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## DOCUMENT VERSION 1.06A

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# I. INTRODUCTION AND OVERVIEW OF XBCD SOFTWARE

## CONTROLMK

ControlMK is a software utility that will allow for keyboard and mouse functions to be assigned to an axis or button on an Xbox gamepad which has been modified to connect to a personal computer via USB. ControlMK is primarily used to manually specify control configurations for a game that does not support DirectInput controllers and therefore does not register axes or button presses directly from the Xbox gamepad. Combined with the XBCD Setup utility, ControlMK acts as middleware between modified Xbox gamepad and computer software such as a PC game. Karcus tells me that ControlMK can be used for any PC gamepad and can be used with gamepads that do not use universal serial bus for connectivity. Thanks for that Karcus.

ControlMk is built around a system of profiles, allowing for multiple control configurations to be applied to a specific Xbox gamepad. ControlMk profiles are saved with a `.pro` file extension. Each individual profile contains key assignments for axes and buttons on the Xbox gamepad. Control profiles can be imported and exported, allowing users to quickly set up control configurations, or to change key layouts to suit a particular game or multimedia application. ControlMK is able to apply a control profile to a gamepad automatically when the program is launched. For more detailed information about the features of ControlMK, see *Section V: Configuring and Using ControlMK*.

## XBCD SETUP UTILITY

The Xbox Controller Driver Setup utility is part of Redcl0ud's software suite which is used to customize and configure an Xbox pad to be used as a game controller on a personal computer. The utility contains thorough configuration options for buttons and axes, functioning as the primary interface between the driver source code and a computer's operating system. For ControlMK to be able to map a key to an axis or button, the operating system must first be told that the button or axes exists and what function it is to perform by default. The XBCD setup utility reports axes and buttons to the operating system, and allows for the core controlling of the behavior of a specific axes or button on the Xbox gamepad.

The XBCD Setup utility has also been built to feature a profile system. XBCD Setup utility profiles are saved with an `.xgi` file extension (as of version 1.06). This plain text file is used to export and import gamepad configurations. To see the contents of the `.xgi` file, rename the file with a `.txt` extension. Eg. `'Test.xgi'` becomes `'Test.txt.'`

By default, the utility will assign a single profile to a controller. Multiple controllers and profiles are supported, up to a maximum of eight profiles per controller. In depth details of the XBCD Setup utility can be found in *Section IV: Configuring and Using XBCD Setup utility*.

## NOTES

Configuring key bindings and control layouts with ControlMK and the XBCD setup utility *is not difficult*. Varying amounts of time may be required to fine tune an exact control layout, depending on the game and the complexity of a game's control interface. Keep in mind that the Xbox controller will never be as precise as a mouse and keyboard combination. It is true that for most games you will not be able to plug the controller in and instantly be able to play a game in the same manner as you did with a mouse and keyboard. Do not expect the Xbox controller to be an instant replacement for your mouse and keyboard. Patience is required to obtain the most out of configuring an Xbox controller. The Xbox pad was never meant to be used with the PC, and therefore I believe help is needed for people who have a pad lying around and think "hey, that's pretty good, might try that". This document is people who are just starting out, or are wondering about how exactly you go about making things happen when you push a button, or activate an axis.

## II. INSTALL PROCESS

The latest versions of the following software are available for download from <http://www.redcl0ud.com/>

### XBOX CONTROLLER DRIVER:

Once you have downloaded the latest version of the driver, double click the file to begin the install process. You will need Administrator privileges to successfully install XBCD. The XBCD Setup wizard will guide you through the install procedure. I suggest that you install rumble support, driver debugging and the source code. Once you have successfully installed the drivers, plug your Xbox pad into a spare USB port. By default, the installer will create a XBCD folder in *C:\Program Files\XBCD* and place an entry in your 'Programs' / 'All Programs' menu found in the Windows 'Start' menu. Click on the 'Setup Utility' icon to launch the XBCD Setup utility to detect your controller. Alternatively, click on Start > Settings > Control Panel > Game Controllers and check the status of your controller.

### CONTROLMK:

Once you have downloaded the latest version of the driver, double click the file to begin the install process. You will need Administrator privileges to successfully install ControlMK. ControlMK is installed to *C:\Program Files\ControlMK* by default, and the installer will place an entry in your 'Programs' / 'All Programs' menu found in the Windows 'Start' menu. ControlMK will display a small animated joystick icon in the system tray. When the joystick is moving, ControlMK is reading data from a specific Xbox controller.

### XBAUDIO:

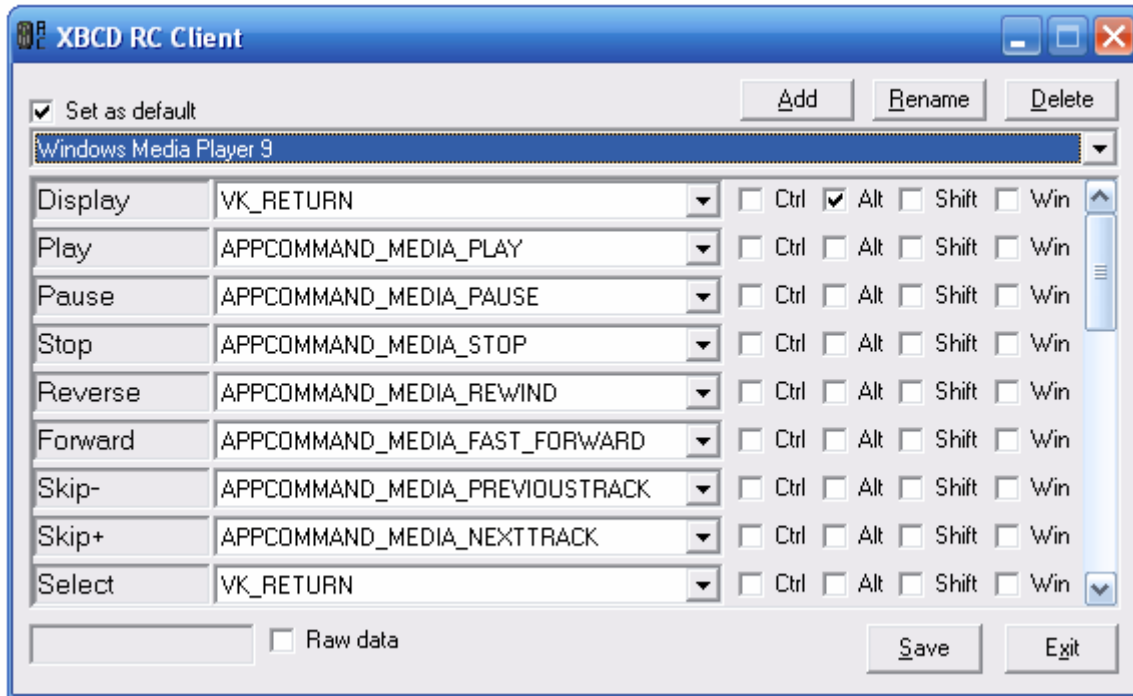
This driver enables support for the Xbox Live headset and the Xbox Music Mixer microphone. Please note that the driver has only been tested on Windows XP but should work with Windows 98/2000. When the headset is plugged into a slot on the game pad, Windows will show 2 separate prompts to install drivers. Point both of the installation prompts to the directory where you have extracted the audio driver. One device will be the speaker on the headset and the other will be the microphone.

