

## AXTELL HANDS-FREE ANIMATION SYSTEM MAGIC2 – instructions v5 (June 8, 2011)

Tech Support – [support@axtell.com](mailto:support@axtell.com)  
<https://axtell.com/support>

With this amazing Magic2 Animation Control System you have several modes you can use. Here is an overview of the modes and we will demonstrate them in more detail later.

**Magic Mode** – Using MagicTrax from any Mp3 source which control the movements of the character. You can program and playback tracks. When data is not coming from the source player, Auto-Alive will control the character to keep it alive. MagicTrax will actually work in either Magic or Vent Mode settings on the menu, but changing the setting will change the functionality of the black system FOB. In Magic Mode the FOB can work to control our “Track Manager” Software on the Netbook connected to the Magic2 Box. (see separate instructions for Track Manager operation).

**Vent Mode** – In Vent Mode, the FOB will control the mouth and head of the character. Auto-Alive will always be active during Vent Mode. During Vent Mode you can also play MagicTrax and use the FOB (in vent mode during auto-alive) to control the character’s mouth when a track is paused. This is very handy if you want to do both MagicTrax and Live control via vent during a show. (Transmitter control would require rebinding).

**Motor-Mouth**– You can speak into a microphone and the character will move it’s mouth – Auto-Alive is active during Motor-Mouth. This works in Magic Mode, by plugging a microphone into the jack on the box. It will also work from an audio track which can be plugged into the Motor-Mouth jack. This is the fastest form of animatronic control in that you could simply record the character’s voice talking, and plug it into the box jack to control the character’s mouth, for almost instant performance. If you want music and sound effects too, just record a stereo file with voice only on the left, and all other audio including voice on the right you can split the signal and send the voice only side to the jack in the box, and the other to your PA!

**LIVE Remote Control** – refers to operating the character in real time by remote control. You could do this in a limited way Vent Mode with

Auto-Alive and the FOB to control mouth and head, or you could control it 100% with the Transmitter Radio. When changing from either Vent or Magic Modes – to LIVE (Transmitter radio control) you must rebind the character to the transmitter.

