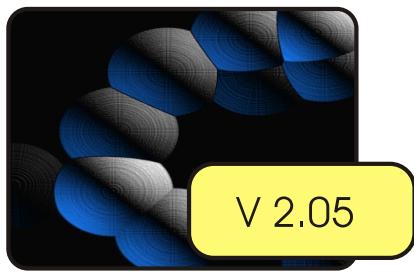




VR-2 Programming Guide



Introduction

The VR-2 is a wireless voice recognition module that brings Voice Activation features to the FX ECU. It can communicate to the ECU at a distance of up to 1,200 feet. The FX ECU must be equipped with a W-CNET card to provide communication with the VR-2. The VR-2 contains a Li-Po battery that allows operation for a period of 12 hours on a full charge. The VR-2 contains a battery management chip that provides supervised charging of the Li-Po battery in about 7 hours. The slow charge is intentional, and for safety purposes.

Charging the battery is accomplished by connecting a 12 Volt DC power adapter (500ma) to the 2.1mm barrel connector on the rear panel. The RED charging LED will light while the battery is charging. The VR-2 can be used while the battery charges.

The VR-2 provides 30 voice commands as well as a SLEEP command (typically “go to sleep”) and the WAKE command (typically “wake up”). The individual voice phrases are recorded into memory in the VR-2. The training and testing of voice commands is initiated from the FX ECU while in CONFIGURATION mode. The VR-2 is turned ON / OFF via the slide switch on the back of the unit, however the ENABLING and DISABLING of the VR-2 is done via the ECU in one of two possible ways.

YOU MUST NOT ATTEMPT TO PROGRAM, TRAIN, OR TEST VOICE COMMANDS WHILE THE VR-2 IS ENABLED. This will cause erratic operation.

When programming the VR-2, it must be switched ON so to communicate with the ECU, but it must be in the DISABLED state. The state of the VR-2, whether enabled, or disabled, is maintained via the ECU. When the VR-2 is powered on, the mode dial is read, and then a communication attempt is made to the ECU. The ECU responds with the current status (enabled/disabled) as well as other parameters. Two quick beeps will be heard from the VR-2 after receiving these parameters.

There is a 10 position MODE dial on the front of the VR-2 that allows selection of several operating modes. Note that the MODE dial is only read upon power up of the VR-2. The mode dial allows the selection of different combinations of INTERNAL MIC vs. EXTERNAL MIC, and switch input modes being either DUAL switch, or SINGLE switch. The VR-2 allows a dual switch input device to be connected to it to allow switch activation of the ECU remotely. In certain modes, it allows a single switch device to be connected that will transmit a “slot 32 match (sequence 145) “ to the ECU upon a switch closure. This allows the user to mute the television volume via a pillow switch avoiding recognition difficulties that would otherwise be caused by the TV volume being turned up.

During normal use (using the internal microphone), the VR-2 should be kept arms length away from the user. It is imperative that when training, and using the VR-2, that the user speak in his/her normal voice. Care must be taken to ensure that the user understands this, and that difficulties in recognition will result if the trained voice phrase is spoken in a manner that is somewhat different of that when it was trained.

When planning out the voice phrases and their associated functionality, you should be aware that a single voice phrase can be used to turn devices ON and OFF. It is not necessary to use two voice commands (one for ON, and another for OFF) to accomplish this type of control.

When using an EXTERNAL microphone, be sure to mount it in a way such that the user will not breathe into the mic. Do not clip the mic to the users shirt in the breast area, but rather off to the side. Best results will be realized with the mic positioned close to the users lips off to the side.

On the front panel of the device there is an LED that lights up BLUE (time to speak), RED to indicate SLEEP mode, and GREEN to indicate successful recognition. On the rear panel there is a jack to connect a dual color LED (Red & Blue) that correspond to the RED & BLUE LEDs of the front panel. Note that the shield is for the Anode, the Tip is the BLUE LED, and the ring is the RED LED.

Each voice command slot in the VR-2 is “hard wired”, so to speak, to directly execute a specific sequence as outlined in the table below. Please print this page, and use it to plan out the desired function of each voice command. Each sequence in the FX ECU supports up to 8 functions. Up to 4 sequences can be chained together so that a particular sequence can execute up to 32 functions. If the ALTERNATE SEQUENCING flag is set for a primary sequence, then the plan below can provide for up to 16 functions being executed by the primary sequence, and another 16 functions executed by the alternate (next higher) sequence.