If you don't want the Xbox Live Headset to be the primary audio device for playback or recording, you will need to adjust the settings in "Sound and Audio Devices" in the Control Panel.

Similarly, when the Xbox Music Microphone is plugged into a slot on the game pad, Windows will prompt you to install a driver. Point the installation prompt to the directory where you have extracted the audio driver. If you don't want the XBox Music Microphone to be the primary audio device for recording, you will need to adjust the settings in "Sound and Audio Devices" in the Control Panel.

## XBCDRC:

This driver enables support for the Xbox DVD Remote. The XBCDRC Setup wizard will guide you through the install procedure. I suggest that you install driver and utility and the source code. The installer will create a folder in *C:\Program Files\XBCDRC* by default. Configuring key binds in the XBCD RC Client is similar in procedure to that of ControlMK. The XBCD RC Client will place a small remote control icon in your system tray. Double-click this icon to show the RC Client application. The RC Client application comes with six default profiles, supporting Windows Media Player 9, PowerDVD, WinDVD, Windows Media Player 6, Windows Media Player 8 and Winamp v5.0x. The *XBCDRC.pro* file contains all the profiles for the XBCD RC Client.



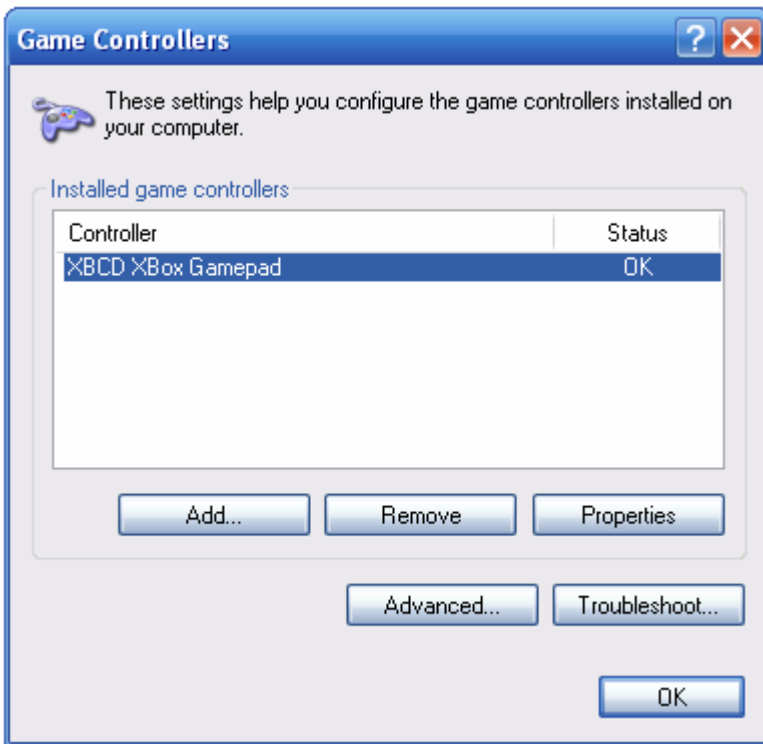
## XBMEM:

This driver enables support for Xbox memory cards. The driver has only been tested on Windows 2000 and XP and may work for Windows ME. A Windows 98 version can be found here: <http://www.redcl0ud.com/xbmem.html>. The driver has only been tested with the original 8MB Microsoft Xbox memory cards but it should work for other cards. This driver doesn't check the USB Device SubClass to see if it's 6 and the SubClass is the only thing that is different in the XBox Memory Card from a regular USB Flash Drive. Insert the memory card into the controller and Windows will prompt for the installation of a driver. Point the installation to where the files for this driver have been extracted to (*C:\Program Files\XBMem* by default).

After the installation, the memory card will show up as a new removable drive in Windows Explorer. Xbox memory cards are formatted as FATX; therefore Windows will not recognize the format of the file system on the memory card, so you will need to format it if you want to use it for storing files. You can backup the contents of your memory card to an image file by using any program which uses raw access to drives. A good program to use is DiskExplorer by Runtime Software. More information about backing up and formatting Xbox memory cards can be found at: <http://www.xbox-linux.org>

### III. CALIBRATION

#### WINDOWS GAME CONTROLLERS APPLLET



#### WINDOWS XP (HOME AND PROFESSIONAL) :

Before using your Xbox game pad to play a game, I advise that you first calibrate your controller. To calibrate your controller, perform the following steps:

Click on Start > Settings > Control Panel > Game Controllers

If you are using XP and you have the XBCD drivers installed, the XBCD Setup utility will appear. Close the utility and the normal Windows applet will appear. You should have an 'XBCD Xbox Game pad' selectable in the 'Controller' list. Click on 'Advanced' to set the Xbox pad as the preferred device. If you have other joysticks installed, you may want to skip this. Choose 'Properties' (exit the XBCD Setup utility) and the 'XBCD Xbox Game pad properties' window will appear.

Click on the 'Settings' tab and then 'Calibrate'. Run through the Device Calibration Wizard to calibrate the Xbox pad. Note that the 'Z', 'Rz' and 'Slider' axes will not show up for calibration if you have them turned off in the XBCD Setup utility. Do not be concerned if these axes do not register during calibration. For an explanation of what function the 'Z', 'Rz' and 'Slider' axes perform, see ***Section IV: Configuring and Using XBCD Setup utility***.