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## HANDS-FREE ANIMATION CONTROL SYSTEM - MAGIC2 BOX OVERVIEW

Axtell Hands-Free  
Magic2 Box  
Front Panel

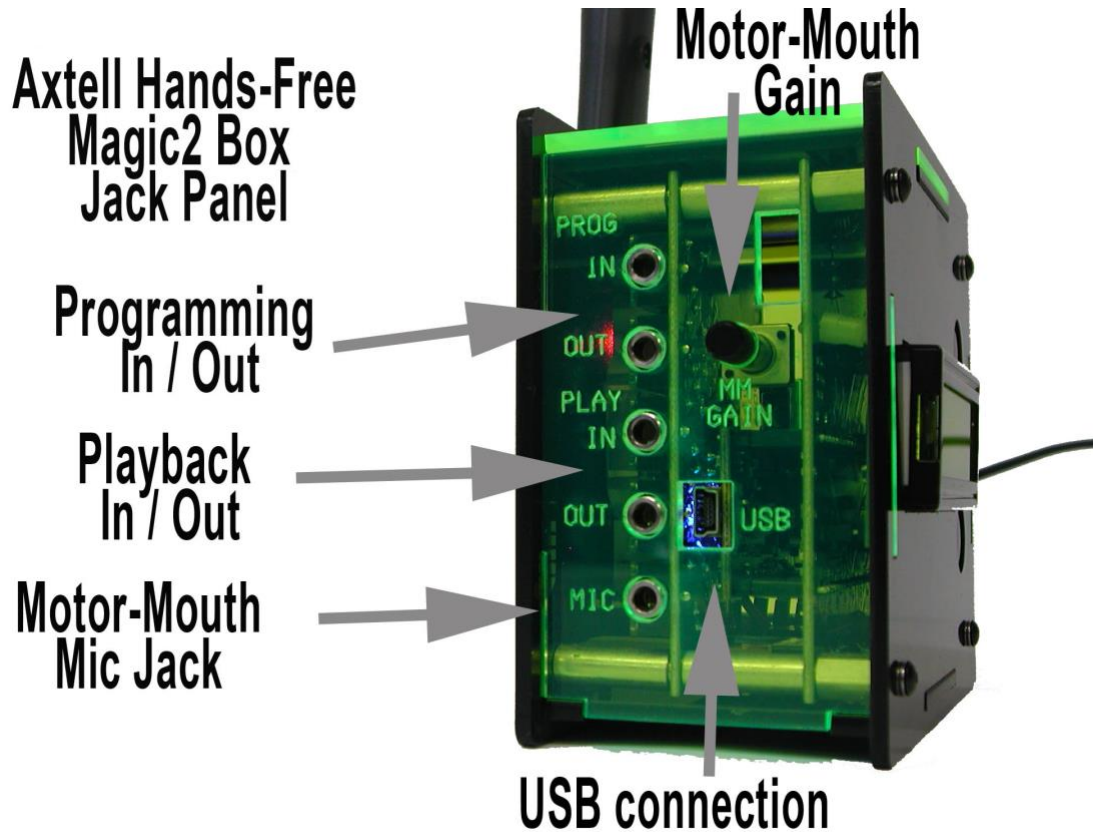
Menu Buttons

LCD Screen



Axtell  
Hands-Free  
Magic2 Box  
Power Side

Use the provided A/C adapter to power your box. This should be plugged into the jack located directly underneath the on/off switch.



## The RADIO TRANSMITTER OVERVIEW

(European version is similar SPEKTRUM DSX9)

Axtell Hands-Free  
Magic2 System  
JR9503 TX Radio

Not for Europe



The Transmitter Radio is used for LIVE control and for Programming.

Typically we program the controls as follows:

Left Joystick (up / down) = head up / down

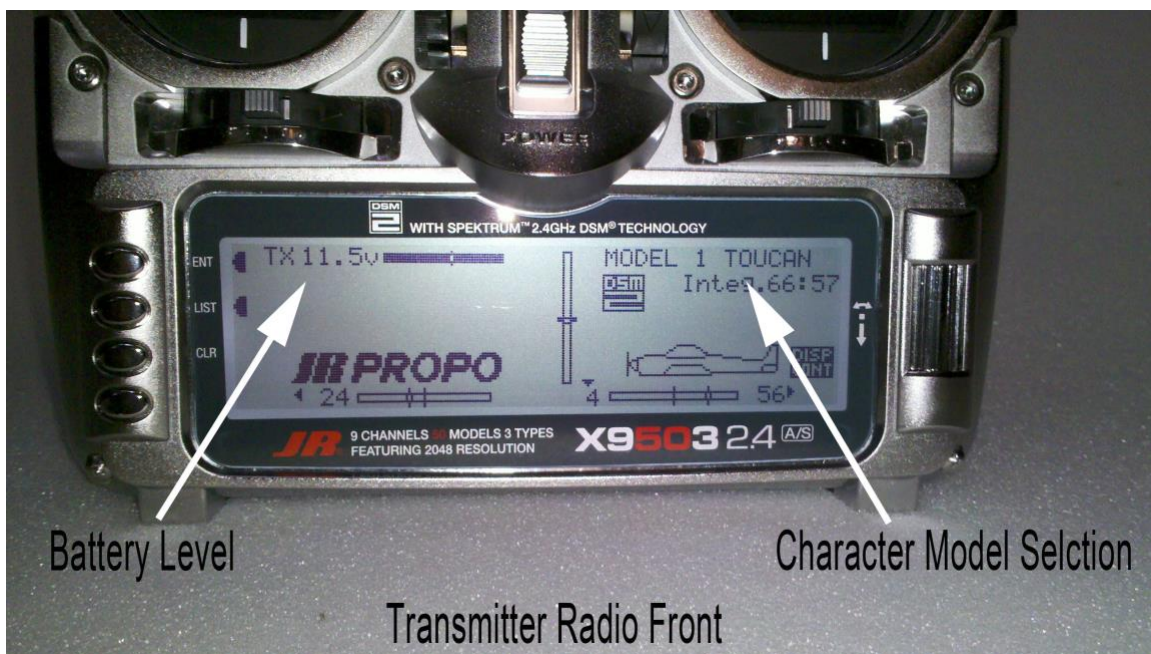
Left Joystick (left / right) = head left / right  
(can be mixed with body lean, using back toggle switch)

