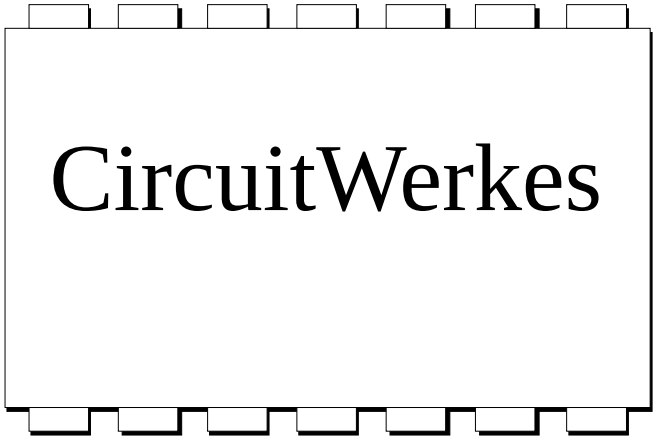
DS-8

Touchtone® Sequence Decoder



Technical Manual

CircuitWerkes
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(352) 335-6555 · Fax (352) 330-0230

THANKS for buying the CircuitWerkes DS-8. We are sure the DS-8 will give you years of faithful service. If you have comments, praise, questions or suggestions for improvement about this or any other CircuitWerkes product please call us at (352) 335-6555 or email us at ***info@circuitwerkes.com*** . The latest copies of our technical manuals and product info on all our problem solving boxes can be found on our Internet web site at ***http://www.circuitwerkes.com*** or our mirror site at ***www.afn.org/~cwerkes*** We appreciate your business!

PLEASE NOTE: Your unit may have been equipped with an audible tone annunciator (beeper) that activates whenever the status LED lights up. This feature is particularly handy when changing the relay codes as described on page 5 of this manual.

These beeps will normally occur only when you are changing the programming of your DS-8; however, if you find the beeps annoying, just open up the box and remove the "buzz enable" jumper, J1, located beside U1, the largest chip on the board.

The CircuitWerkes DS-8
DTMF Sequence Decoder

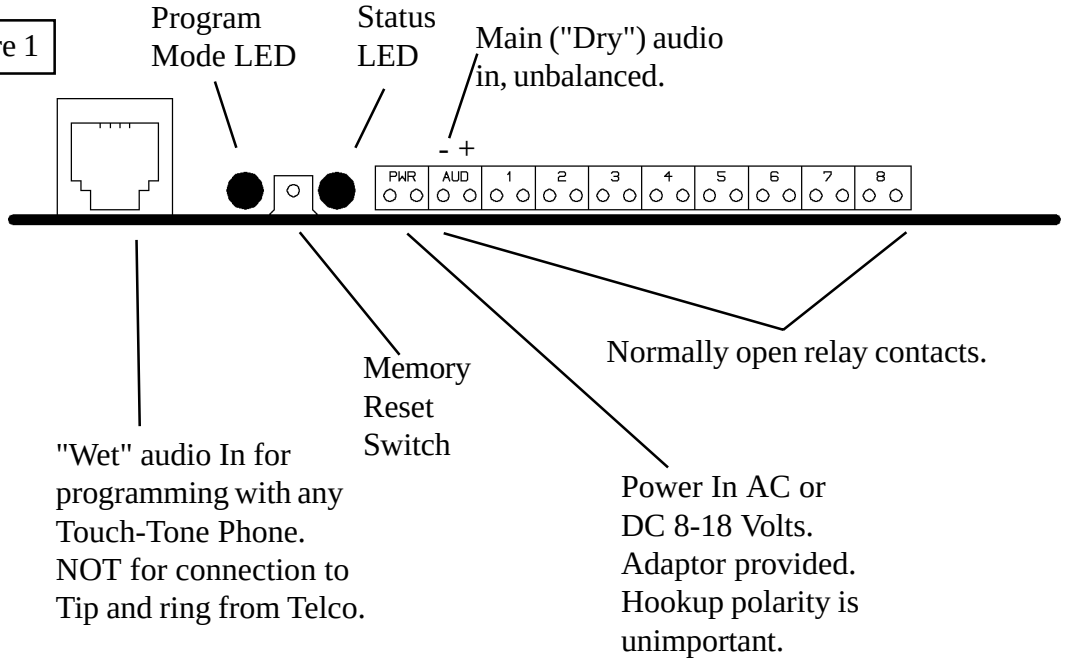
Description

The CircuitWerkes DS-8 is a smart DTMF sequence decoder that has eight independently programmed relay outputs. It comes factory set to provide momentary closures on all eight relays, each relay having its own four digit code corresponding to popular network cueing/automation sequences. The setup information for each relay is stored in non-volatile memory, and is easily changed with a DTMF tone encoder or any Touch-Tone phone.

Installation

The DS-8 is very easy to install. The metal case can be wall mounted with two screws, set on a flat surface (a strip of rubber feet is included), or be rack-mounted with the optional rack-mount kit.
The connector layout for the DS-8 is shown below.

Figure 1



Power is applied to the first two screw terminals. The normal audio input for the DS-8 is unbalanced on the third and fourth screw terminals. The DTMF input range is -15dBM to +6dBM.
The RJ-11 jack is for programming the DS-8 with a generic Touch-Tone telephone. This connection provides power to operate the DTMF circuitry in the phone. Except for the RJ-11 being a wet (DC powered) jack for powering a telephone instrument, it is essentially in parallel with the main audio input; all DS-8 functions can be programmed or accessed from either audio connection. DO NOT ATTACH this device to a live telephone line. Your local Telco will be unhappy and you will probably blow up the onboard power circuitry, ac signal limiting, and who knows what else. Plugging the unit into a Telco line voids the two year limited warranty.

