

## GBxCart RW v1.0

A device for reading game ROMs, save games and restoring saves for GB, GBC and GBA carts from your PC via USB.

### Features

- Backup games ROM to your PC
- Backup save games to your PC
- Restore save games from your PC
- Supports Gameboy, Gameboy Colour, Gameboy Advance cartridges
- Supports SRAM/Flash/EEPROM for Gameboy Advance cartridges
- GUI or console interfacing programs

### Specifications

Size: 54mm (L) x 57mm (W) x 9mm (H)

Voltage: switchable between 3.3V (for GBA) and 5V (for GB/C)

Weight: 18 grams

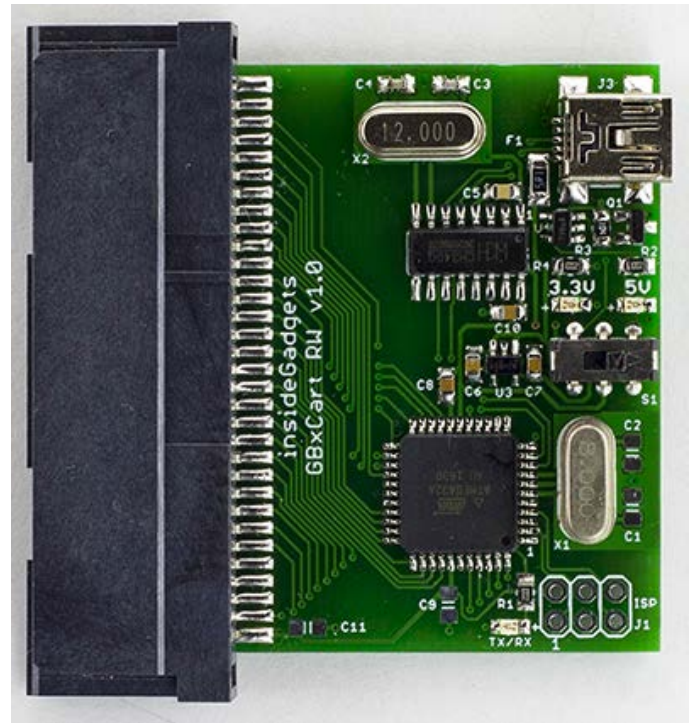
### Requirements

USB Mini cable

### How to Use

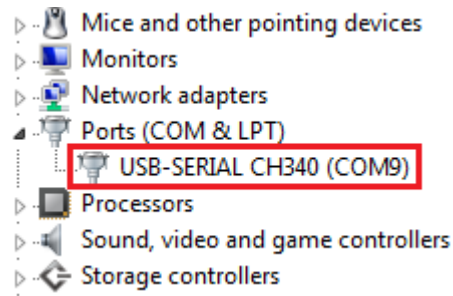
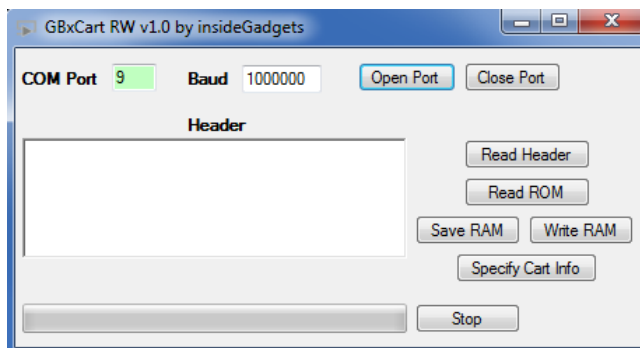
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1. Before inserting the cartridge, select the correct voltage for your cartridge using the switch (GB/GBC use 5V while GBA uses 3.3V) and connect the USB cable to ensure the correct voltage LED lights up and then unplug the device. If the device isn't automatically detected, you will need to open up Device manager, find the "USB 2.0 Serial" device and update the driver using the files in the \Drivers folder.
2. Insert your cartridge to the device and connect the USB cable.
3. For the GUI interface, follow "using the GUI Program" steps or for the console program follow "using the Console Program" steps.
4. When changing cartridges, always unplug the USB cable from the device and follow step 1 again.

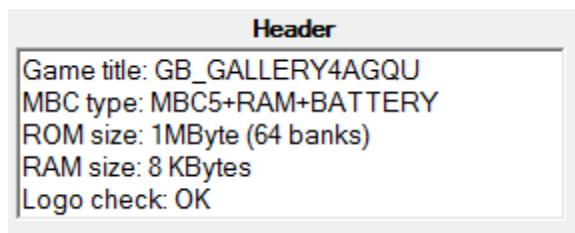


## Using the GUI Program

1. Download and Install Microsoft Visual C++ Redistributable Packages for Visual Studio 2015 - <https://www.microsoft.com/en-us/download/details.aspx?id=53840>

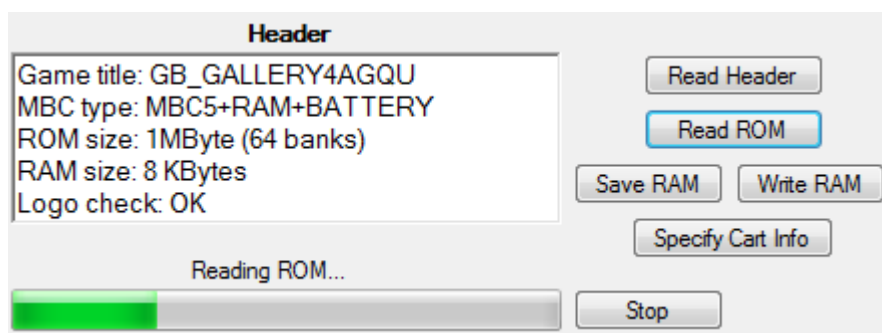


2. Open GBxCart\_RW\_v1.0.exe and change the COM port to match the COM port your operating system has assigned the device, this can be found in device manager.
3. Click the Open Port button; if the COM port text box turns green then it has successfully connected. If it turns red, please double check the COM port and try again. Once the port is successfully opened, the port number and baud rate will be remembered for next time.



