

Parameters

Bool - is a value of either TRUE or FALSE

String - is a value of readable characters. This value is indicated with surrounding quotes

Integer - is a 32 bit (unsigned) number. Hex values are automatically converted

Data - is an array of bytes. Can be specified with 0x80;0x81;0x82 etc.

Functions

Command:	SetParam
Parameters:	Integer, Integer
Syntax:	Setting, Value
Description:	Sets a device parameter on the board (firmware controlled). The delays are set in milliseconds and is the amount of time the AVR should wait between read or write instructions. The main purpose of this command is to fine tune performance; the faster the device operates, the higher the error rate is. This can also affect different target devices differently.
Settings:	1: Intel Flash delay 2: AMD Flash delay 3: Memory read delay 4: Memory read mode 5: Flash base location
Examples:	SetParam(1, 30) #Sets the Intel flash delay to 30 ms

Command:	Ejctrl
Parameters:	Integer
Returns:	Integer
Description:	Sends a JTAG control message to the target device. These types of commands are very dependant on the target device. This can be used to stop (0x10000) or start (0x0) the target processor. The result of the command is returned.
Examples:	Ejctrl(0x10000) #Stops the target processor

Command:	Pause
Parameters:	Integer
Description:	Waits the specified amount of time (in milliseconds), useful only in scripts.
Examples:	Pause(1000) #Waits 1 second

Command:	FixFlash
Parameters:	None
Description:	Attempts to reprogram the bootloader of a device blindly (no verification, no check device id etc.). This is sometimes successful in restoring a device that does not boot correctly. Only supported

	in JTAG mode.
Examples:	FixFlash()

Command:	Verify
Parameters:	None or Bool
Returns:	Bool or nothing
Description:	Used to enable or disable the flash verify process. It can also be used to return the current setting.
Examples:	Verify(true)

Display Commands

Command:	writeline
Parameters:	String
Description:	Displays a message to the console.
Examples:	writeline("this is only a test")

Command:	msgbox
Parameters:	String
Description:	Displays a message to the user using a pop-up box.
Examples:	msgbox("Hello World!")

Command:	mode
Parameters:	None
Returns:	String
Description:	Returns a string indicating which mode BlackcatUSB is in.
Examples:	mode() #Returns "JTAG"

Command:	ask
Parameters:	String
Returns:	Bool
Description:	Asks the user a yes or no question and returns that value. You can use this in a if statement to make conditional sections.
Examples:	ask("Continue script?")

Command:	status
Parameters:	String
Description:	This sets the status text (the bottom bar of the software).
Examples:	status("script is complete")

Tab Commands

These are for creating a application specific tab that allows you easy access to commands from the GUI

Command:	Tab.Create
Parameters:	String
Returns:	Integer

Description:	Creates a application specific tab. Returns the index of the tab.
Examples:	Tab.Create("My Device")

Command:	Tab.AddGroup
Parameters:	String, Integer, Integer, Integer, Integer
Syntax:	Name of group, (X-axis), (Y-axis), Length, Height
Description:	Creates a group box on the tab.
Examples:	Tab.AddGroup("Feature",10,10,420,140)

Command:	Tab.AddBox
Parameters:	String, String, Integer, Integer
Description:	Creates a input box on your tab.
Examples:	Tab.AddBox("BXNAME","default text",30,110)

Command:	Tab.AddText
Parameters:	String, String, Integer, Integer
Description:	Creates a text label on your tab.
Examples:	Tab.AddBox("txtName","What to say",30,110)

Command:	Tab.AddImage
Parameters:	String, String, Integer, Integer
Description:	Adds a image to your tab from the specified file (in your scripts folder)
Examples:	Tab.AddImage("ImgName","logo.gif",20,20)

Command:	Tab.AddButton
Parameters:	Event, String, Integer, Integer
Description:	Adds a button to your tab. The specified event is called when the user clicks on the button.
Examples:	Tab.AddButton>HelloWorld,"Click Me!",20,20)

Command:	Tab.Remove
Parameters:	String
Description:	Removes any previously added object from your tab.
Examples:	Tab.Remove("ImgName")

Command:	Tab.SetText
Parameters:	String, String
Description:	Changes the text of any previously created object
Examples:	Tab.SetText("txtName","Jigga Jigga!")