For example: If you decided that Voice Command slot 3 was going to turn on/off A/V equipment, You could train the phrase “Media System” in slot 3 in the VR-2. In the FX, you would define sequence #29 to send Infrared Commands to turn on the TV, Receiver and DVD Player. If you enabled “Alternate Sequencing” for Sequence #29, then Sequence #30 could be defined to send OFF commands to the TV, Receiver and DVD Player. A single voice command “Media System” could then be used to turn the equipment on and then off again. Note that in this example, it is assumed that less than 8 functions were required to turn on the above devices. If more than 8 were required, then sequence #29 & 30 would be considered the PRIMARY sequences, and the ALTERNATE sequences would be #31 & 32. When defining the primary sequence in the FX ECU, you are asked to specify the length of the sequence as being 8, 16, 24, or 32 events. This parameter determines the number of higher sequences that “chain” together.

Command Slot #	Sequence #	Voice Command Phrase	What it will do...
1	21		
2	25		
3	29		
4	33		
5	37		
6	41		
7	45		
8	49		
9	53		
10	57		
11	61		
12	65		
13	69		
14	73		
15	77		
16	81		
17	85		
18	89		
19	93		
20	97		
21	101		
22	105		
23	109		
24	113		
25	117		
26	121		
27	125		
28	129		
29	133		
30	137		

Modes

There is a 10 position MODE dial on the front of the VR-2 that allows selection of several operating modes. Note that the MODE dial is only read upon power up of the VR-2. The mode dial allows the selection of different combinations of INTERNAL MIC vs. EXTERNAL MIC, and switch input modes being either DUAL switch, or SINGLE switch. The VR-2 allows a dual switch input device to be connected to it to allow switch activation of the ECU remotely. In certain modes, it allows a single switch device to be connected that will transmit a “slot 32 match (sequence 145) “ to the ECU upon a switch closure. This allows the user to mute the television volume via a pillow switch avoiding recognition difficulties that would otherwise be caused by the TV volume being turned up.

The switch input jack on the front panel of the VR-2 is a “stereo” jack. It supports 3 connections, the SHIELD (common), the RING (input B), and the TIP (input A). If a mono type plug were to be inserted into this jack, the RING connection would be permanently shorted to the SHIELD connection. The microcontroller inside the VR-2 would be locked forever in a loop waiting for the release of this signal. Hence the importance of setting the MODE dial correctly. Modes 1 & 3 disable interrupts for the RING connection to allow for a MONO type plug to be inserted into the switch input jack.

MODE 0 - Internal MIC, Normal Dual Switch Input

MODE 1 - Internal MIC, Single Switch Input (a momentary short of TIP to SHIELD sends SLOT 32 match)

MODE 2 - External MIC, Normal Dual Switch Input

MODE 3 - External MIC, Single Switch Input (a momentary short of TIP to SHIELD sends SLOT 32 match)

MODE 4 - Internal MIC, Dual Switch (any sustained input sends a SLOT 32 match [sequence 145])

MODE 5 - External MIC, Dual Switch (any sustained input sends a SLOT 32 match [sequence 145])

No Empty Slots Allowed

Voice commands that you create in the VR-2 execute specific sequences in the FX ECU. When you begin to create voice commands, it would seem natural to begin with voice slot #1, and work your way towards voice slot #30. In fact, you must use this approach, since no empty slots are permitted in the VR-2. This restriction must be fully understood to prevent problems. If you had 10 voice commands created and trained in the VR-2, and then you decided to DELETE slot 7 command, the VR-2 would delete slot 7, and then move commands 8, 9 and 10 down one slot so that there are no empty slots in between commands. Assuming that you had programmed sequences 49, 53 and 57 to execute the desired functions for commands 8, 9 and 10, you would now have a problem because those voice command slots no longer “line up” with the sequences that you had programmed. The solution to this problem would be to simply create a new slot 7 command. When you create a command in the VR-2, you choose which slot you are going to create. If the selected slot already has been defined, then the VR-2 INSERTS a new command in the chosen slot moving all higher commands up one slot. This would fix the problem above, and commands 8, 9 and 10 would once again point to the correct sequences.

Note that it is not necessary to train a command once it has been created if you are not planning on using it for anything.