#### WINDOWS 2000 & WINDOWS 98:

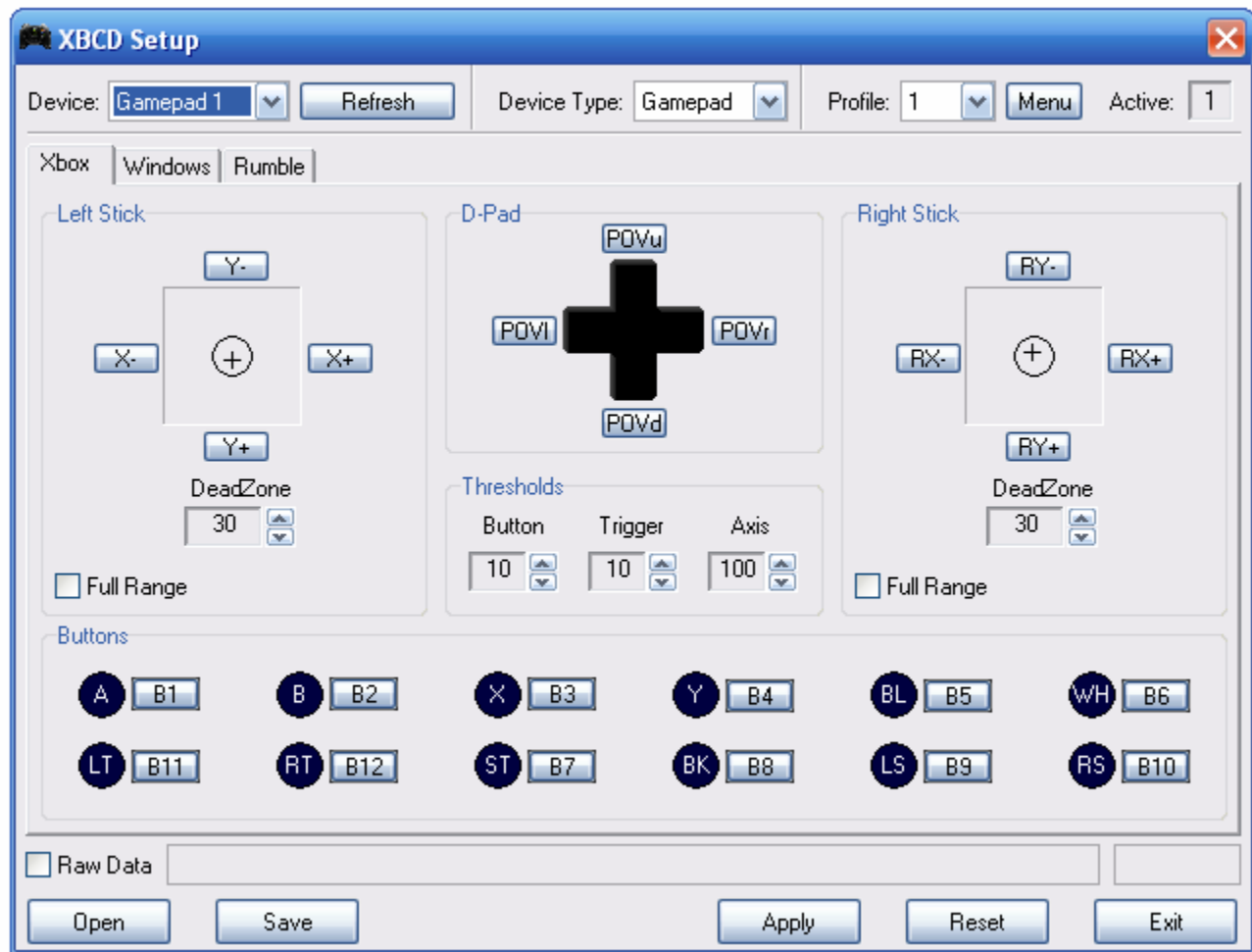
The calibration process for Windows 98 and Windows 2000 is similar to the steps listed above.

#### LINUX AND MAC OS:

Currently, XBCD support for Linux/Mac is unavailable. Expressions of interest to create Open Source drivers for Linux/Mac should be addressed to Redcl0ud. Alternative drivers and configuration utilities for Linux do exist. Configuring an Xbox pad to work with Linux would require a separate tutorial, of which I am unable to write due to the sheer amount of distributions available. I have a small amount of information available for configuring and Xbox pad to work with Linux, and this information is available in ***Section VII: Troubleshooting***.

## IV. CONFIGURING AND USING XBCD SETUP UTILITY

### XBCD SETUP UTILITY USER INTERFACE



The XBCD Setup utility user interface is slightly more complex than that of ControlMK. The utility primarily features three tabs which are used to access and configure the features of the Xbox Controller Driver. By default, the utility is activated from the 'Programs' / 'All Programs' menu in the Windows 'Start' menu or by clicking on Start > Settings > Control Panel > Game Controllers > Properties. Typically you won't have to extensively configure each axis or button, or swap axes and button controls within the utility. Some configuring of axes may be necessary to make a game work with the Xbox pad. Keep in mind that this document is unable to cover every aspect of axes and button arrangement for a specific PC game, as there are many different configurations possible and many variables associated with the Xbox Controller Drivers. See **Section VII: Troubleshooting** for more information on button/axes settings.

The first XBCD Setup utility tab contains configuration options for the left and right control sticks, the Direction-Pad (D-Pad) and the face buttons A, B, X, Y, White, Black, Left Trigger, Right Trigger (both on the underside of the pad), Start, Back, Left Control Stick down-press and Right Control Stick down-press. The second tab contains configuration setting for the Point-Of-View (POV) Hat Switch and axes. Note that specific axes can be turned on and off through this tab and the option for Scaling of an axis is also configurable. The last tab is for rumble effects. There are two rumble motors encased in the controller's plastic shell. Note that the left actuator has a larger offset attached to the motor shaft than the right, meaning that you will feel a greater rumble effect on the left side of the pad. This is demonstrated by sliding the rumble activation bar from 'Off' to 'High' for both actuators.

XBCD Setup

Device: Gamepad 1 Refresh Device Type: Gamepad Profile: 1 Menu Active: 1

Xbox Windows Rumble

X Y Z Rx Ry Rz Slider

☒ On

☒ On

☒ On

☒ On

☒ On

Scale

100

100

100

100

100

100

100

Buttons

Number of buttons

24

1 2 3 4 5 6 7 8 9 10 11 12

13 14 15 16 17 18 19 20 21 22 23 24

☐ Raw Data

Open Save Apply Reset Exit

XBCD Setup

Device: Gamepad 1 Refresh Device Type: Gamepad Profile: 1 Menu Active: 1

Xbox Windows Rumble

Left Actuator Right Actuator

Force Factor

255

Force Factor

255

Off High

Off High

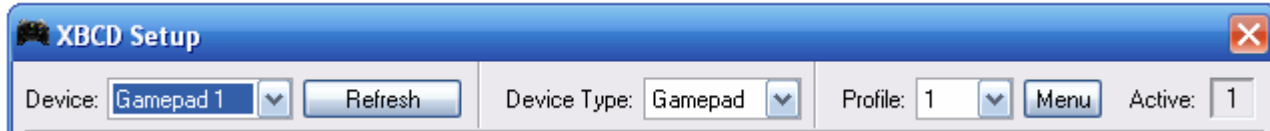
☐ Raw Data

Open Save Apply Reset Exit



## XBCD SETUP UTILITY PROFILE MANAGEMENT

Like ControlMK, the XBCD Setup utility features a profiling system to apply control configurations to an Xbox pad. The utility supports a maximum of eight different control configurations per Xbox controller. An active configuration can be selected by pressing both analog sticks simultaneously. By default, each game pad will have at least 1 profile associated with it. Additional profiles can be added through the profiles menu. According to the accompanying readme file, profiles only include the mapping of each control, they do not include threshold, dead zone, or scale settings. I have found as of version 1.03, dead zones, axes reporting, scale settings and threshold settings *are* saved in an exported .xgp profile. I am unsure of the setting saving behavior of previous versions. Profiles can be imported and exported through the 'Open' and 'Save' functions. Note that you must 'Apply' the profile before any changes become active. The profiling system for v1.06 is slightly different, as the Setup Utility now uses a plain text file to export and import gamepad configurations.



