

| Data Path Control Signals |        |                                       |
|---------------------------|--------|---------------------------------------|
| Signal Name               | # bits | Signal Values                         |
| LD_MAR                    | 1      | NO, LOAD                              |
| LD_MDR                    | 1      | NO, LOAD                              |
| LD_IR                     | 1      | NO, LOAD                              |
| LD_BEN                    | 1      | NO, LOAD                              |
| LD_CC                     | 1      | NO, LOAD                              |
| LD_REG                    | 1      | NO, LOAD                              |
| LD_PC                     | 1      | NO, LOAD                              |
| LD_LED                    | 1      | NO, LOAD (for PAUSE instruction)      |
| GatePC                    | 1      | NO, YES                               |
| GateMDR                   | 1      | NO, YES                               |
| GateALU                   | 1      | NO, YES                               |
| GateMARMUX                | 1      | NO, YES                               |
| ALUK                      | 2      | ADD, AND, NOT, PASSA                  |
| PCMUX                     | 2      | PC + 1 ;select pc+1                   |
|                           |        | BUS ;select value from bus            |
|                           |        | ADDER ;select output of address adder |
| DRMUX                     | 1      | IR[11:9] ;destination IR[11:9]        |
|                           |        | 3'b111 ;destination R7                |
| SR1MUX                    | 1      | IR[11:9] ;source IR[11:9]             |
|                           |        | IR[8:6] ;source IR[8:6]               |
| SR2MUX                    | 1      | SR2 OUT ;value from SR2               |
|                           |        | imm5 ;immediate value                 |
| ADDR1MUX                  | 1      | PC, BaseR                             |
| ADDR2MUX                  | 2      | ZERO ;select the value zero           |
|                           |        | offset6 ;select SEXT[IR[5:0]]         |
|                           |        | PCoffset9 ;select SEXT[IR[8:0]]       |
|                           |        | PCoffset11 ;select SEXT[IR[10:0]]     |
| Mem_OE                    | 1      | NO, YES (active low)                  |
| Mem_WE                    | 1      | NO, YES (active low)                  |