Command:	Tab.ButtonDisable
Parameters:	String
Description:	Disables a button so the user can not click it and run the event.
Examples:	Tab.ButtonDisable("btName")

Command:	Tab.ButtonEnable

Parameters:	String
Description:	Enables the button (if you had it disabled)
Examples:	Tab.ButtonEnable("btName")

JTAG Specific Commands

These commands are only valid when the device is in JTAG mode. If it is not, they are ignored.

Command:	JTAG.MemoryAddress
Parameters:	Integer
Description:	Initialized the dynamic memory controller and sets the base memory address.
Examples:	JTAG.MemoryAddress(0x80000000)

Command:	JTAG.MemoryType
Parameters:	String
Description:	Sets the device type of the memory. This can be "RAM", "CFI" or "SPI". Note: SPI mode over JTAG is not yet supported.
Examples:	JTAG.MemoryType("CFI")

Command:	JTAG.MemorySize
Parameters:	Integer
Description:	Sets the size of the memory (in bytes) of the dynamic memory
Examples:	JTAG.MemorySize(0x800000)

Command:	JTAG.MemoryInit
Parameters:	None
Description:	Will initialize and connect the BlackcatUSB interface to the memory interface. You may need to specify address and size prior to calling this function. If successful, the GUI will add the "Memory" tab. This command also returns the unique index of the created device.
Examples:	MemIndex = JTAG.MemoryInit()

Command:	JTAG.FlashInit
Parameters:	None
Description:	Will connect to the CFI compliant flash on the memory controller to allow for reading and writing. This will create the "Flash" tab on the GUI. Must set FlashBase prior.
Examples:	JTAG.FlashInit()

Command:	JTAG.FlashFind
Parameters:	None
Description:	Will scan the entire memory address range for a CFI compatible flash.
Examples:	JTAG.FlashFind()

Memory Device Commands

The following commands are for interacting with memory devices. Each memory command can have its index specified. For example, `memory(0).read` will perform the read operation from the first memory device; `memory(1).read` will do the same from the second device, and so on. When you create a memory device using the `JTAG.MemoryInit`, you should save that index to a variable so you can specify which device to perform the memory operation from.

Command:	Memory.Write
Parameters:	Data, Integer, Optional Integer
Syntax:	Data object to write, flash address offset, optional length
Description:	Writes a data variable to the flash device. Works for both CFI and SPI flash devices, but please note you must have already initiated the flash.
Examples:	Memory.Write(dataVar,0,256) #Writes

Command:	Memory.Read
Parameters:	Integer, Integer, Optional Bool
Returns:	Data
Description:	Reads data from the flash device. Works for both CFI and SPI type flash devices, but please note you must have already initiated the flash.
Examples:	dataVar = Memory.Read(0,512) #Reads 512 bytes

Command:	Memory.ReadString
Parameters:	Integer
Returns:	String
Description:	Reads a string from the location specified on the flash device. Returns nothing if error or string not found.
Examples:	dataStr = Memory.ReadString(0x5000)

Command:	Memory.ReadVerify
Parameters:	Integer, Integer
Returns:	Data
Description:	Similar to <code>ReadFlash()</code> , this function actually does it twice and compares the result, and if needed verifies all data to ensure that the data read is 100% accurate. Returns nothing if verification failed. This function is preferred over <code>ReadFlash</code> where the integrity of the data is vital.
Examples:	dataVar = Memory.ReadVerify(0,512) #Reads 512 bytes

Command:	Memory.GetSectorCount
Returns:	Integer
Description:	Erases the specified flash sector
Examples:	sectors = Memory.GetSectorCount()

Command:	Memory.EraseSector
Parameters:	Integer
Returns:	Nothing
Description:	Erases the specified flash sector

Examples:	Memory.EraseSector(0)
-----------	-----------------------

Command:	Memory.EraseSection
Parameters:	Integer, Integer
Returns:	Nothing
Description:	Erases a section of the flash memory, starting at the address (the first parameter), and the number of bytes (second parameter).
Examples:	Memory.EraseSector(0x10000,0x8000)

Command:	Memory.EraseBulk
Parameters:	None
Returns:	Nothing
Description:	Erases the entire flash memory
Examples:	Memory.EraseBulk()

Command:	Memory.GetSectorSize
Parameters:	Integer
Returns:	Integer
Description:	Returns the size
Examples:	dataInt = Memory.GetSectorSize(0)