Profiles can be added, copied and removed from the XBCD Setup utility through the 'Menu' button. A profile can be made active by setting the appropriate profile (numbered from 1 to 8) in the highlighted 'Profile' selection drop box. On the right hand side of the 'Menu' button is a confirmation indicator that shows which profile is currently active. Multiple game pads can be used with the XBCD Setup utility and a specific pad can be selected for configuration with the 'Device' drop box. The 'Device Type' drop box (v1.06) allows the controller to be reported to Windows as a Gamepad or Joystick accordingly.

## DEAD ZONES

The dead zone value of an analog stick will create an area in which the stick will be reported as being centered. A dead zone's range is from 0 to 100, where 0 means a dead zone does not apply. Dead zone settings are configured through the XBCD Setup utility; under the 'Xbox' tab. Creating dead zones may be required for some PC games, particularly games that require single direction movements such as first person shooters. For example, a dead zone of 30 will reduce the effect of moving in two directions at the same time in Battlefield 1942. This means that when you are driving a vehicle, you won't go left or right as you're going forward to run over that bloke who's been sniping you for the past 15 minutes. Tweaking dead zones may be necessary to refine game controls.

## BUTTONS

Button configuration is performed through the XBCD Setup utility. Each button has an identification number assigned to it in the Setup utility. Buttons can be changed to act like axes or to take the role of a different button on the game pad. The Setup utility is used to identify what button is currently being pressed. Once you know the name of a button, you can configure its function or assign a key bind to it. Games that support DirectInput controllers, such as UT2004 and BF1942 will register a button press as *Joy-xx* in the control config settings of the game. Games that do not register a button press will need to have a key assigned via ControlMK. The main face buttons on the Xbox pad are listed and configured in the 'Xbox' tab of the Setup utility. Each button has been named as it appears on the pad for simplicity. The Setup utility lists the face buttons for configuration in the following order: A, B, X, Y, BL (Black), WH (White), LT (Left Trigger), RT (Right Trigger), ST (Start), BK (Back), LS, (Left Stick) and RS (Right Stick). Note that to activate the LS and RS buttons; you must push down on the corresponding control stick. To assign a key to a button, open ControlMK and scroll down the edit list until you find the number that represents the button you wish to assign a key to. To find out a button's representation number, click on the 'Windows' tab in the Setup utility and press the button. A numbered blue circle will light up to indicate a button press.

## AXES

There are many axes that can be configured with the XBCD Setup utility. An axis can be defined as ‘one of the fixed reference lines of a coordinate system’\*. The Xbox Controller Driver uses floating point mathematics based on the Cartesian Coordinates system (<http://mathworld.wolfram.com/CartesianCoordinates.html>) to define exactly where a control stick is at any given time. Without going into complex mathematical theory, the following diagrams may help to explain what the  $x$ ,  $y$  and  $z$  axes are.

Top Down view of Xbox Controller

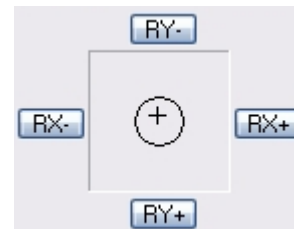
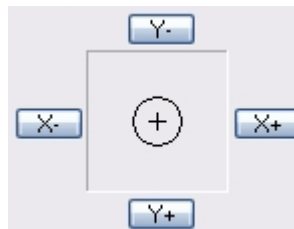
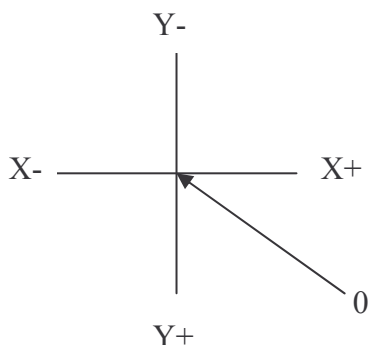


Side On view of Xbox Controller

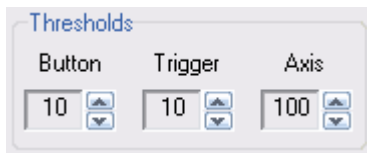


Looking at the top down view of the Xbox controller we can see that each control stick really only has two planes of operation, horizontal and vertical. The horizontal movement is known as the  $x$ -axis while vertical movement is known as the  $y$ -axis. A third plane is introduced in the side on view and this plane is known as the  $z$ -axis. Movement along the  $z$ -axis is demonstrated by pushing directly down or pulling directly up on either control stick. Note that the XBCD drivers will not recognize pushes or pulls on the control sticks as axes. I am using the example of the control sticks as a way to better illustrate what the  $z$  axis is. The  $x$ ,  $y$  and  $z$  axes are not unique to the Xbox Controller Drivers. Nearly every PC joystick or game pad has an  $x$  and  $y$  axis. Perhaps a simpler way of demonstrating how axes work is by placing your fist on a flat surface such as a table. Moving your fist forwards and backwards could be seen as a  $y$  axis, while moving your fist left and right can be seen as an  $x$  axis. Lifting your fist off the table, or moving your fist under the table (or through the table, if you're so inclined) could be seen as movement along the  $z$ -axis. The  $Z$ ,  $RX$ ,  $RY$ ,  $RZ$ , and Slider axes can be hidden from Windows by turning them off.

