DSchmidt Technologies' DTMF to RS232 Decoder
(part # DTMF232)

Overview

This DTMF to RS232 decoder will decode DTMF audio signals (0-9, A-D, #, *) and send its ASCII value out the RS232 port. The serial port is configured as 1200/2400/4800/9600 baud, 8bits, no parity, 1 stop bit.

Features

- **-** In assembled form. Hook up the audio input and a power supply and it's ready!
- Wide power input voltage range (7-24 VDC), 20mA current draw
- True RS232 output voltages
- On board RS232 DB9F connector
- On board RCA audio input connector
- RS232 1200/2400/4800/9600,8,n,1 baud output
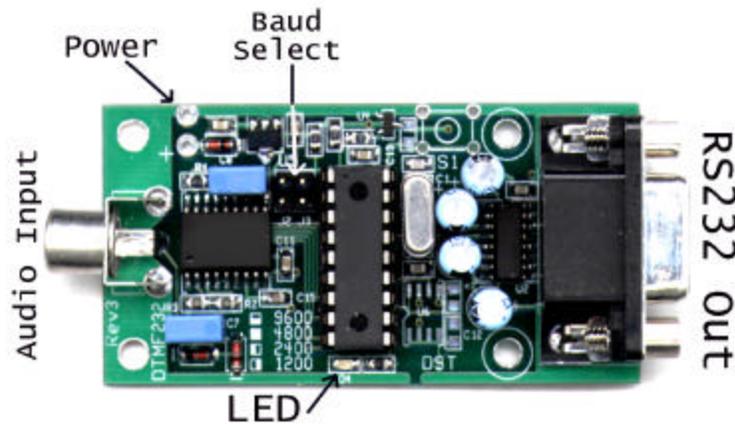- Visual indicator (LED) tells you when a valid tone is decoded

Hookup

The unit comes assembled and is tested before shipment. Because of high current consumption (approximately 10mA idle, 20mA when receiving tones) an external filtered DC power supply is recommended. The on-board regulator will accept voltage inputs ranging from 7 to 24 VDC. Please make sure your power connections are correct before powering the unit! (positive pad is marked with a +)
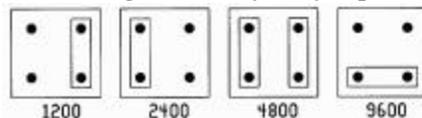
The user must hook up the audio input to the desired source. The on-board phono jack accepts line level audio input. Connect this jack directly to your audio source. DO NOT CONNECT A TELEPHONE LINE DIRECTLY TO THIS JACK! The voltage levels from a telephone line are too great to be used directly.

If you wish to hook this decoder to your phone line and a computer at the same time, you will need to do so using a 1:1 isolation transformer (also known as a 600:600 phone transformer). This will electrically isolate the two from each other. See sample circuit shown later in this document.

Circuit Board Layout with Signal and Power Connection Locations

Baud Rate Settings (note, only one jumper supplied)

| 1200 | 2400 | 4800 | 9600 |

RS232 Connection/Setting of Baud Rate

The on-board DB9F connector is configured as a standard, transmit only, PC serial port. All handshaking lines have been jumpered together. Communication is performed at 1200/24004800.9600 baud, 8 bits, no-parity, 1 stop bit. Configure the baud rate jumper to match your desired speed. For 9600 baud operation, no jumper is required, but you may place the jumper as shown for storage.

Operations

      As tones are received, the LED will light for the duration of the tone. Each tone will then be decoded and the ASCII value of this tone will be sent via the RS232 port.

Hardware

      The microcontroller is a PIC16C54 and is the brains of the decoder. This controller performs the baud rate calculations/communications and converts the output of the DTMF decoder chip to an ASCII value. DTMF decoding is perfomed by the 8870 IC and the MAX232 is a RS232 voltage level shifter for true bipolar RS232 voltages. An voltage supervisor monitors the power supply and prevents the microcontroller from operating if the supply doesn't meet spec. A 5V regulator regulates the incoming DC for all the above IC's.

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For Assembled/Tested Products: WARRANTY
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DSchmidt Technologies expressly warrants that it will either repair or replace the DTMF to RS232 Decoder if it proves to be defective in design, material, or workmanship within ninety (90) days from the buyer's date of purchase.

For warranty repair or replacement, the defective DTMF to RS232 Decoder must be returned within ninety (90) days to DSchmidt Technologies by insured mail and accompanied by proof of purchase. A repaired or replacement DTMF to RS232 Decoder shall be warranted as above for the balance of the original product Warranty Period or thirty (30) days, whichever is longest.

DSchmidt Technologies shall have no obligation with respect to any Product which has been modified or altered. In no event shall DSchmidt Technologies be liable for consequential damages, losses, or expenses arising out of this transaction. The return of the purchase price or the repair or replacement of the product shall be the buyer's sole remedy hereunder.

This limited warranty is DSchmidt Technologies sole warranty. DSchmidt Technologies makes no other warranty of any kind whatsoever, express or implied. All implied warranties of merchantability and/or fitness for a particular purpose are hereby disclaimed by DSchmidt Technologies.

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For ALL Products: SOFTWARE RIGHTS
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The software programs that controls the DTMF to RS232 Decoder manufactured by DSchmidt Technologies is solely owned by DSchmidt Technologies and all rights are reserved. Reproduction, adaptations, or translation of those programs without prior written permission of DSchmidt Technologies is prohibited.

All dimensions in inches
Holes are 0.125" in diameter

Add this circuit to connect the
decoder to your phone line.

600:600
Transformer

To Decoder
Audio Input

To Phone
Line

1N5228

470

0.2uf
250VDC