The power requirement from the provided 12v supply (with no relays energized) is approximately 10mA; each energized relay adds about 10mA to the load. With all relays latched the unit will draw less than 100mA. The relay closures are rated at 10 watts each. If you need to switch line voltages we heartily recommend slaving big fat relays made for that purpose. Safety first.

Operation

Once the installation is complete and you've energized power, the status led will blink three times letting you know the unit is ready to operate. The stock (default) codes and modes for each relay are shown in figure 2 below.

Figure 2

Relay #	Mode	Digits	ON code	Off Code
1	M	4	048*	N/A
2	M	4	048#	N/A
3	M	4	635*	N/A
4	M	4	635#	N/A
5	M	1	1	N/A
6	M	1	3	N/A
7	M	1	5	N/A
8	L	3	*12	#12

MODEs:
The operation of each relay is described by the relay's mode. Although the default codes MOSTLY specify momentary relay action, any relay can be set up for any one of the following modes.

M = Momentary. When the DS-8 receives the ON code the relay contacts close for approximately 200milliseconds. A single code operates this mode.

L = Latching. When the DS-8 receives the ON code the relay contacts close and stay closed until the OFF code is received.

XL = All relays set up as XL type are just like normal latching (as described above) except that they are exclusive to each other. If a type XL relay is ON and another type XL relay is subsequently turned ON, the previously energized XL-type is automatically turned off.
Regardless of how many of the relays are set up as type XL, only one type XL will be on at one time. The OFF code for the energized relay still works too.

D = Disabled. This relay type does not respond to any incoming codes.

DIGITS
Each relay can be independently set-up for 1, 2, 3, or 4 digit code length, regardless of the relay's mode. All sixteen standard DTMF digits are valid digits.

Programming your DS-8:

Programming is fairly straight forward. Relays are set up one at a time. Programming can be done with a DTMF encoder attached to the unit's Audio Input or with just about any telephone instrument that has a TouchTone® pad, plugged in to the DS-8's RJ-11 jack (unfortunately most telephones are not capable of producing A,B,C, and D tones). Programming a relay is as easy as dialing a telephone number; the DS-8 even acknowledges the steps along the way. You first enter the programming mode with a four digit password, then enter the relay number, then the number that corresponds to the relay's mode, the code length, the ON code, and the OFF code if the relay is a Latching or eXclusive Latching type.

The Default Programming Password is 9999.
The Mode numbers are : 1 = M (Momentary) 3 = XL (eXclusive Latching)
2 = L (Latching) 0 = Disabled
If you make a mistake during the programming of a relay, just stop what you're doing and wait a few seconds for the device to time-out. It will automatically drop out of the programming mode (without saving incomplete changes) if no input is received for eight seconds. When each step of the process occurs, the STATUS LED blinks once. If an error occurs, like selecting relay 9 or type 4 (neither of which exists, the status LED will blink ten times then the DS-8 will leave program mode and wait for two seconds of silence (no DTMF tones) before accepting further input.

EXAMPLES:
To program relay 1 as momentary output with a 4 digit code to be 635*

ENTER	9999	1	1	4	635*
	programming password	relay#	mode	digits	code

Relay 8: Momentary, 3 digits, Code=111
ENTER 9999 8 1 3 111

Relay 4: Latching, 4 digits, ON=4321, OFF=0000
ENTER 9999 4 2 4 4321 0000

Relay 2: XL, 4 digits, ON=222*, OFF=222#
ENTER 9999 2 3 4 222* 222#

THINGS TO CONSIDER WHEN CHOOSING NEW CODES
If you mix different-length codes on a DS-8, there may be times when you will activate more than one relay with a sequence of tones. If a shorter code is the same as the beginning digits of a longer code, both functions will occur. For example if relay 1 has a single digit code of '3' and relay 2 has a three digit code of '325', both codes will be received and both actions taken if the 325 code is entered.

CHANGING THE PROGRAMMING PASSWORD
If you wish to change the programming password, you first enter the default (or current) programming password, then enter an asterisk, then enter your new password twice. The programming password must be four digits.
Example: To change the programming password from the default password to 8888:
ENTER 9999 * 8888 8888
Remember (better yet, write down) your password if you change it.

REPAIR OR SERVICE INFORMATION

In the event of the need for service or repair, call CircuitWerkes at (352) 335-6555 for a Return Merchandise Authorization number (RMA). Then carefully package the unit along with a note of the problem and send it to the address below. Clearly indicate the RMA number on the outside of the box. We cannot accept returns without an RMA. Be sure to include your address (not a PO box), telephone number and best time to call.

CircuitWerkes
ATTN: CUSTOMER SERVICE DEPT.
3716 SW 3rd Place
GAINESVILLE, FL 32607

CircuitWerkes Limited Warranty

This product is warranted against defects for two years from date of purchase from CircuitWerkes and CircuitWerkes authorized distributors. Within this period, we will repair it without charge for parts and labor. Proof of purchase-date required. **Warranty does not cover transportation costs, or a product subjected to misuse, accidental damage, alteration (except as authorized by CircuitWerkes), improper installation, or consequential damages**
Except as provided herein, CircuitWerkes makes no warranties, express or implied, including warranties of merchantability and fitness for a particular purpose. Some states do not permit limitation or exclusion of implied warranties; therefore, the aforesaid limitation(s) or exclusion(s) may not apply to the purchaser. This warranty gives you specific legal rights and you may also have other rights which vary from state to state