Each of the  $x$ ,  $y$  and  $z$  axes can be split in half. One half of the axis becomes positive, and the other half becomes negative. Think of the place where the  $x$  and  $y$  axes meet as zero. For example:



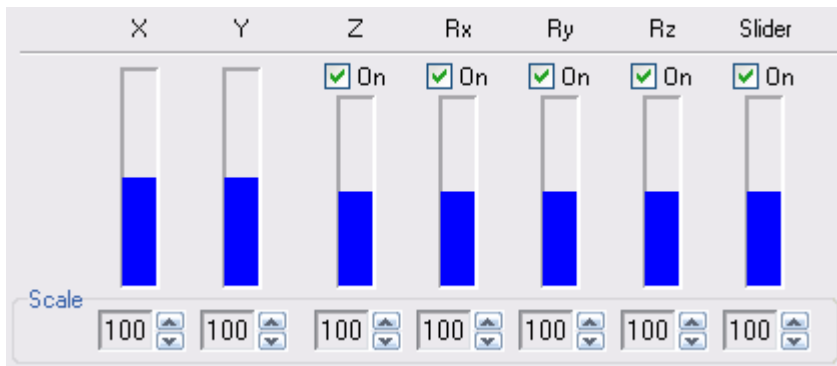
## THRESHOLDS



Threshold values are used to indicate at what level a button or POV direction should be registered as being activated. Buttons, Triggers, and Axes have separate threshold values. The range is from 1 to 255. Think of this as the amount of pressure required to push the button down before a signal is captured. For example a button can be set

to activate a function with the smallest of taps (small threshold), or by pushing in the button to the maximum allowable physical limit (large threshold). Note that the 'All Digital Buttons Version' of the Xbox Controller Driver makes all of the buttons act digitally and therefore multiple functions cannot be set to a specific level of pressure on a button/axis.

## SCALING AND SENSITIVITY



This option can be found under the Windows tab in the XBCD Setup utility. It is used to scale down the reported value of an axis thereby minimizing the sensitivity of an axis. Sensitivity of control sticks is best configured through a game's control options. If you have either stick set to emulate a mouse, then adjusting the game's mouse sensitivity will effectively adjust the sensitivity the control stick.

## RUMBLE

The Xbox Controller Drivers feature force feedback support for rumble effects. Open the XBCD Setup Utility and choose the 'Rumble tab'. Move the sliders from 'off' to 'high' to test each rumble motor. Note that one motor is bigger than the other, so you will feel a difference in the vibration from one side of the pad to the other. Games that feature TouchSense Force Feedback, such as Unreal Tournament 2004 will work with the Xbox pad and produce rumble effects. For games that do not feature force feedback, the a company called Immersion offers a program to add rumble effects *'by using your sound card data and button programming functions to deliver force feedback sensations to any PC game'*. The force factor of each motor or 'actuator' can be adjusted by decreasing or increasing the value sent to the actuators on the controller. The range is from 0 to 255, with 255 representing maximum rumble effects. I would leave the rumble settings to default. Immersion TouchWare Gaming software is available from <http://www.immersion.com/gaming>.

## V 1.06

Version 1.06 (released 20<sup>th</sup> March 2005) can be obtained from here: <http://www.redcl0ud.com/xbcd.html#v106>  
A list of changes from 1.03 to 1.06 is as follows:

- New option added to expand analog stick movement to full range.
- The number of buttons reported to Windows can now be set through an option in the Setup Utility.
- Now, the controller can be reported to Windows as a gamepad or a joystick.
- The Setup Utility now uses a plain text file to export and import gamepad configurations.
- A new DLL (XBCDIF.dll) is included with the Setup Utility; it is only used to enumerate XBCD controllers but more functionality will be added to it.
- The rumble DLL has been ported to C++ and other changes were made to make it more stable. The new rumble DLL was compiled using [Dev-C++](#), a free MinGW C++ IDE.

## COMPATIBLE CONTROLLERS

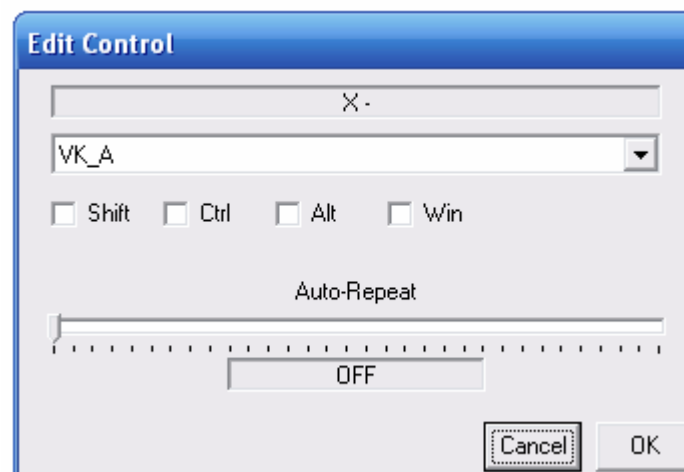
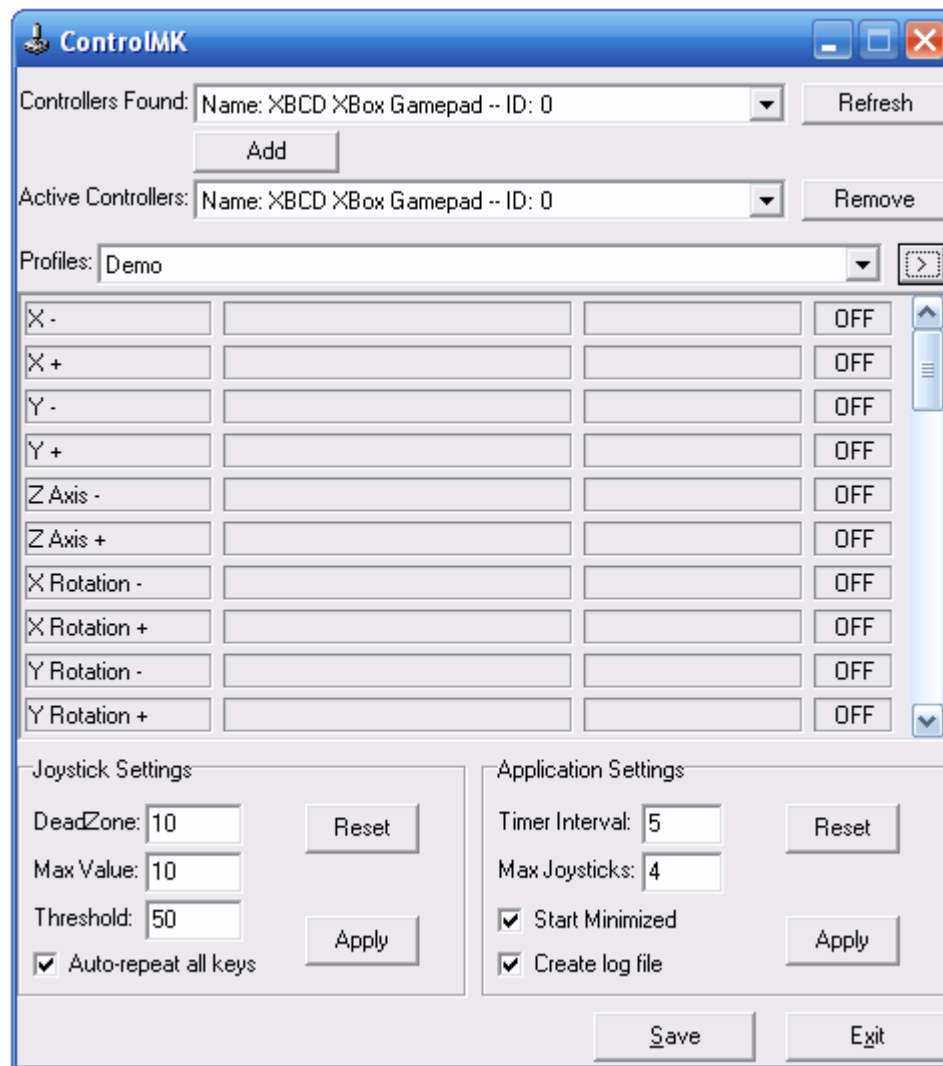
Wireless and corded Xbox controllers are supported by the Xbox Controller Driver. The original 'taco' Xbox Controller, Controller S, Logitech Precision Controller and the Logitech Cordless Precision has been proven to work seamlessly with the drivers. A more detailed list of supported pads can be found in the *XBCD.inf* file. Note that if your pad is not listed here, it does not mean that your pad is not supported. If you have one of the pads listed here and it does not work with the drivers, then I suggest you thoroughly check your wiring, and then check ***Section VII: Troubleshooting***. Note that with the Blaze Patriot Xbox Controller the white wire is switched with the yellow wire. Wiring a controller is covered in more detail in ***Section VI: Controller Wiring***.