Also, it is important that you don’t confuse DELETING and ERASING voice commands. Erasing a voice command, clears the audio information for a slot, allowing you to re-train it again. DELETING a command erases the audio data, clears the NAME data for the slot, and marks it as VACANT.

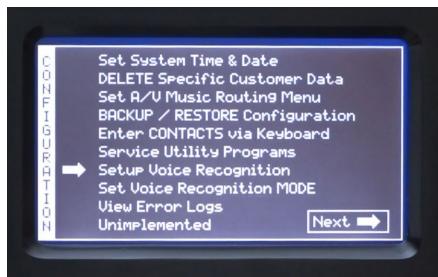
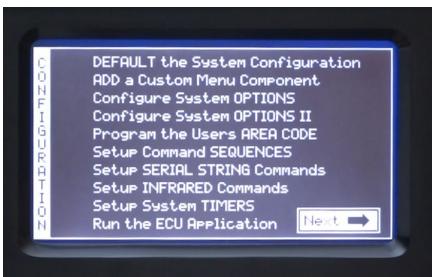
Formulate a Plan

Before you begin creating Voice Commands and programming, be sure that you have a well thought out plan. This is particularly important if you will be controlling the clients Audio / Video system. Depending on the components that your client is using, video sources may be connected to, and switched via the TV, or they may be connected to and switched via a home theater receiver. You must fully understand what features that your client wishes to use, and how to make it all happen. The only way to do this is to spend time in front of the clients A/V system, with remotes in your hand, experimenting with the system. Ask the client what he normally likes to do, ie: watch DVDs, listen to music, watch TV, etc. Make a list of the favorite channels. You must understand what button presses are required, and in what order using the clients remote controls in order to program this in the FX ECU. It is strongly recommended that you program the ECU as much as possible at your office, before heading out to the client site. Leave the Voice Training and learning of Infrared commands for installation day, but show up with the system otherwise fully programmed.

PROGRAMMING

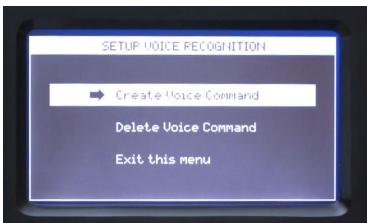
Creating Voice Commands

Enter the programming mode of the FX and navigate to page 2 of Configuration by clicking on the NEXT button. Select SETUP VOICE RECOGNITION. All voice commands that you create must have a name associated with them. It would make sense to create the name as being the same as the voice phrase that you intend to train, although this does not have to be the case. Click on the top menu item, “Create / Delete Voice Commands”. Create the needed voice commands first, and then go back and train them after the fact.



Main menu for voice commands

Choose “Create Voice Command”. Using the Rotary Dial, select the desired Voice Command to be created. Note that in the current software version, it is not possible to use the keyboard to enter the name for the command, so choose “The Rotary Dial”. Using the Rotary Dial, select the individual characters to create the name for the command. When finished, choose OK. The name has now been created, and the command can be displayed, even though it has yet to be trained.