Right joystick (left / right) = head tilt left / right

Right joystick (center / down) = Mouth close / open

Left and Right Sliders = Arms up / down





Axtell Hands-Free  
TX Radio  
JR9503

Not for Europe



## BINDING INSTRUCTIONS

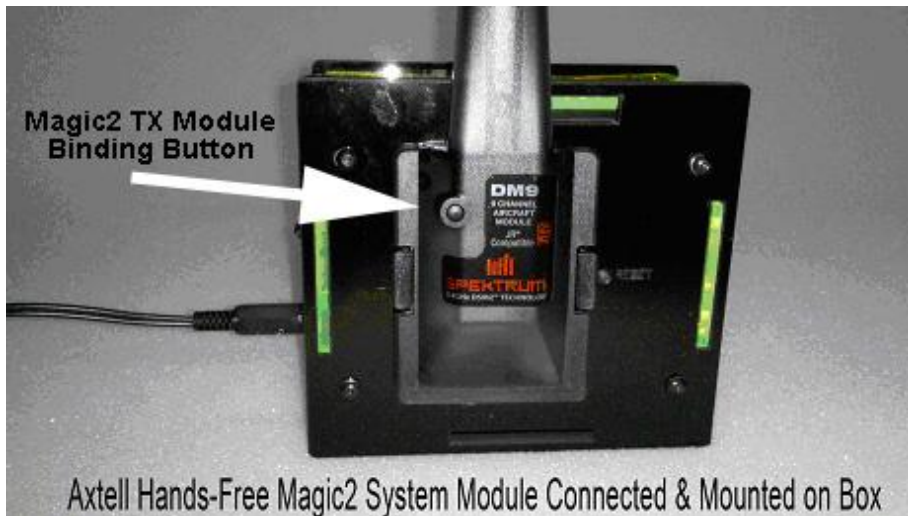


Binding Button Instructions:

After your Axtell Hands-Free character has been plugged into either the battery or A/C adapter, you will push the **red** binding button



located next to the power switch. While pressing the binding button switch the power on, once power has been turned on you can release the binding button. Next take your Magic2 box and hold the bind button down... located in the back middle of the module.



While holding down the button switch the Magic2 box on, continue holding the button until you see the character come to life. If done correctly the character should go into Auto-Alive.

(If no auto-alive begins moving, the SD Card may not be securely seated in the slot. Re-seat the card and try again).

NOTE – The Character can be bound to either the Magic2 Box, or the Radio Transmitter, not both.

## **To Bind the Radio Transmitter to the Character:**

1. Turn both character and transmitter off.
2. On puppet, press red binding button and turn on power
3. Hold in the binding button on back of the transmitter (clear button in middle of back of transmitter) and power on the Radio transmitter.
4. Continue to hold binding button until character responds with movement.

# PAIRING YOUR FOB

Sometime your FOB may not be working and you will need to re-pair your FOB to the ANIMATION CONTROL SYSTEM MAGIC2 BOX. Do the following:

1. Press the top button on the Magic2 Box until you see FOB MENU
2. Press the center button to select it.
3. It will say PAIR FOB – hit the middle button again
4. Press the top and bottom button of FOB to pair
5. Once the FOB is paired to the box it will exit all menus

# PLAYBACK MODE

There are several option for playing back magicTrax. Any stereo audio player may be used. Many of these devices have remote controllers made for them.

IPod  
MP3 Player  
CD Player  
Iphone or Other Phone  
iPAD  
Computer PC / MAC

Your MagicBox FOB will control our Track Manager Software on a PC computer connected to the MagicBox.

**SEE TRACK MANAGER INSTRUCTIONS  
and alternative for Mac**

**For MULTIPLE Hands-Free CHARACTERS Synced in your show** – You need C.E.S. MediaStar Control System (Axtell Version). Contaact us for more info.  
<http://www.axtell.com/remotesupport.html>

# PROGRAMMING

Connect the Radio Transmitter Programming Port with a 1/8" Mono Audio cable to the PROG IN on the Magic2 Box. Turn the Transmitter to the OFF position. Your transmitter will remain ON because the programming mode is initiated with the cord plugged in.





Next Connect the PROG OUT from the box with a 1/8" Mono Audio Cable to the Mic In on the Netbook.

**NOTE:** It is now necessary to now use a USB audio interface to connect your Magic2 box to a computer in order to record your programming data at proper levels. Many will work, but the Behinger UM2 is an affordable option: <https://amzn.to/3xsDVOe>

You can use a mono 1/8" to 1/4" breakout cable to connect your Magic2 box to the input of the Audio interface (Use the gain knob on audio interface so that your incoming data level is approximately -12db)



The following photo shows them both connected at the same time, as you will need to do in Programming mode.



