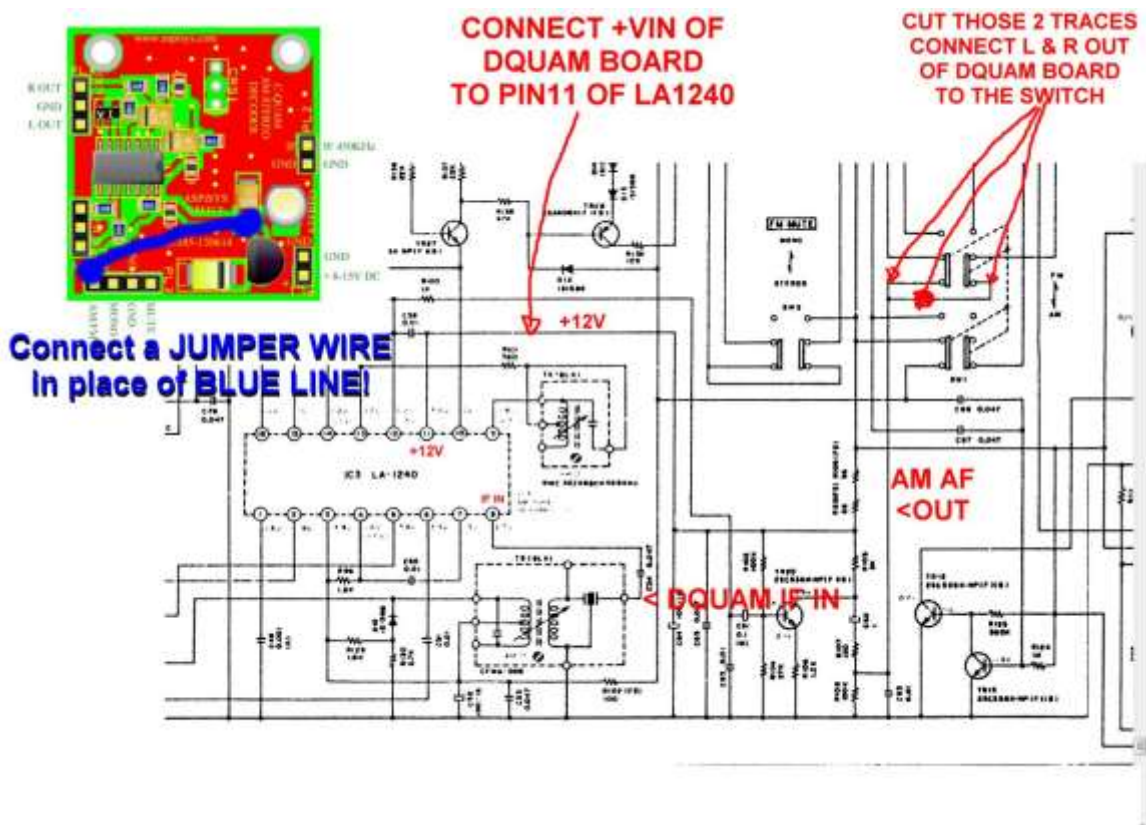
### **Connections**

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In case you use the decoder externally, or your receiver’s AM-FM band switch signal will not be used, you must short (using a jumper wire) the pins shown in the following image.



One example of such connection is shown in the following image.



**Note**

The audio bandwidth which is available after decoding, 99% of the time depends on the type of ceramic filter, and the bandwidth this filter allows to pass to the IF. There are various ceramic filter types, and the bandwidth they allow varies from 4.5 KHz (common low cost European receivers) to 15 KHz.

The letter following the number on the ceramic filter usually gives the bandwidth specified by the manufacturer. Letters H, E, and D have very narrow bandwidth. Letter A is usually wider (17.5-19 KHz). Letter B is usually the best for AM Stereo as it is typically up to 15 KHz audio bandwidth. (IF bandwidth is measured as +/- KHz from center meaning that for a 15 KHz audio signal to pass through, the IF filter must have a bandwidth +/-15 KHz due to AM dual side band modulation index.)

*ASPiSYS Ltd designs and produces FM – AM radio transmitters and analog television VHF –UHF based on international specifications and quality control at a fully equipped lab, up to 20GHz!*

You may find more information about our products through our Internet web site: [www.aspisys.com](http://www.aspisys.com)

Thank you for your preference in our products.

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