If you are unsure about pad support, check out the Xbox Controller Driver Forum and contact Redcl0ud: <http://redcl0ud.1.forumer.com/index.php?act=idx>

- Thrustmaster Controller
- Microsoft Xbox Controller
- Microsoft Xbox Controller S
- Logitech Thunderpad
- Chic Controller
- Mad Catz Control Pad Pro
- Big Ben XS XBox Controller
- Mad Catz 4526
- Mad Catz 4516
- Madcatz Microcon Xbox Controller
- Mad Catz Lynx Wireless Controller
- Mad Catz Blaster
- Nyko Air Flow

# V. CONFIGURING AND USING CONTROLMK

## CONTROLMK USER INTERFACE



## ASSIGNING KEYS

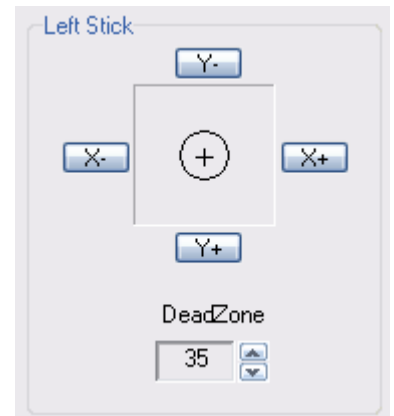
Assigning keys with ControlMK is as simple as using the XBCD Setup utility to find out what each axis and button is named so you can manipulate that axis/button with ControlMK. For example, a very common control method for PC games uses the 'w-s-a-d' keys to move forward, backward, left and right. I usually set 'w-s-a-d' movement to the left control stick (Y- Y+ X- X+ in XBCD Setup utility). To make your character or vehicle move forward, backward, left or right in a game by moving the left control stick in the required direction, you need to 'map' the corresponding key to the axis in ControlMK.

All Key mapping functions are performed through the 'Edit Control' dialog box. This box will appear when an assignable axis or button is clicked in ControlMK. The 'Edit Control' dialog will show what axis is to be configured, what key or function is to be assigned to the specified axis or button and if any modification and key repeat rate settings are to be applied.



In the XBCD Setup utility think of Y- as forward, Y+ as backward X- as left and X+ as right. Open ControlMK, click the 'Controllers Found' drop box, choose your Xbox game pad (shows up as NAME: XBCD Xbox Game pad -- ID: 0) and click 'Add'. The controller will now become available in the second drop box menu entitled 'Active Controllers'. You will need to create a new profile, so click on the arrow box below 'Remove' and then click 'Add'. Give you profile a name (e.g. Demo) and you should be presented with a whole lot of boxes, divided into columns. Each one of these 'boxes' has a specific function.

A quick glance at the XBCD Setup utility identifies the X- axis as corresponding to a left movement of the left control stick. Click on X- to bring up the 'Edit Control' dialog box. In the 'Edit Control' dialog box, choose the drop down menu and scroll down until you find 'VK\_A' in the list. Click OK and X- will have the 'VK\_A' key bind beside it in the next column. X- is now mapped to 'A' and a left tap on the left control stick will now produce the same result as a taping 'A' on the keyboard. Note that for some games, such as Battlefield 1942, the 'Auto-repeat all keys' function may need do be activated by placing a tick in the associated checkbox.



Windows modifier keys, such as Ctrl, Alt, Shift and the Widows key can be assigned in conjunction with a control. For example, I can use ContolMK to assign the 'Ctrl + Alt + Del' combination to a left tap of the left control stick. The 'Off' signifies that a repeat rate for this key combination has not been set.



Repeat rates affect the number of times a key press is registered. The effects of repeating can best be seen when using multimedia software such as Winamp or Windows Media Player. 'Auto repeat all keys' will cause the song indicator to rapidly scroll down the play list, skipping a large number of tracks at a time. Turning key repeating off will result in the next track being played with a single press of a button, which is the normal behavior. Key repeating will also affect some PC games. For example, Unreal Tournament 2004 and Battlefield 1942 require key repeating to be enabled for w-s-a-d movement. This occurs because holding down w, s, a or d will cause the player character to move in a direction continuously. Tapping w, s, a or d will move the player character step by step, halting in between each step. Repeating keys means that a control stick can be held in a direction, as opposed to repeatedly tapping the control stick in the required direction to make the player character move.



A control stick on the Xbox game pad can be used to emulate the way a mouse behaves. This is done by assigning the MOUSE\_MOVE\_(X/Y)\_POS and MOUSE\_MOVE\_(X/Y)\_NEG control functions to either the X-, X+, Y-, Y+ or X Rotation -, X Rotation +, Y Rotation - and Y Rotation + axes. The X-, X+, Y-, Y+ correspond to the left control stick, while the 'X/Y Rotation +/-' axes correspond to the right control stick. This behavior is configured through the XBCD Setup utility.

LEFT CONTROL STICK AS MOUSE

X-

MOUSE\_MOVE\_X\_NEG

X+

MOUSE\_MOVE\_X\_POS

Y-

MOUSE\_MOVE\_Y\_NEG

Y+

MOUSE\_MOVE\_Y\_POS

Left Stick

Y-

X-

+

X+

Y+

DeadZone

35

RIGHT CONTROL STICK AS MOUSE

X Rotation -

MOUSE\_MOVE\_X\_NEG

X Rotation +

MOUSE\_MOVE\_X\_POS

Y Rotation -

MOUSE\_MOVE\_Y\_NEG

Y Rotation +

MOUSE\_MOVE\_Y\_POS

Right Stick

RY-

RX-

+

RX+

RY+

DeadZone

35

Note that the X Rotation -, X Rotation +, Y Rotation - and Y Rotation + axes in ControlMK are called RX-, RX+, RY- and RY+ in the XBCD Setup utility. I have set a dead zone for each control stick to 35. For more information dead zones, see *Section IV: Configuring and Using XBCD Setup utility*.