You will be capturing your programming in audio software, such as Audacity.

PC and MAC both can use IMPRESS and AUDACITY.

If you are not using our Netbook that already has the software installed, you can download free Audacity Software (Beta is recommended) from:

[http://audacity.sourceforge.net/download/beta\\_windows](http://audacity.sourceforge.net/download/beta_windows)

In Edit / Preferences / Recording / click the first check box for Overdub. Do not check Software Playthrough.

Move the sticks on the Radio TX to confirm you are controlling the Character.

In Audacity you will be RECORDING the data. Experiment with watching and hearing data while in Record mode. Move the sticks and you are now recording movements.

## PROCEDURE

You should first record your audio for the MagicTrax. This can include voice, music and sound effects complete. Have this loaded into the audio software and pan this audio to the right side of the stereo spectrum. Make sure you back up your audio, so it is not lost during programming. You may need to reload it occasionally.

Test record volume of data at -12db level for best results.

Next with your programming connections in place, hit record and you will be adding a NEW TRACK of recorded DATA. This will NOT affect your audio track. Depending on your laptop, computer or netbook, you will probably hear a loud buzzing, which makes hearing the reference audio difficult, so we have a simple yet effective fix. Plug earbuds into the audio out, and listen only to the right ear output! Now you won't hear the buzz. You can also turn off "software playthrough of input" in Preferences > Recording in order to silence the buzzing sound when recording.

Begin recording: allow plenty of front end of blank audio on the front so you can have time to turn on recording and get the transmitter into your hands for proper operation. (you can cut off this excess data and blank audio once you are finished).

Move the Joysticks to the audio (after many rehearsals) and capture the data along with the audio.

## **TEST PLAYBACK**

Change your connections to the PLAYBACK connections outlined above.

Balance the data track to the LEFT stereo side. You now should have data LEFT and audio RIGHT.

PLAY the MagicTrax starting at the beginning of the file. You can use the spacebar on a computer to start and pause the playback.

If your actions are later than they should be because of slow response or latency you can carefully use the shift tool to move your data slightly to the left. This will take much practice and you can use the zoom feature to get a magnified view of the audio track in relation to the data track before shifting slightly. (general audacity video is available in the forum under magic programming).

Adjust the system volumes for best playback movement.

Export the stereo file (audio right, data left) as a stereo mp3 and save it where you can easily access it. We recommend the desktop folder we have created for you. Also make duplicate back up copies.

## **PREPARING YOUR SHOW FOR PLAYBACK**

Your show will consist of a playlist of MP3 MagicTrax.

TrackManager is the PC software controllable by the Magic2 FOB.

An alternative method for MAC users, or for PC users wanting to use presentation software would be to use IMPRESS, or PowerPoint (Video or Slides can be included with your show).

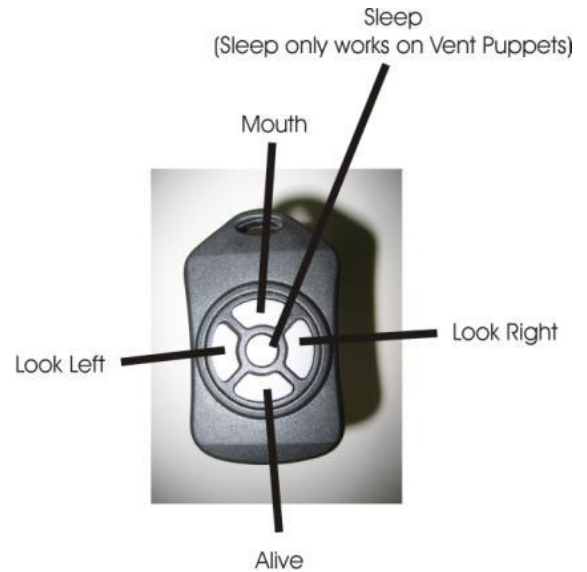
**SEE TRACK MANAGER INSTRUCTIONS.**

## **“VENT” OPERATION**



With your MAGIC2 Puppet system you can also go into the VENT MODE. You leave the Control System turned on and set to Vent Mode in the menu by pressing and holding the center menu button until it says VENT Mode.

