

VOICE CONTROL  
A "BSR" CONTROL SYSTEM  
WITH "EARS" INTERFACE

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LICENSED TO SPEECH SYSTEMS

**IMPORTANT**

The enclosed software is designed to work with three different BSR type home control systems: the original Radio Shack Plug 'N' Power controller catalog No. 26-1182 (circa 1982-1984), the new one, catalog No. 26-3142 (started shipping circa Jan 1985), and of course our own Home Commander.

The BASIC program "VCONTROL" will upon execution (C)LOAD a machine language program called "BSR". This machine language program will function perfectly with the original Plug 'N' Power unit (26-1182) and our Home Commander.

If you have the new Plug 'N' Power unit (26-3142) you will still use the VCONTROL BASIC program, but you must modify it. Just (C)LOAD VCONTROL and change the 2 occurrences of "BSR" to "BSRNEW" in line 330.

We sincerely hope you enjoy this product.

### COPYRIGHT NOTICE

This entire manual along with all the computer programs are supplied for the personal use of the purchaser. The programs "VCONTROL" and "BSR" were written by A. B. Trevor And are copyrighted by him. In addition, the contents of this manual are copyrighted by Speech Systems and reproduction by any means is strictly prohibited.

### SYSTEM REQUIREMENTS

Voice control requires a color computer with at least 32K of memory, "EARS" (Electronic Audio Recognition System), and either the "HOME COMMANDER" or the "old" Radio Shack Plug 'N' Power BSR control unit. We say the old unit since it is no longer manufactured.

### SOFTWARE PROVIDED

The tape or disk provided contains 2 files, they are:

VCONTROL.BAS  
BSR.BIN

BSR Is a machine language program that is provided to drive the BSR control system. For those needing this information the beginning, ending, and executing addresses are: &H3D)0, &H3DAC, &H0000.

You will also need the machine language program "EARS" which came with your recognition system. You may also find that the program "EARSEDIT", which also was provided when you purchased EARS, will also be handy.

### GETTING STARTED

From a hardware standpoint, you must first have both the EARS recognition system inserted into the computer as well as the Home Commander or the Plug 'N' Power unit. The EARS is inserted into either the Rom pak cartridge slot on the side of the computer and the Home Commander or Plug 'N' Power unit is connected into the cassette connector on the back of the computer. Now you are ready to (C)LOADM "EARS" and EXEC. Of course if you have a tape system, you will have to disconnect the Home Commander while you loading the software.

You are now ready to (C)LOAD "VCONTROL". Before running the program LIST 4000-5000 and you will find the following.

```
4000 DATA "FLOODS", C2
4010 DATA "OFFICE", L7
4020 DATA "KITCHEN", L16
4030 DATA "TV", L6
4040 DATA ""
```

These 4 data statements represent 4 hypothetical devices which are to be controlled. You should place your own devices in this table using the same format. The first parameter (i.e. FLOODS) represents the device name, which can be any length up to 11 characters. The second parameter (i.e. C2) represents the house code and unit number. Refer to your BSR control system manual for a more detailed explanation of house code and unit number should you need that information. Note that line 4040 is a null string (i.e. "") which represents the end of the table. It is very important that as you add devices that you always end the device table with a "" null string. You may place up to 32 devices into the DATA table. Note that 32 devices represents a total of 64 commands. Specifically, the device FLOODS will give you two commands FLOODS ON and FLOODS OFF. Note that OFF and ON are automatically appended to the end of word. This should become clearer when you train EARS in a moment.

You are now ready to run the program. Since this is the first time you are running the program, the program will find that the BSR machine language program is not loaded and ask if this program should be loaded from tape or disk. Merely type the appropriate response T or D. Once this program is loaded, you will not be asked again to load it. Since we are not finished loading software, if you were loading your software from tape you should not connect your BSR control system. Now that the program is loaded you will find displayed a menu with 4 options:

1. TRAIN EARS TO NEW VOICE
2. LOAD VOICE TEMPLATE FILE
3. LISTEN TO COMMANDS
4. SELECT REJECTION (REJ 4)

First select option 1. You will be asked to speak all the device commands in order. Specifically FLOODS ON, FLOODS OFF, OFFICE ON, OFFICE OFF, KITCHEN ON etc. We assume the user is already acquainted with EARS and how it recognizes words and the need to pronounce words consistently. However, an added note is necessary. Since the difference between FLOODS ON and FLOODS OFF is the words ON and OFF, it is important that you make an effort to pronounce these words distinctly. However since EARS listens for a pause to detect an utterance, it is also important not to pause too long between the words FLOODS and ON since EARS may construe it as two words rather than a single command. You may wish to consider using FLOODS ACTIVATE and FLOODS OFF in an effort to make sure that the two commands are as different as possible. Remember even though you are prompted by the computer with FLOODS ON there is no reason why you cannot speak FLOODS ACTIVATE.

You can now select option 3 which will request you to speak the commands you have just trained EARS. Just speak them and you will find that the devices you have programmed will turn on and off to your spoken commands. If the program appears to lock-up at this point, chances are that your BSR control system is not connected to the computer. The only way to leave option 3 is to hit the BREAK key. If you need to restart just type RUN.

### **EARSEDIT**

Options 1 and 3 are all you really need, however, you may find it more convenient to use the EARSEDIT program that came with EARS. Since it will give you more flexibility. For example, you can "average" your commands as well as insert and delete words individually. In addition, EARSEDIT will allow you to test the voice template to ensure they are accurate. Should you use EARSEDIT to create a voice template command file, you would then select option 2 to load in the file.

Using EARSEDIT can get you in trouble if you are not careful to input the device name exactly as you have it in the DATA statements. If line 4000 is FLOODS then "train" EARS under EARSEDIT with the phrase FLOODS ON and FLOODS OFF being careful not to make any changes. In addition, remember the 11 character rule for device names. Should you error, you will get a NO MATCH error when you RUN the program VCONTROL.

### **REJECTION**

The "new" BASIC command REJ is enabled in this program. If it were not used, each time an utterance was made, the program would find a match. Even if that match was not very good it would return a match and a device would be turned on or off. To prevent this, the rejection coefficient is used to allow you to specify the degree of accuracy necessary for acceptance of the phrase as a legitimate utterance. The default is 4 however you can change it if you like. This is the purpose of option 4 of the menu. Note that after the option, displayed in parenthesis is the current value of the rejection coefficient. We suggest values between 1 and 4, where 9 is the least sensitive and 0 is the most.

### **SUMMARY**

VCONTROL is all written in BASIC and therefore you should find it easy to make changes to it should you wish to make modifications for your own particular application.

We hope you find this system useful and powerful.