The following example shows a control layout whereby the left control stick has been mapped to w-s-a-d movement, and the right control stick has been mapped to act like a mouse. This control set up works with Battlefield 1942, as w-s-a-d movement will allow a player to move forward, backward, strafe left and right while the MOUSE\_MOVE mappings enable the right control stick to adjust yaw and pitch in a helicopter, spin turrets in tanks and to control a player's gun aim. Note that this setup is a personal preference of mine and I have found this setup to be one of the better arrangements. Of course, w-s-a-d keys are also a personal preference of mine, and these keys can easily be changed to reflect your own control layout.

X-	VK_A		OFF
X+	VK_D		OFF
Y-	VK_W		OFF
Y+	VK_S		OFF
Z Axis -			OFF
Z Axis +			OFF
X Rotation -	MOUSE_MOVE_X_NEG		OFF
X Rotation +	MOUSE_MOVE_X_POS		OFF
Y Rotation -	MOUSE_MOVE_Y_POS		OFF
Y Rotation +	MOUSE_MOVE_Y_NEG		OFF

## CONTROLMK PROFILE MANAGEMENT



ControlMK assigns key bind profiles to an Xbox pad with the 'Profiles' drop box. To create a new key bind profile, click on the profiles command arrow found below the 'Remove' button in the ControlMK user interface. Give the new profile a name and the new profile will become active. Begin assigning keys and click on the 'Save' button when you are finished. Once you have saved your profile, you should export a copy to the install directory of ControlMK. By default this path is 'C:\Program Files\ControlMK'. With each creation of a new ControlMK profile, a secondary '*ControlMK.pro*' file is created.

Importing and Exporting ControlMK profiles are performed by clicking on the profiles command arrow, and choosing either 'Import' to activate a profile created by someone else or from another computer, or 'Export' to externally save a profile for migration to another computer running ControlMK. Exporting a profile from ControlMK can also be used to overwrite or update a previously created profile with new key binds.

## AUTOMATIC STARTUP CONFIGURATION

ControlMK can automatically apply a selected profile to an Xbox controller and remember the configuration. Profiles that are added into the profiles list using the method above will remain in the profiles list until they are removed. Previously created profiles, or a profile created by someone else will need to be placed in the program's default install folder and imported into the profiles list. To make ControlMK start up with Windows, place a shortcut to *ControlMk.exe* into the 'Startup' folder found within the 'Programs' / 'All Programs' menu of the Windows 'Start' menu. ControlMK will then load with Windows, and apply a selected profile to a controller. Note that in ControlMk you must first select what profile and controller you want to activate, and click on 'Save'.

For example, to make ControlMK automatically start up with Windows, select my Xbox pad and apply a custom Winamp control profile I would first open ControlMK, select my controller, create my profile and click 'Save'. I would then add *ControlMk.exe* to the Windows 'Startup' folder and reboot to test the configuration. If I had downloaded a custom Winamp profile, or I wanted to move the *Winamp.pro* file from one computer to another I would first have to place the *Winamp.pro* file into ControlMK's default install directory. I would then open ControlMK, click on the profiles command arrow and import the profile into the profiles list. Once the profile is in the profiles list and has been selected, the key bindings will load into ControlMK for editing. Since I do not want to make any changes to the Winamp profile I would make sure that I have the correct controller selected, and then select the profile and click 'Save'. I would then add *ControlMk.exe* to the Windows 'Startup' folder and reboot to test the configuration.

If you are having trouble with ControlMK and auto-startup procedures, profile management, or something isn't working the way I said it should, then I suggest you see ***Section VII: Troubleshooting***.



## VI. CONTROLLER WIRING

In the interests of copyright protection I am unable to include a wiring tutorial that I found to be very useful in modifying the Xbox game pad to feature USB connectivity. The wiring tutorial was written by Daniel Pielage and can be found at <http://www.ocmodshop.com/default.aspx?a=223> with a forum discussion on the topic available at <http://forums.ocmodshop.com/default.aspx?f=10&m=14550>. Redcl0ud also has a diagram on how to wire up your Xbox pad. This diagram can be found at [http://www.redcl0ud.com/xbox\\_wiring.html](http://www.redcl0ud.com/xbox_wiring.html). I have emailed Daniel for permission to include this tutorial in this document, however he has so far not replied to my request. Should I be given permission, then the tutorial will become part of my reference documentation.

## VII. TROUBLESHOOTING

For troubleshooting your Xbox USB game pad I suggest you first look over the help documentation that Redcl0ud has created. An XBCD FAQ is available at [http://www.redcl0ud.com/xbcd\\_faq.html](http://www.redcl0ud.com/xbcd_faq.html) and common XBCD game settings are available at [http://www.redcl0ud.com/xbcd\\_gs.html](http://www.redcl0ud.com/xbcd_gs.html). Redcl0ud's XBCD Forum should be your first port of call should you run into trouble. See <http://redcl0ud.1.forumer.com/index.php?act=idx> and post up your problem. I am unable to document every problem or question on the forums here. Experienced users on the forum are more than happy to help with your problem and Redcl0ud is always around to sort out the more technical side of things.

During my research for this document I came across a small amount of information about getting the Xbox pad to work with Linux. This information isn't really associated with Redcl0ud's software, however I thought I'd put it in for those who like have a Linux machine/dual-boot setup at home and plugged the pad in to see what would happen.

Alternative Mac OSX drivers are available from here: <http://homepage.mac.com/walisser/xboxhiddriver/>. Qjoypad can be used to configure axes and buttons in Linux: <http://qjoypad.sourceforge.net/#download>. Xpad drivers for Linux can be downloaded from: <http://www.bmx-chemnitz.de/Zeugs/xpad-0.1.4.tar.bz2>.

Note that version 0.0.5 of the xpad drivers is included with Red Hat Fedora Core 3 (Kernel 2.6.9). I am unsure of other distros that include the xpad drivers. Plug your Xbox pad in type the *dmesg* command into a terminal to find out what version of xpad drivers are present, if at all. I am unable to provide details for getting the Xbox controller to work under Linux, as there are so many distributions and instructions for one distro may not work for another. A good place to start looking for Linux help is [www.xbox-linux.org](http://www.xbox-linux.org) and [www.xbox-scene.com](http://www.xbox-scene.com).