In the VENT mode you will be using the FOB to control the puppet's head left and right, and mouth. You will be able to turn Auto-Alive™ on for the body movement, or turn the body movement off. The idea with VENT mode, is that you can be on stage talking with your Hands-Free puppet as a ventriloquist (providing the live voice of the puppet using "ventriloquism" without moving your mouth....a skill you can learn on our website). You would hide the fob in your hand so the audience does not notice that you are controlling the mouth of the puppet, or it's head turn. You can now turn the head to the extreme left and right or anywhere in between! Press and release and the head of the puppet will stop. Auto-Alive™ will operate all the other functions including the head turn randomly unless you press the head left / right buttons on the fob.



## Vent Mode

Of course more advanced users can re-map the buttons

## SEE VENT MODE INSTRUCTIONS FOR MORE INFO

The FOB is used in VENT and MAGIC operation. In VENT mode it is used to control the head and mouth of the puppet. In MAGIC mode the same FOB can be used to control the MP3 player (which controls the puppet with servo data pre-programmed).

### INFORMATION TO USER FOB# AXRGFv.310

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for Class B Digital Device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures.

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help

## HANDS-FREE CONTROL SYSTEM Menu

The Alive Controller employs a simple three button interface used to select menu items and review / make changes to various settings. . ***Remember, once you change the menu settings and store them, turn off the controller and then back on before continuing.***

The top and bottom buttons navigate forward and backward through the menu items which can be composed of menu names (appearing in all CAPITAL LETTERS), commands (appearing with first letter capitalized), and variables

(appearing with at least first letter in lowercase – but sometimes will have mixed case to make multi-world variable abbreviations more clear, e.g., mouthOp.

By default, the status display appears. (described later)

**Press top button and the main menu is invoked, and “SETTINGS” is displayed on the LCD (the first Sub Menu item). Use the top and bottom buttons to navigate to the desired item. Then, press the middle button to confirm a selection.**

The main menu is composed of the names of other menus, with the exception of Reset Default & Exit Main. As you press either the top or bottom buttons you will cycle through the following options:

## Menus

This section details each of the controller menus. Appearing on the left side of the page is the name of the MENU, Command or parameter as displayed on the LCD. Appearing on the right of the page is the description for each.

See: Alive Controller Menu System section for details on menu operation.

## Main Menu

The Main Menu contains a list of sub-menus and one command, therefore it serves as a more like a table of contents linking to different functional groups of commands and parameters.

SETTINGS MENU	General device settings
VENT SETTINGS MENU	Vent related settings
FOB MENU	Commands to pair/unpair fob to controller and & fob button to controller command assignments
DIAGNOSTICS	Used for Tech Support only
Reset Defaults	Reset all parameters to default values. If SD card is installed, the character and aliveTrack parameters remain untouched. If SD card is not present, character and aliveTrack parameters are cleared.
Exit MAIN MENU	Exit the Main Menu and return to normal operating mode.

## Settings Menu

The Settings menu is used for General Settings.

character	Defines the name of the character (folder on SD card) which contains the alive and VentMotion files used by the character. The character folder must be located in the ACX folder which must be located in the root folder on the SD card. The character folder name must be 8 or less characters in length.
aliveTrack	Defines the Alive Track, which will be played and looped when the character is idle. Alive tracks are 8 characters long MAX and have extension .alv
dominant	Defines the dominant direction for the alive track as far as the direction the character will be looking. “right/Center” is the default direction Alive Tracks are recorded. Changing the selection to “Left=Mirror”, mirrors the head turn position and the body lean allowing you to change the character to “Left dominant”.
magicMouthGain	8..32 [16] Magic Trax mouth track gain used to increase / decrease Magic Trax mouth movement (this parameter was formerly called mouthScale)
motorMouthSpeed	Mouth Speed 1..9 [5] rate at which mouth closes when audio signal level falls.
Exit Settings Menu	Exit the Settings Menu and return controller to normal ` operating mode.

## Vent Settings Menu

Note : Default parameter values are shown in [brackets] and parameter ranges are showed as n1..n2, e.g. 1..50 means parameter can be in range from 1 to 50.

mouthOpen	0..100 [98] mouth MAX open position when using motor mouth
mouthClosed	0..100 [45] mouth normal closed position when using motor mouth (note: open position value does not have to be larger than closed position. Also, as values are adjusted mouth will move in to show setting)
	mouthClosed parameter is also used to limit mouth travel when playing alive / Magic Trax

headTurnStopLeft 0..100 [0] defines the stop for left head rotation as produced by vent mode LeftSlo head turn key fob command.

headTurnStopR 0..100 [100] defines the stop right head rotation as produced by vent mode RightSlo head turn key fob command.

