Micro code EEPROM layout

| | Instruction code | | | | | | Step | | | Flags | | Left | | Direct | | To inverters | | | | | | Middle | | Direct | | To inverters | | | | | | Right | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | CF | ZF | | | CE | RI | Ral | RO | II | J | CO | AI | | | S | HLT | AO | AIO | BI | BO | OI | FI | | | INC | DCR | SUP | SDN | SA | SO | XI | XO |
| | A8 | A7 | A6 | A5 | A4 | A3 | A2 | A1 | A0 | A9 | A10 | A11 | A12 | D7 | D6 | Y5 | Y4 | Y3 | Y2 | Y1 | Y0 | A11 | A12 | D7 | D6 | Y5 | Y4 | Y3 | Y2 | Y1 | Y0 | A11 | A12 | D7 | D6 | D5 | D4 | D3 | Y2 | D1 | Y0 |
| NOP<br>Is also the start of each instruction | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | X | X | 0 | 0 | | | 1 | | | | 1 | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 0 | 0 | 1 | X | X | 0 | 0 | 1 | | | 1 | 1 | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| LDA | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | X | X | 0 | 0 | | | 1 | | | | 1 | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 0 | 1 | 1 | X | X | 0 | 0 | 1 | | 1 | 1 | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 1 | 0 | 0 | X | X | 0 | 0 | | | | 1 | | | | 1 | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| ADD<br>Add what is at memory address to A | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | X | X | 0 | 0 | | | 1 | | | | 1 | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 0 | 1 | 1 | X | X | 0 | 0 | 1 | | 1 | 1 | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 1 | 0 | 0 | X | X | 0 | 0 | | | | 1 | | | | | 0 | 1 | | | | | 1 | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 1 | 0 | 1 | X | X | 0 | 0 | | | | | | | | 1 | 0 | 1 | | | | 1 | | | | 1 | 1 | 0 | | | | | | | | |
| SUB<br>Subtract what is at memory address from A | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | X | X | 0 | 0 | | | 1 | | | | 1 | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 0 | 1 | 1 | X | X | 0 | 0 | 1 | | 1 | 1 | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 1 | 0 | 0 | X | X | 0 | 0 | | | | 1 | | | | | 0 | 1 | | | | | 1 | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 1 | 0 | 1 | X | X | 0 | 0 | | | | | | | | 1 | 0 | 1 | 1 | | | 1 | | | | 1 | 1 | 0 | | | | | | | | |
| STA | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | X | X | 0 | 0 | | | 1 | | | | 1 | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 0 | 1 | 1 | X | X | 0 | 0 | 1 | | 1 | 1 | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 1 | 0 | 0 | X | X | 0 | 0 | | 1 | | | | | | | 0 | 1 | | | 1 | | | | | | 1 | 0 | | | | | | | | |
| LDI<br>Load direct into A | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | X | X | 0 | 0 | | | 1 | | | | 1 | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 0 | 1 | 1 | X | X | 0 | 0 | 1 | | | 1 | | | | 1 | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| JMP<br>Jump to address | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | X | X | 0 | 0 | | | 1 | | | | 1 | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 0 | 1 | 1 | X | X | 0 | 0 | | | | 1 | | 1 | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| JC<br>Jump to address if carry out | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | X | X | 0 | 0 | | | 1 | | | | 1 | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 0 | 1 | 1 | 0 | X | 0 | 0 | 1 | | | | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 0 | 1 | 1 | 1 | X | 0 | 0 | | | | 1 | | 1 | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| JZ<br>Jump to address if zero | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | X | X | 0 | 0 | | | 1 | | | | 1 | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 0 | 1 | 1 | X | 0 | 0 | 0 | 1 | | | | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 0 | 1 | 1 | X | 1 | 0 | 0 | | | | 1 | | 1 | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| LDB | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | X | X | 0 | 0 | | | 1 | | | | 1 | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 0 | 1 | 1 | X | X | 0 | 0 | 1 | | 1 | 1 | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 1 | 0 | 0 | X | X | 0 | 0 | | | | 1 | | | | | 0 | 1 | | | | | 1 | | | | 1 | 0 | | | | | | | | |
| STB | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | X | X | 0 | 0 | | | 1 | | | | 1 | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 0 | 1 | 1 | X | X | 0 | 0 | 1 | | 1 | 1 | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |

| | Instruction code | | | | | | Step | | | Flags | | Left | | Direct | | To inverters | | | | | | Middle | | Direct | | To inverters | | | | | | | Right | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | CF | ZF | | | CE | RI | Ral | RO | II | J | CO | AI | | | S | HLT | AO | AIO | BI | BO | OI | FI | | | | | | | | | | | |
| | A8 | A7 | A6 | A5 | A4 | A3 | A2 | A1 | A0 | A9 | A10 | A11 | A12 | D7 | D6 | Y5 | Y4 | Y3 | Y2 | Y1 | Y0 | A11 | A12 | D7 | D6 | Y5 | Y4 | Y3 | Y2 | Y1 | Y0 | A11 | A12 | D7 | D6 | D5 | D4 | D3 | Y2 | D1 | Y0 |
| | | | | | | | 1 | 0 | 0 | X | X | 0 | 0 | | 1 | | | | | | | 0 | 1 | | | | | | 1 | | | 1 | 0 | | | | | | | | |
| LDIB<br>Load direct into B | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | X | X | 0 | 0 | | | 1 | | | | 1 | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 0 | 1 | 1 | X | X | 0 | 0 | 1 | | | 1 | | | | | 0 | 1 | | | | | 1 | | | | 1 | 0 | | | | | | | | |
| OUT | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | X | X | 0 | 0 | | | | | | | | | 0 | 1 | | | 1 | | | | 1 | | 1 | 0 | | | | | | | | |
| OUTB | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | X | X | 0 | 0 | | | | | | | | | 0 | 1 | | | | | | 1 | 1 | | 1 | 0 | | | | | | | | |
| OUTX | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | X | X | 0 | 0 | | | | | | | | | 0 | 1 | | | | | | | 1 | | 1 | 0 | | | | | | | | 1 |
| HLT | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | X | X | 0 | 0 | | | | | | | | | 0 | 1 | | 1 | | | | | | | 1 | 0 | | | | | | | | |
| LDX | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | X | X | 0 | 0 | | | 1 | | | | 1 | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 0 | 1 | 1 | X | X | 0 | 0 | 1 | | 1 | 1 | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 1 | 0 | 0 | X | X | 0 | 0 | | | | 1 | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | 1 | |
| STX | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | X | X | 0 | 0 | | | 1 | | | | 1 | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 0 | 1 | 1 | X | X | 0 | 0 | 1 | | 1 | 1 | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 1 | 0 | 0 | X | X | 0 | 0 | | 1 | | | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | 1 |
| LDIX | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | X | X | 0 | 0 | | | 1 | | | | 1 | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 0 | 1 | 1 | X | X | 0 | 0 | 1 | | | 1 | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | 1 | |
| PSH | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | X | X | 0 | 0 | | | 1 | | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | 1 | 1 | | |
| | | | | | | | 0 | 1 | 1 | X | X | 0 | 0 | | 1 | | | | | | | 0 | 1 | | | 1 | | | | | | 1 | 0 | | | 1 | | 1 | | | |
| POP | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | X | X | 0 | 0 | | | | | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | 1 | | | | |
| | | | | | | | 0 | 1 | 1 | X | X | 0 | 0 | | | 1 | | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | 1 | 1 | | |
| | | | | | | | 1 | 0 | 0 | X | X | 0 | 0 | | | | 1 | | | | 1 | 0 | 1 | | | | | | | | | 1 | 0 | | | | | 1 | | | |
| PSHB | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | X | X | 0 | 0 | | | 1 | | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | 1 | 1 | | |
| | | | | | | | 0 | 1 | 1 | X | X | 0 | 0 | | 1 | | | | | | | 0 | 1 | | | | | | 1 | | | 1 | 0 | | | 1 | | 1 | | | |
| POPB | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | X | X | 0 | 0 | | | | | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | 1 | | | | |
| | | | | | | | 0 | 1 | 1 | X | X | 0 | 0 | | | 1 | | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | 1 | 1 | | |
| | | | | | | | 1 | 0 | 0 | X | X | 0 | 0 | | | | 1 | | | | | 0 | 1 | | | | | 1 | | | | 1 | 0 | | | | | 1 | | | |
| JSR | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | X | X | 0 | 0 | | | 1 | | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | 1 | 1 | | |
| | | | | | | | 0 | 1 | 1 | X | X | 0 | 0 | | 1 | | | | | 1 | | 0 | 1 | | | | | | | | | 1 | 0 | | | 1 | | 1 | | | |
| | | | | | | | 1 | 0 | 0 | X | X | 0 | 0 | | | 1 | | | | 1 | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | 1 | 0 | 1 | X | X | 0 | 0 | | | | 1 | | 1 | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| RTS | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | X | X | 0 | 0 | | | | | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | 1 | | | | |
| | | | | | | | 0 | 1 | 1 | X | X | 0 | 0 | | | 1 | | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | 1 | 1 | | |
| | | | | | | | 1 | 0 | 0 | X | X | 0 | 0 | | | | 1 | | 1 | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | 1 | | | |
| | | | | | | | 1 | 0 | 1 | X | X | 0 | 0 | 1 | | | | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |

| | Instruction code | | | | | | Step | | | Flags | | Left | | Direct | | To inverters | | | | | | Middle | | Direct | | To inverters | | | | | | Right | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | CF | ZF | | | CE | RI | RaI | RO | II | J | CO | AI | | | S | HLT | AO | AIO | BI | BO | OI | FI | | | INC | DCR | SUP | SDN | SA | SO | XI | XO |
| | A8 | A7 | A6 | A5 | A4 | A3 | A2 | A1 | A0 | A9 | A10 | A11 | A12 | D7 | D6 | Y5 | Y4 | Y3 | Y2 | Y1 | Y0 | A11 | A12 | D7 | D6 | Y5 | Y4 | Y3 | Y2 | Y1 | Y0 | A11 | A12 | D7 | D6 | D5 | D4 | D3 | Y2 | D1 | Y0 |
| INCX | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | X | X | 0 | 0 | | | | | | | | | 0 | 1 | | | | | | | | | 1 | 0 | 1 | | | | | | | |
| | | | | | | | 0 | 1 | 1 | X | X | 0 | 0 | | | | | | | | | 0 | 1 | | | | | | | | 1 | 1 | 0 | | | | | | | | |
| DECX | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | X | X | 0 | 0 | | | | | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | 1 | | | | | | |
| | | | | | | | 0 | 1 | 1 | X | X | 0 | 0 | | | | | | | | | 0 | 1 | | | | | | | | 1 | 1 | 0 | | | | | | | | |
| | | | | | | | | | | X | X | 0 | 0 | | | | | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | | | | X | X | 0 | 0 | | | | | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |
| | | | | | | | | | | X | X | 0 | 0 | | | | | | | | | 0 | 1 | | | | | | | | | 1 | 0 | | | | | | | | |