### DMSG OUTPUT

```
hub 1-1:1.0: USB hub found
hub 1-1:1.0: 3 ports detected
input: X-Box pad on usb-0000:00:07.2-1.1<6>usbcore: registered new driver xpad
drivers/usb/input/xpad.c: X-Box pad driver:v0.0.5
```

## VIII. MEMORY CARD

The Xbox controller is in brief a USB device that consists of a USB gamepad and a two-port USB hub. The hub internally has three ports, one port is used for the gamepad itself and the other two ports are used to connect memory cards. You can solder on USB connectors onto the Xbox Controller printed circuit board and use the two hubs as USB ports. Xbox memory cards are formatted as FATX; therefore Windows will not recognize the format of the file system on the memory card, so you will need to format it if you want to use it for storing files. You can backup the contents of your memory card to an image file by using any program which uses raw access to drives. A good program to use is DiskExplorer by Runtime Software.

The following information was taken from the Xbox-Linux project website available at:  
[http://www.xboxlinux.org/Xbox\\_Linux\\_USB\\_HOWTO](http://www.xboxlinux.org/Xbox_Linux_USB_HOWTO)

### Formatting memory sticks

*i have a question. i been lookin at this website lately and i saw that u could use memory sticks with xbox, but du u have to format ur memory stick in a especial way, please help i have a jumpdrive secure 128mb -anonymous edit*

If the filesystem on the device is not Xbox FS, the Dashboard will automatically reformat the drive to accept savegames. So no, you do not need to format your stick before inserting it into the Xbox. Note that the Xbox does not ask for confirmation before formatting, so **do not insert memory sticks with PC files'** unless you want the stick erased! The only sure way of getting files *to* the Xbox is to use a) a disk image, like the MechInstaller exploit, or b) software that can read the Xbox filesystem. Thankfully, most computers will prompt before reformatting an Xbox-formatted stick or an actual memory card (through a reverse adapter).

## IX. XBOX LINUX

Linux can be run on your Xbox. Xbox-Linux isn't directly related to any of Redcl0ud's software; however I've mentioned it a few times so I'll put in a brief bit for those interested. I'll let the experts describe it:

*'Xbox Linux is GNU/Linux on your Xbox The Xbox is a legacy-free PC by Microsoft that consists of an Intel Celeron 733 MHz CPU, an nVidia GeForce 3MX, 64 MB of RAM, a 8/10 GB hard disk, a DVD drive and 10/100 Ethernet. As on every PC, you can run Linux on it. An Xbox with Linux can be a full desktop computer with mouse and keyboard, a web/email box connected to TV, a server or router or a node in a cluster. You can either dual-boot or use Linux only; in the latter case, you can replace both IDE devices. And yes, you can connect the Xbox to a VGA monitor.'*

[http://www.xbox-linux.org/Main\\_Page](http://www.xbox-linux.org/Main_Page)

## X. REFERENCES

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## XI. CUSTOM PROFILES

### BATTLEFIELD 1942 CONTROLMK PROFILE (.PRO):

This can be imported into ControlMK and has the key assignments mapped to match the control settings found within the aleXbox BF1942 game profile. I have mapped the left control stick to w-s-a-d movement (forward-backward-left-right) and the right control stick acts like the mouse (i.e. look up, down, left, right). I did this because Battlefield seems to switch axis for infantry and vehicle left and right turning (e.g. left becomes right and right becomes left). I don't know why, but mapping w-s-a-d with ControlMK as opposed to using joy-xx in Battlefield's control options seems to fix it. I have also mapped the Hat Switch Right to the keyboard comma key, as the comma key is used to bring up the spawn interface in Battlefield. I couldn't get Battlefield to save the Hat Switch key press in common control options, so I just mapped it to a random key. Feel free to change this to something else if you want.

### XBCD SETUP PROFILE (.XGP):

This just sets the deadzones on the control sticks to 25. Useful so that you don't go forwards and sideways at the same time. Well, that's the idea anyway.

### ALEXBOX.AAA:

This achive contains the Battlefield custom profile. Extract the aleXbox folder to: C:\Program Files\EA GAMES\Battlefield1942\Mods\bf1942\Settings\Profiles (or wherever you installed Battlefield to, this is the default file path). The profile will then become available when you start Battlefield or Desert Combat.



## WINAMP PROFILE:

I had an old laptop knocking around so I put on Winamp 5.05 and use it as an mp3 box. Because the laptop sits on my desk I don't want to reach around for my mouse while lying on the bed to change songs or adjust the volume etc. You must enable global hotkeys in Winamp for this to work (right click in Winamp > options > preferences > Global Hotkeys).

Set:--

Playback: Previous in play list to 'ctrl + alt + P'

Playback: Next in play list to 'ctrl + alt + N'

Playback: Play/Pause to 'ctrl + alt + Y'

UI: Bring to Front/Hide Winamp to 'ctrl + alt + H'

The ControlMK Winamp profile contains all the other key bindings used to manipulate Winamp.

I have set the left control stick to act like a mouse, left and right triggers act as left and right mouse click and right control stick up and down to act as mouse wheel scroll. Hat Switch up shows the playlist window. Hat Switch down shows the equalizer (bass and treble adjustment etc). Hat Switch left shows the main Winamp window and Hat Switch right minimizes/maximizes Winamp. X turns up the volume and A decreases volume. Y will play/pause and B will bring up the open file dialog box. White will go to the previous item in a playlist and black will go to the next item. Start will shut down your computer while Back will reboot it.

Linkage:

[http://atlas.walagata.com/w/al3x/BF1942\\_XBCD.pro](http://atlas.walagata.com/w/al3x/BF1942_XBCD.pro)

[http://atlas.walagata.com/w/al3x/BF1942\\_XBCD\\_Setup.xgp](http://atlas.walagata.com/w/al3x/BF1942_XBCD_Setup.xgp)

<http://atlas.walagata.com/w/al3x/aleXbox.rar>

[http://atlas.walagata.com/w/al3x/Winamp\\_Final.pro](http://atlas.walagata.com/w/al3x/Winamp_Final.pro)

I happen to have a Windows Media Player 10 profile that I've been working on. It's finished now. Enjoy! I don't know if it will work with WMP 9 though. Note that to scroll between playlist items, a playlist must exist. I have used ControlMK's MEDIA\_NEXTTRACK and MEDIA\_PREVIOUS TRACK instead of using WMP10's inbuilt key shortcuts (CTRL+B, CTRL+F) because, frankly it works (and I only found the key binding details within media player help file until I was almost finished).

**Important:** As with the Winamp profile I created, make sure that 'Auto repeat all keys' is unticked.

Linkage

[http://atlas.walagata.com/w/al3x/MediaPlayer10\\_XBCD.rar](http://atlas.walagata.com/w/al3x/MediaPlayer10_XBCD.rar)

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