Command:	Memory.Dump
Parameters:	None
Description:	Reads all the data from flash (twice) and then prompts the user to save the file to disk. Usefully for making a flash backup.
Examples:	Memory.Dump()

Command:	Memory.Exist
Parameters:	None
Returns:	Bool
Description:	Returns true if a memory device at a given index has been created.
Examples:	Memory(2).Exist()

SPI Commands

Command:	SPI.Fosc
Parameters:	Integer
Description:	Used to set the hardware SPI clock divider. The SPI speed is the system clock (16 MHz) divided by the Fosc value. Supported values: 2, 4, 8, 16, 32, 64, 128
Examples:	SPI.Fosc(4)

Command:	SPI.Order
Parameters:	String
Description:	Used to set the bit order for all SPI commands. For most significant bit, use "MSB" for least significant bit use "LSB".
Examples:	SPI.Order("MSB")

Command:	SPI.Mode
Parameters:	Integer
Description:	Used to set the SPI device mode. Supported modes 0, 1, 2, 3.
Examples:	SPI.Mode(0)

Command:	SPI.Swap
Parameters:	Bool
Description:	Used to reverse the bit order of bytes of the data being written or read to the flash. For example, if your flash uses MSB, but your microprocessor is LSB and reads the data off of the SPI flash, you can use this command to conveniently swap the bits.
Examples:	SPI.Swap(true)

File Input and Output

Command:	OpenFile
Parameters:	String, String (optional)
Returns:	Data
Description:	Prompts the user for a file and then reads the file from disk and returns a data variable. First parameter is the title of the window and the optional second is the standard file filter to use.
Examples:	MyData = OpenFile("Choose file", "Firmware files (*.bin) *.bin")

Command:	SaveFile
Parameters:	Data, String, String (optional)
Syntax:	Data variable to write, title prompt, default save name
Description:	Prompts the user to save a data variable to the hard drive.
Examples:	SaveFile(MyData,"Where to save?","fileread.bin")

Misc

Command:	hex
Parameters:	Integer
Returns:	String
Description:	Converts a integer value or variable into a hex string
Examples:	hex(255) #ouputs "0xFF"

Command:	resize
Parameters:	Data, Integer, Integer (optional)
Description:	Resizes a byte array (usually in a variable), starting at the first parameter. The optional parameter can be used to specify how many to copy.
Examples:	resize(datavar,2) #removes the first two bytes

Command:	Len
Parameters:	String, Integer or Data

Returns:	Integer
Description:	Returns the length of a string , the number of bytes in a data object or the number of bytes to hold a integer.
Examples:	len("hello") #returns 5 dataVar = 0x1F;0x2F;0x2F;0xFF;0x2A;0x50 len(dataVar) #returns 6 len(302) #returns 2

Command:	Byte
Parameters:	Data, Integer
Returns:	Integer
Description:	Returns the value of the byte located in a data array.
Examples:	dataVar = 0x1F;0x3F;0x2F;0xFF;0x2A;0x50 word(dataVar,2) #Returns 47

Command:	Word
Parameters:	Data, Integer
Returns:	Integer
Description:	Returns the value of the four bytes located in a data array.
Examples:	dataVar = 0x1F;0x3F;0x2F;0xFF;0x2A;0x50 word(dataVar,2) #Returns 805251664

Command:	HWord
Parameters:	Data, Integer
Returns:	Integer
Description:	Returns the value of the two bytes located in a data array.
Examples:	dataVar = 0x1F;0x3F;0x2F;0xFF;0x2A;0x50 hword(dataVar,2) #Returns 12287

Command:	value
Parameters:	String
Returns:	String
Description:	Returns the text value of a Tab object, such as a textbox you have created.
Examples:	strVar = value(MYINPUTBOX)

Command:	ToInteger
Parameters:	String
Returns:	Integer
Description:	Converts a integer stored in a string as a integer.
Examples:	ToInteger("234") #Returns 234

Command:	sigmakey
Parameters:	None
Returns:	String
Description:	Returns the SIGMA key of a given device. Only compatible in JTAG mode. Also prints the key to the console.
Examples:	strVar = sigmakey()

Command:	copy
Parameters:	Data, Data
Returns:	Data
Description:	Copies two data variables and returns them as a new combined data variable.
Examples:	dataVar = copy(data1,data2) #equals data1+data2