Signal Definition for SCPU

ALUop	**ALU Operation Code**		
00000	Bitwise AND	01001	a × b
00001	Bitwise OR	01010	Unsigned a × b
00010	Bitwise NOR	01011	a / b
00011	Bitwise XOR	01100	Unsigned a / b
00100	a + b	01101	b << a
00101	Unsigned a + b	01110	b >> a
00110	a – b	01111	b >>> a
00111	Unsigned a – b	10000	Set Less Than
01000	Reserved	10001	Unsigned SLT
10010	HI = a	10011	LO = a

ALUctrl[1:0]	**Extra ALU Control Signal**
ALUctrl[0]=0	Shift = Shift Amount
ALUctrl[0]=1	Shift = $rs
ALUctrl[1]=0	Normal ALU input (a,b)
ALUctrl[1]=1	Exchanged ALU input (b,a)

RegDst	**Selection for Destination Register**
00	$rt
01	$rd
10	$31

ALUsrcB	**ALU Input B Source Selection**
00	Register file port B
01	Immediate value
10	zero

RegWrite	Write Enable to Register File
0	Do not write to Register file
1	Write to Register file

MemtoReg	Write Memory Data to Register File
0	Write ALU data to Register file
1	Write Memory data to Register file

MemWrite	Memory Write Enable
0	Do not write Data to Memory
1	Write Data to Memory

DatWidth	Data Width for Memory Access
000	32-bit Word
010	16-bit Halfword
011	8-bit Byte
110	16-bit Halfword /w Sign Ext
111	8-bit Byte /w Sign Ext

Jump	Jump Address Source
00	Do not use Jump address
01	Use Pseudo Jump address format
10	Use $rs

Branch	**Branch Option & Address Source**
000	Use PC+4
011	Unconditional Branch to PC+imm16
100	Branch if zero
101	Branch if not zero
110	Branch if not positive
111	Branch if positive

RegDatSel	**To Select Data Source for Register Write**
00	Write ALU/MEM Result to Register file
01	Write LO to Register file
10	Write HI to Register file
11	Write PC to Register file

EXTmode	**Immediate Data Extension Mode**
0	Zero Extension
1	Sign Extension