

GBA I/O Map

LCD I/O Registers

4000000h	2	R/W	DISPCNT	LCD Control
4000002h	2	R/W	-	Undocumented - Green Swap
4000004h	2	R/W	DISPSTAT	General LCD Status (STAT,LYC)
4000006h	2	R	VCOUNT	Vertical Counter (LY)
4000008h	2	R/W	BG0CNT	BG0 Control
400000Ah	2	R/W	BG1CNT	BG1 Control
400000Ch	2	R/W	BG2CNT	BG2 Control
400000Eh	2	R/W	BG3CNT	BG3 Control
4000010h	2	W	BG0HOFs	BG0 X-Offset
4000012h	2	W	BG0VOFS	BG0 Y-Offset
4000014h	2	W	BG1HOFs	BG1 X-Offset
4000016h	2	W	BG1VOFS	BG1 Y-Offset
4000018h	2	W	BG2HOFs	BG2 X-Offset
400001Ah	2	W	BG2VOFS	BG2 Y-Offset
400001Ch	2	W	BG3HOFs	BG3 X-Offset
400001Eh	2	W	BG3VOFS	BG3 Y-Offset
4000020h	2	W	BG2PA	BG2 Rotation/Scaling Parameter A (dx)
4000022h	2	W	BG2PB	BG2 Rotation/Scaling Parameter B (dmx)
4000024h	2	W	BG2PC	BG2 Rotation/Scaling Parameter C (dy)
4000026h	2	W	BG2PD	BG2 Rotation/Scaling Parameter D (dmy)
4000028h	4	W	BG2X	BG2 Reference Point X-Coordinate
400002Ch	4	W	BG2Y	BG2 Reference Point Y-Coordinate
4000030h	2	W	BG3PA	BG3 Rotation/Scaling Parameter A (dx)
4000032h	2	W	BG3PB	BG3 Rotation/Scaling Parameter B (dmx)
4000034h	2	W	BG3PC	BG3 Rotation/Scaling Parameter C (dy)
4000036h	2	W	BG3PD	BG3 Rotation/Scaling Parameter D (dmy)
4000038h	4	W	BG3X	BG3 Reference Point X-Coordinate
400003Ch	4	W	BG3Y	BG3 Reference Point Y-Coordinate
4000040h	2	W	WIN0H	Window 0 Horizontal Dimensions
4000042h	2	W	WIN1H	Window 1 Horizontal Dimensions
4000044h	2	W	WIN0V	Window 0 Vertical Dimensions
4000046h	2	W	WIN1V	Window 1 Vertical Dimensions
4000048h	2	R/W	WININ	Inside of Window 0 and 1
400004Ah	2	R/W	WINOUT	Inside of OBJ Window & Outside of Windows
400004Ch	2	W	MOSAIC	Mosaic Size
400004Eh	-	-	-	Not used
4000050h	2	R/W	BLDCNT	Color Special Effects Selection
4000052h	2	W	BLDALPHA	Alpha Blending Coefficients
4000054h	2	W	BLDY	Brightness (Fade-In/Out) Coefficient
4000056h	-	-	-	Not used

Sound Registers

4000060h	2	R/W	SOUND1CNT_L	Channel 1 Sweep register	(NR10)
4000062h	2	R/W	SOUND1CNT_H	Channel 1 Duty/Length/Envelope	(NR11, NR12)
4000064h	2	R/W	SOUND1CNT_X	Channel 1 Frequency/Control	(NR13, NR14)
4000066h	-	-	-	Not used	
4000068h	2	R/W	SOUND2CNT_L	Channel 2 Duty/Length/Envelope	(NR21, NR22)
400006Ah	-	-	-	Not used	
400006Ch	2	R/W	SOUND2CNT_H	Channel 2 Frequency/Control	(NR23, NR24)
400006Eh	-	-	-	Not used	
4000070h	2	R/W	SOUND3CNT_L	Channel 3 Stop/Wave RAM select	(NR30)
4000072h	2	R/W	SOUND3CNT_H	Channel 3 Length/Volume	(NR31, NR32)
4000074h	2	R/W	SOUND3CNT_X	Channel 3 Frequency/Control	(NR33, NR34)
4000076h	-	-	-	Not used	
4000078h	2	R/W	SOUND4CNT_L	Channel 4 Length/Envelope	(NR41, NR42)
400007Ah	-	-	-	Not used	
400007Ch	2	R/W	SOUND4CNT_H	Channel 4 Frequency/Control	(NR43, NR44)
400007Eh	-	-	-	Not used	
4000080h	2	R/W	SOUNDCNT_L	Control Stereo/Volume/Enable	(NR50, NR51)
4000082h	2	R/W	SOUNDCNT_H	Control Mixing/DMA Control	
4000084h	2	R/W	SOUNDCNT_X	Control Sound on/off	(NR52)

