

General Purpose Register (Cont.)

G E N E R A L W O R K I N G R E G I S T E R	7	0	Address
	R0		0x00
	R1		0x01
	R2		0x02
	...		
	R13		0x0D
	R14		0x0E
	R15		0x0F
	R16		0x10
	R17		0x11
	...		
	R26		0x1A
	R27		0x1B
	R28		0x1C
	R29		0x1D
	R30		0x1E
	R31		0x1F
			X Register Low Byte
			X Register High Byte
			Y Register Low Byte
			Y Register High Byte
			Z Register Low Byte
			Z Register High Byte

Figure 3. General Purpose Register

Most of the instructions operating on the Register File have direct access to all registers, and most of them are single cycle instructions. As shown in the figure above, each register is also assigned a data memory address, mapping them directly into the first 32 locations of the user Data Space. Although not being physically implemented as SRAM locations, this memory organization provides great flexibility in access of the registers, as the X-, Y- and Z-Pointer registers can be set to index any register in the file.

X/Y/Z Register

Registers R26...R31 can be combined in pairs to form three 16-bit registers. These three 16-bit registers are mainly used as address pointers for indirect addressing access. The X/Y/Z registers are structured as follows:

	15	XH		XL	0
X REGISTER	7	0	7	0	
	R27 (0x1B)		R26 (0x1A)		
	15	YH		YL	0
Y REGISTER	7	0	7	0	
	R29 (0x1D)		R28 (0x1C)		
	15	ZH		ZL	0
Z REGISTER	7	0	7	0	
	R31 (0x1F)		R30 (0x1E)		

These registers are used as fixed offset, auto-increment, and auto-decrement address pointers in different addressing modes. See the Instruction Description section for details.