4. Press the Read Header button and the cartridge information should show up. (GBA carts take 4 seconds as tests are being performed to determine the ROM and SRAM/Flash/EEPROM sizes). Make sure that the “Logo check” comes back as OK otherwise the cartridge may not be read correctly and you will have to disconnect the device, remove and re-insert the cartridge.

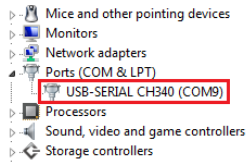
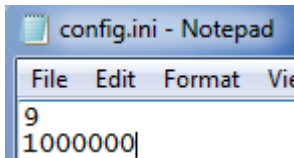
If the cartridge information doesn't match what you know to be correct, you can press the “Specify Cart Info” button to change the ROM size, RAM size/type.



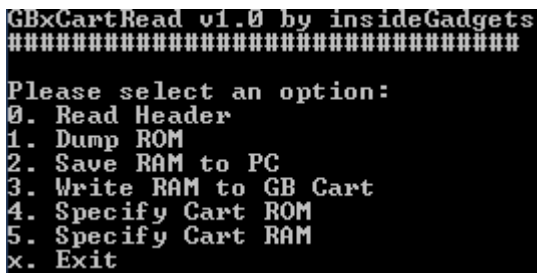
5. You can now press the corresponding buttons to read the ROM, save the RAM to the PC (save game) or write the RAM (save game) from the PC.

We recommended verifying your Gameboy ROMs using BGB (a Gameboy emulator) and for Gameboy Advance games we recommend using VisualBoyAdvance. It's a good idea to verify your save files too by running the ROM when the save file.

## Using the Console Program



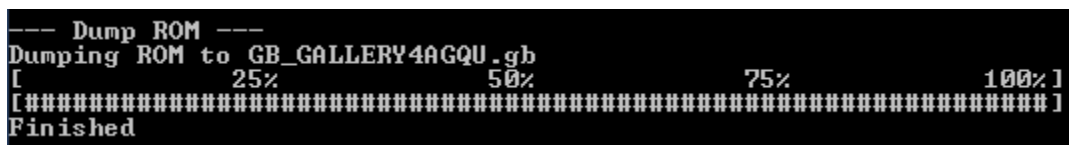
1. Open the config.ini file and change the first number to your COM port, e.g. 9 = COM9 and change the second number to the baud rate, default is 1Mbit (1000000) which should work fine. Your COM port can be found in device manager.



2. Open GBxCart\_RW\_Console\_v1.0.exe and the option menu should appear.



3. Press "0" and hit enter to read the cartridge information. Make sure that the "Logo check" comes back as OK otherwise the cartridge may not be read correctly and you will have to disconnect the device, remove and re-insert the cartridge.



4. You can now press the corresponding buttons to read the ROM, save the RAM to the PC (save game) or write the RAM (save game) from the PC.

We recommended verifying your Gameboy ROMs using BGB (a Gameboy emulator) and for Gameboy Advance games we recommend using VisualBoyAdvance. It's a good idea to verify your save files too by running the ROM when the save file.

## Raw I/O Access

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If you wish to read/write to a special cartridge which the regular functions don't support, you can access the raw I/O of the ATmega32A on board with the following COM commands. Commands should be sent as characters, a null terminator byte (0) is used to determine the end of some strings sent. No responses will be returned except for reading a PORT.

### Enable/Disable common lines RD/WR/MREQ-CS/Reset-CS2 set high after each command

(recommended to disable so you drive these lines yourself)

To enable: M1

To disable: M0

### Set pins as inputs/output

Set any pin as input/output

Reads the DDR/PORT (e.g. DDRB/PORTB is 'B') and the hex value that represents pins (e.g. PB7 is 0x80)

To set PB7 as an input: IB0x80 (include a null-terminator byte at the end)

To set PB7 as an output: OB0x80 (include a null-terminator byte at the end)

### Set output low

To set PB7 low: LB0x80 (include a null-terminator byte at the end)

### Set output high

To set PB7 high: HB0x80 (include a null-terminator byte at the end)

### Read all pins of a PORT

Returns a byte representing all pins of that port, e.g. 128

To read PORTB: DB

### Port mappings to Gameboy Slot pins

PB0 = A0	PA0 = A8	PC0 = D0/A16
PB1 = A1	PA1 = A9	PC1 = D1/A17
PB2 = A2	PA2 = A10	PC2 = D2/A18
PB3 = A3	PA3 = A11	PC3 = D3/A19
PB4 = A4	PA4 = A12	PC4 = D4/A20
PB5 = A5	PA5 = A13	PC5 = D5/A21
PB6 = A6	PA6 = A14	PC6 = D6/A22
PB7 = A7	PA7 = A15	PC7 = D7/A23
PD4 = *WR	PD6 = *MREQ/CS	
PD5 = *RD	PD7 = *RESET/CS2	

## Software Revision History

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v1.0 – 11<sup>th</sup> March 2017

- Initial Release

## Hardware Revision History

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v1.0 – 11<sup>th</sup> March 2017

- Initial Release (Errata - The switch operates in reverse, for example, moving it to the left should select 3.3V but it selects 5V and moving it to the right should select 5V but it selects 3.3V.)

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