

| VIRTUAL16 Instruction Set Table |                 |                 |                 |                 |                 |                 |                 |                 |
|---------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| HI/LO                           | 0               | 1               | 2               | 3               | 4               | 5               | 6               | 7               |
| 0                               | RET             | RTS             | CLC             | SEC             | MOV Rs, Rd      | MOV @Rs, Rd     | MOV Rs, @Rd     | MOV +@Rs, Rd    |
| 10                              | XOR Rd, Rs      | ADD Rd, Rs      | ADC Rd, Rs      | SUB Rd, Rs      | SBC Rd, Rs      | SMUL Rd, Rs     | UMUL Rd, Rs     | CMP Rd, Rs      |
| 20                              | RRC Rd, #COUNT  | JMP R Rd        | JSR ADDR        | NJSR ADDR       | JMP ADDR        | BCC OFFSET      | BCS OFFSET      | BRA OFFSET      |
| 30                              | PUSH R0         | PUSH R1         | PUSH R2         | PUSH R3         | PUSH R4         | PUSH R5         | PUSH R6         | PUSH R7         |
| 40                              | POP R0          | POP R1          | POP R2          | POP R3          | POP R4          | POP R5          | POP R6          | POP R7          |
| 50                              | MOV #VAL, R0.L  | MOV #VAL, R1.L  | MOV #VAL, R2.L  | MOV #VAL, R3.L  | MOV #VAL, R4.L  | MOV #VAL, R5.L  | MOV #VAL, R6.L  | MOV #VAL, R7.L  |
| 60                              | MOV #VAL, R0.H  | MOV #VAL, R1.H  | MOV #VAL, R2.H  | MOV #VAL, R3.H  | MOV #VAL, R4.H  | MOV #VAL, R5.H  | MOV #VAL, R6.H  | MOV #VAL, R7.H  |
| 70                              | MOV #VAL, R0    | MOV #VAL, R1    | MOV #VAL, R2    | MOV #VAL, R3    | MOV #VAL, R4    | MOV #VAL, R5    | MOV #VAL, R6    | MOV #VAL, R7    |
| 80                              | MOV ADDR, R0    | MOV ADDR, R1    | MOV ADDR, R2    | MOV ADDR, R3    | MOV ADDR, R4    | MOV ADDR, R5    | MOV ADDR, R6    | MOV ADDR, R7    |
| 90                              | MOV R0, ADDR    | MOV R1, ADDR    | MOV R2, ADDR    | MOV R3, ADDR    | MOV R4, ADDR    | MOV R5, ADDR    | MOV R6, ADDR    | MOV R7, ADDR    |
| A0                              | BNM1 R0, OFFSET | BNM1 R1, OFFSET | BNM1 R2, OFFSET | BNM1 R3, OFFSET | BNM1 R4, OFFSET | BNM1 R5, OFFSET | BNM1 R6, OFFSET | BNM1 R7, OFFSET |
| B0                              | BM1 R0, OFFSET  | BM1 R1, OFFSET  | BM1 R2, OFFSET  | BM1 R3, OFFSET  | BM1 R4, OFFSET  | BM1 R5, OFFSET  | BM1 R6, OFFSET  | BM1 R7, OFFSET  |
| C0                              | BMI R0, OFFSET  | BMI R1, OFFSET  | BMI R2, OFFSET  | BMI R3, OFFSET  | BMI R4, OFFSET  | BMI R5, OFFSET  | BMI R6, OFFSET  | BMI R7, OFFSET  |
| D0                              | BPL R0, OFFSET  | BPL R1, OFFSET  | BPL R2, OFFSET  | BPL R3, OFFSET  | BPL R4, OFFSET  | BPL R5, OFFSET  | BPL R6, OFFSET  | BPL R7, OFFSET  |
| E0                              | BNE R0, OFFSET  | BNE R1, OFFSET  | BNE R2, OFFSET  | BNE R3, OFFSET  | BNE R4, OFFSET  | BNE R5, OFFSET  | BNE R6, OFFSET  | BNE R7, OFFSET  |
| F0                              | BEQ R0, OFFSET  | BEQ R1, OFFSET  | BEQ R2, OFFSET  | BEQ R3, OFFSET  | BEQ R4, OFFSET  | BEQ R5, OFFSET  | BEQ R6, OFFSET  | BEQ R7, OFFSET  |

