

Program Control

PC

_jump

Specify whether to jump.
0: no jump
1: jump

J

_rel

Specify the jump mode.
0: absolute address
1: rel offset

R

_addr_ext_mode

E

Specify the mode of address extend
0: signed extend
1: concat with PC

_s_next_PC[2]

NP

Specify next PC if jump.
00: the second register
01: immediate field in instr
10: addr field in instr
11: UNDEFINED

Decoder

DEC

_ext_signed

E

Specify how to extend the immediate.
0: unsigned
1: signed

Memory Control

MEM

_mem_en

E

Indicate whether memory read/write operation is enabled. 1 for yes, 0 for no.

_mem_rw

W

Specify whether to read or to write.
0: read memory
1: write memory

Registers

REG

_r1_sel[2]

R1

Specify the first register to read.
00: zero register (\$0)
01: rs
10: rt
11: rd

_r2_sel[2]

R2

Specify the second register to read.
00: zero register (\$0)
01: rs
10: rt
11: rd

_rw_sel[2]

RW

Specify the register to write.
00: given by _w_reg
01: rs
10: rt
11: rd

_w_reg

W_REG

Specify the register to write, if _rw_sel = 11.

_s_regw_data[2]

WD

Specify the data to write.
00: PC+8 (when linking)
01: data bus
10: ALU result
11: UNDEFINED

ALU

ALU

_s_alu_op2[2]

O2

Specify the second operand.
00: 0
01: the second register
10: shamt
11: extended immediate

_alu_funcnt[4]

FUNC

Specify ALU function.

| Hi/Lo | 000 | 001 | 010 | 011 | 100 | 101 | 110 | 111 |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|
| 0 | 0 | add | lt | sub | and | or | xor | nor |
| 1 | <=0 | | lt | ltu | sll | sr1 | | |