| Control Unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| function | inputs | outputs | | | | | | |
| | opcode | Branch | MemRead | MemtoReg[1-0] | ALUOp[1-0] | MemWrite | ALUSrc[1-0] | RegWrite |
| LW | 0000011 | 0 | 1 | 01 | 00 | 0 | 01 | 1 |
| ADDI | 0010011 | 0 | 0 | 00 | 10 | 0 | 01 | 1 |
| ANDI | 0010011 | 0 | 0 | 00 | 10 | 0 | 01 | 1 |
| SRAI | 0010011 | 0 | 0 | 00 | 10 | 0 | 01 | 1 |
| AUIPC | 0010111 | 0 | 0 | 00 | 11 | 0 | 11 | 1 |
| SW | 0100011 | 0 | 0 | 00 | 00 | 1 | 00 | 0 |
| ADD | 0110011 | 0 | 0 | 00 | 10 | 0 | 00 | 1 |
| SLT | 0110011 | 0 | 0 | 00 | 10 | 0 | 00 | 1 |
| XOR | 0110011 | 0 | 0 | 00 | 10 | 0 | 00 | 1 |
| LUI | 0110111 | 0 | 0 | 11 | 11 | 0 | 01 | 1 |
| BEQ | 1100011 | 1 | 0 | 00 | 01 | 0 | 00 | 0 |
| JAL | 1101111 | 1 | 0 | 10 | 11 | 0 | 01 | 1 |
| ABS | 0110011 | 0 | 0 | 00 | 10 | 0 | 00 | 1 |

| ALU Control Unit | | |
|---|---|---|
| function | inputs | |
| | ALUOp | inst[30,14-12] |
| LW | 00 | 0010 |
| ADDI | 10 | 1000 |
| ANDI | 10 | 0111 |
| SRAI | 10 | 1101 |
| AUIPC | 11 | XXXX |
| SW | 00 | 0010 |
| ADD | 10 | 0000 |
| SLT | 10 | 0010 |
| XOR | 10 | 0100 |
| LUI | 11 | XXXX |
| BEQ | 01 | 0000 |
| JAL | 11 | XXXX |
| ABS | 10 | 0001 |

| outputs |
| --- |
| ALUCtrl |
| 0010 |
| 0010 |
| 0000 |
| 0100 |
| 0010 |
| 0010 |
| 0010 |
| 0110 |
| 0011 |
| 0010 |
| 0110 |
| 0010 |
| 0101 |