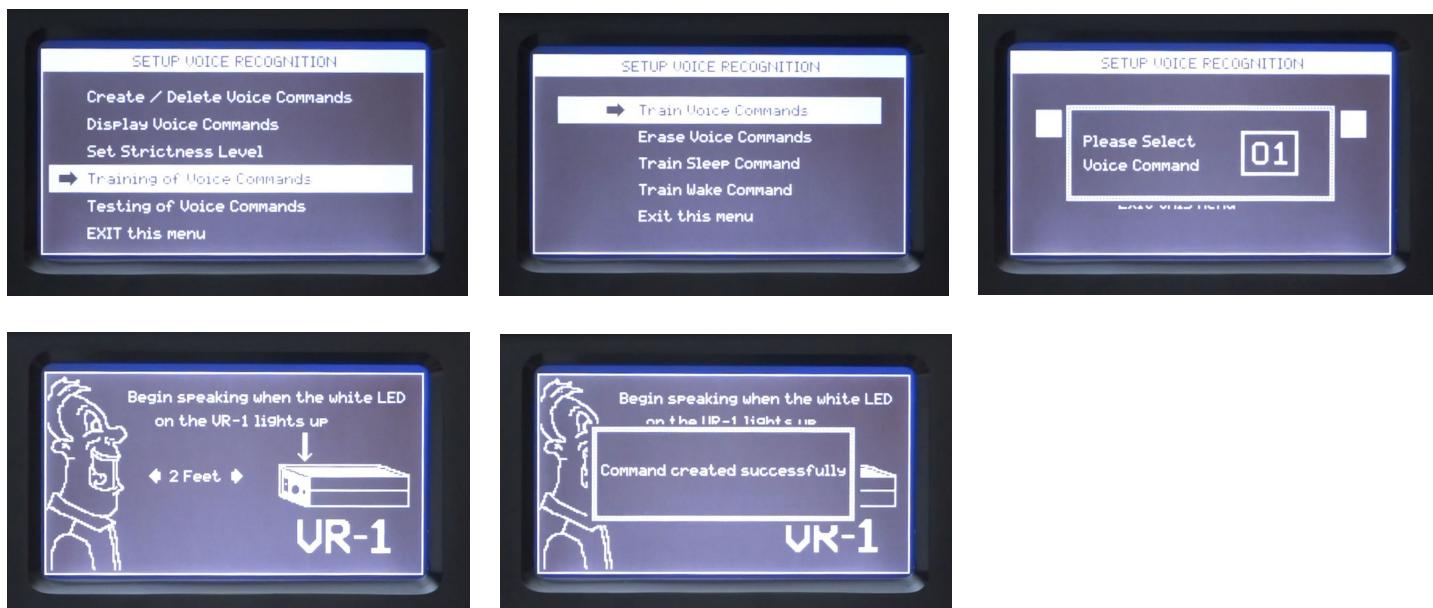
Displaying Voice Commands

From the “Setup Voice Recognition” main menu, choose “Display Voice Commands”. Note that the voice commands are not stored in the memory of the ECU, but in the VR-2. The ECU sends a command to the VR-2 requesting the first 10 commands. DO NOT turn the rotary dial, or press the dial until ALL of the commands (1 - 10) have been received from the VR-2, and are on display. If the command you are interested in viewing is in the 11 - 20 range, then turn the rotary dial ONE CLICK clockwise to display the next 10 commands. Be sure to wait until ALL commands of a given range have been displayed before turning the dial either clockwise for the next range, or counter clockwise for the previous range. To EXIT, press the rotary dial. The “TRN” column indicates the number of times that a voice command has been trained. The “CONF” column indicates that a command is conflicting with another command, and displays the index number of the conflicting command.



Training Voice Commands

From the “Setup Voice Recognition” main menu, choose “Training of Voice Commands”. From the following menu, choose “Train Voice Commands”. Using the rotary dial, select the desired command for voice training. Be prepared to speak the phrase, but wait until the BLUE LED on the VR-2 front panel lights BEFORE speaking. You will hear a beep from the VR-2 shortly before the LED lights up. If using the VR-2’s internal microphone, the VR-2 should be arms length from the user when training. Be sure that there is no other source of noise in the room while training commands. Also, it is important that the user speaks in his/her normal relaxed tone of voice. After speaking the phrase, watch for the BLUE LED to light a second time. Be prepared to speak the same phrase a second time. If the phrase is spoken in a manner that is not very similar to the first phrase, and error may result.



Testing Voice Commands

From the “Setup Voice Recognition” main menu, choose “Testing of Voice Commands”. Select “Test Group Commands” from the following menu. Be prepared to speak the desired phrase when the BLUE LED on the front panel of the VR-2 lights up. The FX will display the detected voice command.

Note that only slots 1 - 30 can be tested in this way. To test the SLEEP and WAKE UP commands, you must enable the VR-2 and test in the normal user run mode.



Training the Sleep Command

From the “Setup Voice Recognition” main menu, choose “Training of Voice Commands”. Select “Train Sleep Command” from the following menu. Be prepared to speak the phrase “typically Go To Sleep” when the BLUE LED on the front panel of the VR-2 lights up.

To test the SLEEP and WAKE UP commands, you must enable the VR-2 and test in the normal user run mode.



Training the Wake Command

From the “Setup Voice Recognition” main menu, choose “Training of Voice Commands”. Select “Train Wake Command” from the following menu. Be prepared to speak the phrase “typically Wake Up” when the BLUE LED on the front panel of the VR-2 lights up.

To test the SLEEP and WAKE UP commands, you must enable the VR-2 and test in the normal user run mode.

