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| --- | --- | --- | --- | --- | --- | --- |
| Instruction (5) | Parameter (3) | Data (3 or 8) | Data (8) | Opcode | Name | Description |
| Mov | Reg | Reg | - | 00000 | Move | Requires push to stack. Used as Nop. |
| Wait | - | - | - | 00001 | Halt |  |
| Lda | Reg | Addr | Addr | 00010 | Load Address | [Seg][Addr] |
| Ldr | Reg | Reg | - | 00011 | Load Register | “” |
| Ldi | Reg | Value | - | 00100 | Load Immediate | -128 to 127 (00h to FFh) |
| Sta | Reg | Addr | Addr | 00101 | Store Address | [Seg][Addr] |
| Str | Reg | Reg | - | 00110 | Store Register | “” |
| Push | Reg | - | - | 00111 | Push |  |
| Pop | Reg | - | - | 01000 | Pop |  |
| Call | Addr | Addr | Addr | 01001 | Call | Don’t use segment register. |
| Ret | - | - | - | 01010 | Return |  |
| Jmp | Addr | Addr | Addr | 01011 | Jump | Don’t use segment register. |
| Jc | Addr | Addr | Addr | 01100 | Jump if Carry | Jump if bellow. |
| Jz | Addr | Addr | Addr | 01101 | Jump if Zero | Jump if equal. |
| Jo | Addr | Addr | Addr | 01110 | Jump if Overflow |  |
| Jp | Addr | Addr | Addr | 01111 | Jump if Parity |  |
| Cmp | Reg | Reg | - | 10000 | Compare | Subtraction; discards results, updates flags. |
| Add | Reg | Reg | - | 10001 | Add | First register is A, seconds is B. |
| Adc | Reg | Reg | - | 10010 | Add with Carry | Use CF as carry input. |
| Inc | Reg | Reg | - | 10011 | Increment | Add 0 with carry high. |
| Sub | Reg | Reg | - | 10100 | Subtract |  |
| Sbb | Reg | Reg | - | 10101 | Sub with Borrow | Use CF as borrow input. |
| Dec | Reg | Reg | - | 10110 | Decrement | Add 0 with borrow high. |
| Shl | Reg | Reg | - | 10111 | Logical Shift Left |  |
| Rcl | Reg | Reg | - | 11000 | Rotate Carry Left |  |
| Not | Reg | Reg | - | 11001 | Negate |  |
| And | Reg | Reg | - | 11010 | Conjoin |  |
| Or | Reg | Reg | - | 11011 | Disjoin |  |
| Xor | Reg | Reg | - | 11100 | Exclusive Disjoin |  |
| Flg | Mode | - | - | 11101 | Flag Update | Choose a control flag to update. |
| Seg | Value | Value | - | 11110 | Segment | Update segment register. |
| Int | - | Value | - | 11111 | Interrupt | Choose interrupt to raise. |

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| Instruction (5) | Parameter (3) | Data (8 or 3) | Code | Name | Description |
| Mov | Reg | Reg | 00 | Move | Requires push to stack. Used as Nop. |
| Hlt | - | - | 01 | Halt |  |
| Lda | Reg | Addr | 02 | Load Address | [Seg][Addr] |
| Ldr | Reg | Reg | 03 | Load Register | “” |
| Ldi | Reg | Value | 04 | Load Immediate | -128 to 127 (00h to FFh) |
| Sta | Reg | Addr | 05 | Store Address | [Seg][Addr] |
| Str | Reg | Reg | 06 | Store Register | “” |
| Push | Reg | - | 07 | Push |  |
| Pop | Reg | - | 08 | Pop |  |
| Call | - | Addr | 09 | Call | [Seg][Addr] |
| Ret | - | - | 0A | Return |  |
| Jmp | - | Addr | 0B | Jump | [Seg][Addr] |
| Bnch | Mode | Addr | 0C | Branch | Cond jump. Choose flag to jump on. |
| Add | Reg | - | 0D | Add |  |
| Adc | Reg | - | 0E | Add with Carry | Use CF as carry input. |
| Inc | Reg | - | 0F | Increment | Add 0 with carry high. |
| Sub | Reg | - | 10 | Subtract |  |
| Sbb | Reg | - | 11 | Sub with Borrow | Use CF as borrow input. |
| Dec | Reg | - | 12 | Decrement | Add 0 with borrow high. |
| Shl | Reg | - | 13 | Logical Shift Left |  |
| Rcl | Reg | - | 14 | Rotate Carry Left |  |
| Not | Reg | - | 15 | Negate |  |
| And | Reg | - | 16 | Conjoin |  |
| Or | Reg | - | 17 | Disjoin |  |
| Xor | Reg | - | 18 | Exclusive Disjoin |  |
| Flg | Mode | - | 19 | Flag | Chose flag to update. |
| In | Dev | Reg | 1A | Input | Receive data from device to register. |
| Out | Dev | Reg | 1B | Output | Send data from register to device. |
| Send | Dev | Value | 1C | Send (Output) | Send literal data to device. |
| Int | - | Value | 1D | Interrupt | Choose interrupt to raise. |
| Seg | Value | Value | 1E | Segment | Update segment register. |
| Sec | Value | - | 1F | Segment Count | Inc or Dec segment. |