Note: The controller restricts the left head stop to be less than or equal to the right and the right to always be greater than or equal to the left. For Example if the right stop is set to 75 then adjusting the left stop will be restricted to 0..75.

headTurnRate 1..50 [20] LeftSlo and RightSlo command head turn rate.

ventMotion1 Track used for vent motion sequence 1 as activated by key fob when command VentMotionSeq1 is assigned to a fob button. Vent motion sequence files a 8 characters long MAX and have a file extension of .vms

ventMotion2 Track used for vent motion sequence 2 as activated by key fob when command VentMotionSeq2 is assigned to a fob button. Vent motion sequence files a 8 characters long MAX and have a file extension of .vms

Sleep Position Stores, fob Sleep Command, character position as currently set by RC Transmitter operating in Slave Trainer Mode, with trainer cable plugged into Play In Jack (Not plugged into the PROG IN Jack).

Before executing this command, that is, pressing (select), the character should be placed in the desired sleep position controlled via RC Transmitter sticks. Upon pressing (select), "Sleep Position Stored" will be briefly displayed on LCD and a parameter save will be automatically executed.

The default sleep position, if not set by SetSleepPosition is the center of servo rotation which may not be very close to a neutral position for the character.

Also, to enable Sleep position sleepSpeed must be set to a non-zero value.

sleepSpeed Sleep Speed 0..9 [0] parameter determines how fast character moves to sleep position.



Values 1 to 9 determine the rate that character will transition to the sleep position defined by SetSleepPosition command.

If the parameter value is zero, which is the default setting, the character will stop immediately in its current position upon receiving a sleep command, not using the position programmed by the SetSleepPosition command.

Exit Vent Settings	Exit the Vent Settings Menu and return to normal operating mode.
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# Fob Menu

## Pair Fob

Pair an Alive Key Fob with controller. Issuing this command will prompt, for pressing and holding top and bottom buttons on fob.

Press & Hold Fob Top&Bot. Buttons
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The pairing process typically takes about 1 or 2 seconds and the message “Fob Paired” will appear briefly on the screen followed by “Changes Saved” and menu exit.

If the fob is already paired with the controller, the message “Already Paired” will be displayed.

If pairing process is not successful, controller will eventually timeout and return to normal operating mode.

After pairing the fob, the Controller should be responsive to fob button presses where fob commands will be displayed on the top line of the LCD, provided that the controller is not in Menu Mode.

Up to 3 Fobs may be paired with a given controller.

Don’t try to pair multiple controllers in the same proximity of one another at the same time. If for some reason the wrong fob is paired with the wrong controller the “Clear Fob” command is provided.

## Clear Fob Pair

Clear all fob to controller associations. After executing this command it will be necessary to Pair all fobs to be used with the controller.

## fobPowerUpMode

Specifies the fob command mode that the controller will power-up in, Vent or Magic mode. That is, mode equates to the fob command set selection.

Below are fob button to command assignments. Controller mode Vent or Magic defines which set of fob button commands are active.

Fob button to command assignments. Default parameter values are shown in [brackets]. Letters (T L M R B) indicate button position on fob. See Key Fob Commands section for a description of each command.

magic button T	[Mouth]
magic button L	[LeftSlo]
magic button M	[Sleep]
magic button R	[RightSlo]
magic button B	[Alive]

vent button T	[PlayPause]
vent button L	[MP3 <<]
vent button M	[Panic]
vent button R	[MP3 >>]
vent button B	[PlayPause]

Exit FOB	Exit the Fob Menu and return to normal operating mode.
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**We recommend that you test a configuration after making changes to any settings to be sure your character has the behavior programmed you expect. To test it – turn off the controller box and then turn it on again to observe settings.**

We are still editing this document for better clarity. If something does not make sense, or could be explained in better words, please email [steve@axtell.com](mailto:steve@axtell.com)  
Thanks.

Hands-Free Puppets, Motor-Mouth, MagicTrax, Auto-Alive and the configuration of the puppet characters are trademarks and copyrights of Axtell Expressions, Inc. All rights reserved. 2007-2011 Axtell Expressions, Inc.  
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