4000086h	-	-		Not used
4000088h	2	BIOS	SOUNDBIAS	Sound PWM Control
400008Ah	..	-	-	Not used
4000090h	2x10h	R/W	WAVE_RAM	Channel 3 Wave Pattern RAM (2 banks!!)
40000A0h	4	W	FIFO_A	Channel A FIFO, Data 0-3
40000A4h	4	W	FIFO_B	Channel B FIFO, Data 0-3
40000A8h	-	-		Not used

DMA Transfer Channels

40000B0h	4	W	DMA0SAD	DMA 0 Source Address
40000B4h	4	W	DMA0DAD	DMA 0 Destination Address
40000B8h	2	W	DMA0CNT_L	DMA 0 Word Count
40000BAh	2	R/W	DMA0CNT_H	DMA 0 Control
40000BCh	4	W	DMA1SAD	DMA 1 Source Address
40000C0h	4	W	DMA1DAD	DMA 1 Destination Address
40000C4h	2	W	DMA1CNT_L	DMA 1 Word Count
40000C6h	2	R/W	DMA1CNT_H	DMA 1 Control
40000C8h	4	W	DMA2SAD	DMA 2 Source Address
40000CCh	4	W	DMA2DAD	DMA 2 Destination Address
40000D0h	2	W	DMA2CNT_L	DMA 2 Word Count
40000D2h	2	R/W	DMA2CNT_H	DMA 2 Control
40000D4h	4	W	DMA3SAD	DMA 3 Source Address
40000D8h	4	W	DMA3DAD	DMA 3 Destination Address
40000DCh	2	W	DMA3CNT_L	DMA 3 Word Count
40000DEh	2	R/W	DMA3CNT_H	DMA 3 Control
40000E0h	-	-		Not used

Timer Registers

4000100h	2	R/W	TM0CNT_L	Timer 0 Counter/Reload
4000102h	2	R/W	TM0CNT_H	Timer 0 Control
4000104h	2	R/W	TM1CNT_L	Timer 1 Counter/Reload
4000106h	2	R/W	TM1CNT_H	Timer 1 Control
4000108h	2	R/W	TM2CNT_L	Timer 2 Counter/Reload
400010Ah	2	R/W	TM2CNT_H	Timer 2 Control
400010Ch	2	R/W	TM3CNT_L	Timer 3 Counter/Reload
400010Eh	2	R/W	TM3CNT_H	Timer 3 Control
4000110h	-	-		Not used

Serial Communication (1)

4000120h	4	R/W	SIODATA32	SIO Data (Normal-32bit Mode; shared with below)
4000120h	2	R/W	SIOMULTI0	SIO Data 0 (Parent) (Multi-Player Mode)
4000122h	2	R/W	SIOMULTI1	SIO Data 1 (1st Child) (Multi-Player Mode)
4000124h	2	R/W	SIOMULTI2	SIO Data 2 (2nd Child) (Multi-Player Mode)
4000126h	2	R/W	SIOMULTI3	SIO Data 3 (3rd Child) (Multi-Player Mode)
4000128h	2	R/W	SIOCNT	SIO Control Register
400012Ah	2	R/W	SIOMLT_SEND	SIO Data (Local of MultiPlayer; shared below)
400012Ah	2	R/W	SIODATA8	SIO Data (Normal-8bit and UART Mode)
400012Ch	-	-		Not used

Keypad Input

4000130h	2	R	KEYINPUT	Key Status
4000132h	2	R/W	KEYCNT	Key Interrupt Control

Serial Communication (2)

4000134h	2	R/W	RCNT	SIO Mode Select/General Purpose Data
4000136h	-	-	IR	Ancient - Infrared Register (Prototypes only)
4000138h	-	-		Not used
4000140h	2	R/W	JOYCNT	SIO JOY Bus Control
4000142h	-	-		Not used
4000150h	4	R/W	JOY_RECV	SIO JOY Bus Receive Data
4000154h	4	R/W	JOY_TRANS	SIO JOY Bus Transmit Data
4000158h	2	R/?	JOYSTAT	SIO JOY Bus Receive Status
400015Ah	-	-		Not used

Interrupt, Waitstate, and Power-Down Control

4000200h	2	R/W	IE	Interrupt Enable Register
4000202h	2	R/W	IF	Interrupt Request Flags / IRQ Acknowledge
4000204h	2	R/W	WAITCNT	Game Pak Waitstate Control
4000206h	-	-		Not used
4000208h	2	R/W	IME	Interrupt Master Enable Register

400020Ah	-	-		Not used
4000300h	1	R/W	POSTFLG	Undocumented - Post Boot Flag
4000301h	1	W	HALTCNT	Undocumented - Power Down Control
4000302h	-	-		Not used
4000410h	?	?	?	Undocumented - Purpose Unknown / Bug ??? 0FFh
4000411h	-	-		Not used
4000800h	4	R/W	?	Undocumented - Internal Memory Control (R/W)
4000804h	-	-		Not used
4xx0800h	4	R/W	?	Mirrors of 4000800h (repeated each 64K)

All further addresses at 4XXXXXXh are unused and do not contain mirrors of the I/O area, with the only exception that 4000800h is repeated each 64K (ie. mirrored at 4010800h, 4020800h, etc.)