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|---------------------------------|-----------------|-----------------|------------------|------------------|------------------|------------------|------------------|------------------|
| HI/LO                           | 8               | 9               | A                | B                | C                | D                | E                | F                |
| 0                               | MOV Rs, +@Rd    | MOV Rs.H, Rd.H  | MOV Rs.H, Rd.L   | MOV Rs.L, Rd.H   | MOV Rs.L, Rd.L   | SWAP Rs, Rd      | AND Rd, Rs       | OR Rd, Rs        |
| 10                              | INC Rd, #COUNT  | DEC Rd, #COUNT  | ASR Rd, #COUNT   | LSL Rd, #COUNT   | LSR Rd, #COUNT   | ROL Rd, #COUNT   | RLC Rd, #COUNT   | ROR Rd, #COUNT   |
| 20                              | NOP             | NOP             | NOP              | NOP              | NOP              | NOP              | NOP              | NOP              |
| 30                              | PUSH R8         | PUSH R9         | PUSH R10         | PUSH R11         | PUSH R12         | PUSH R13         | PUSH R14         | PUSH R15         |
| 40                              | POP R8          | POP R9          | POP R10          | POP R11          | POP R12          | POP R13          | POP R14          | POP R15          |
| 50                              | MOV #VAL, R8.L  | MOV #VAL, R9.L  | MOV #VAL, R10.L  | MOV #VAL, R11.L  | MOV #VAL, R12.L  | MOV #VAL, R13.L  | MOV #VAL, R14.L  | MOV #VAL, R15.L  |
| 60                              | MOV #VAL, R8.H  | MOV #VAL, R9.H  | MOV #VAL, R10.H  | MOV #VAL, R11.H  | MOV #VAL, R12.H  | MOV #VAL, R13.H  | MOV #VAL, R14.H  | MOV #VAL, R15.H  |
| 70                              | MOV #VAL, R8    | MOV #VAL, R9    | MOV #VAL, R10    | MOV #VAL, R11    | MOV #VAL, R12    | MOV #VAL, R13    | MOV #VAL, R14    | MOV #VAL, R15    |
| 80                              | MOV ADDR, R8    | MOV ADDR, R9    | MOV ADDR, R10    | MOV ADDR, R11    | MOV ADDR, R12    | MOV ADDR, R13    | MOV ADDR, R14    | MOV ADDR, R15    |
| 90                              | MOV R8, ADDR    | MOV R9, ADDR    | MOV R10, ADDR    | MOV R11, ADDR    | MOV R12, ADDR    | MOV R13, ADDR    | MOV R14, ADDR    | MOV R15, ADDR    |
| A0                              | BNM1 R8, OFFSET | BNM1 R9, OFFSET | BNM1 R10, OFFSET | BNM1 R11, OFFSET | BNM1 R12, OFFSET | BNM1 R13, OFFSET | BNM1 R14, OFFSET | BNM1 R15, OFFSET |
| B0                              | BM1 R8, OFFSET  | BM1 R9, OFFSET  | BM1 R10, OFFSET  | BM1 R11, OFFSET  | BM1 R12, OFFSET  | BM1 R13, OFFSET  | BM1 R14, OFFSET  | BM1 R15, OFFSET  |
| C0                              | BMI R8, OFFSET  | BMI R9, OFFSET  | BMI R10, OFFSET  | BMI R11, OFFSET  | BMI R12, OFFSET  | BMI R13, OFFSET  | BMI R14, OFFSET  | BMI R15, OFFSET  |
| D0                              | BPL R8, OFFSET  | BPL R9, OFFSET  | BPL R10, OFFSET  | BPL R11, OFFSET  | BPL R12, OFFSET  | BPL R13, OFFSET  | BPL R14, OFFSET  | BPL R15, OFFSET  |
| E0                              | BNE R8, OFFSET  | BNE R9, OFFSET  | BNE R10, OFFSET  | BNE R11, OFFSET  | BNE R12, OFFSET  | BNE R13, OFFSET  | BNE R14, OFFSET  | BNE R15, OFFSET  |
| F0                              | BEQ R8, OFFSET  | BEQ R9, OFFSET  | BEQ R10, OFFSET  | BEQ R11, OFFSET  | BEQ R12, OFFSET  | BEQ R13, OFFSET  | BEQ R14, OFFSET  | BEQ R15, OFFSET  |