

INSTRUCTION SET / KOMUT SETİ

(ENGLISH MNEMONICS / TÜRKÇE KISALTMALAR)

| Transfer/Aktarma | |
|------------------|-----|
| MOV | AKT |
| LDA | YÜK |
| STA | YAZ |
| EXC | TKS |
| CHN | DĞŞ |

| Shift-Rotate/ Öteleme- Döndürme | |
|---------------------------------------|------|
| LSL | SOL |
| LSR | SAĞ |
| ASR | SAĞİ |
| ROL | SOLD |
| ROR | SAĞD |

| Logic/Mantıksal | |
|-----------------|------|
| AND | VE |
| OR | VEYA |
| XOR | YADA |
| CLR | SİL |
| SET | KUR |
| COM | TÜM |
| NEG | EKS |

| Directives/ Direktifler | |
|----------------------------|-----|
| ORG | BAŞ |
| EQU | EŞT |
| RMB | YER |
| DAT | VER |
| END | SON |

| Arithmetic/ Aritmetik | |
|--------------------------|------|
| ADD | TOP |
| ADC | TOPE |
| SUB | ÇIK |
| SUE | ÇIKE |
| MUL | ÇAR |
| DIV | BÖL |
| INC | ART |
| DEC | AZT |

| Operational/ Operasyonel | |
|-----------------------------|------|
| DAA | ONA |
| PSH | YİĞ |
| PUL | ÇEK |
| EIN | KİZ |
| DIN | KEN |
| NOP | GEÇ |
| INT | KES |
| RTS | DÖN |
| RTI | DÖNK |

| Branch-Compare/ Dallanma - Karşılaştırma | |
|--|------|
| CMP | KAR |
| BIT | SIN |
| BRA | DAL |
| JMP | BAĞ |
| JMC | BAĞK |
| BEQ | DEE |
| BNE | DED |
| BGT | DEB |
| BGE | DBE |
| BLT | DEK |
| BHI | DEI |
| BHE | DiE |

| Branch-Compare/ Dallanma - Karşılaştırma | |
|--|-------|
| BLO | DEU |
| BIO | DTV |
| BNO | DTY |
| BIC | DEV |
| BNC | DEY |
| BIH | DYV |
| BNH | DYY |
| BSR | ALT |
| JSR | ALTD |
| BSC | ALTK |
| JSC | ALTDK |
| DBNZ | ADED |

EDU-CPU INSTRUCTION SET

| Transfer | |
|----------|----------|
| MOV | Move |
| LDA | Load |
| STA | Store |
| EXC | Exchange |
| CHN | Change |

| Shift/Rotate | |
|--------------|------------------------|
| LSL | Logical shift left |
| LSR | Logical shift right |
| ASR | Arithmetic shift right |
| ROL | Rotate left |
| ROR | Rotate right |

| Logic | |
|-------|--------------|
| AND | And |
| OR | Or |
| XOR | Exclusive or |
| CLR | Clear |
| SET | Set |
| COM | Complement |
| NEG | Negate |

| First Operands |
|----------------|
| Ri |
| Rii |
| V |

| Directives | |
|------------|----------------------|
| ORG | Origin |
| EQU | Equal |
| RMB | Reserve memory bytes |
| DAT | Data |
| END | End |

| Arithmetic | |
|------------|---------------------|
| ADD | Add |
| ADC | Add with carry |
| SUB | Subtract |
| SUE | Subtract with carry |
| MUL | Multiply |
| DIV | Divide |
| INC | Increment |
| DEC | Decrement |

| Second Operands |
|-----------------|
| Rj |
| Rjj |
| V |
| VV |
| <Address> |
| <CD> |
| <SK+S> |
| <SK+S> + - R |
| <SK+CD+S> |
| <YG+S> |

| Operational | |
|-------------|----------------------------|
| DAA | Decimal adjust accumulator |
| PSH | Push |
| PUL | Pull |
| EIN | Enable interrupt |
| DIN | Disable interrupt |
| NOP | No operation |
| INT | Interrupt |
| RTS | Return from subroutine |
| RTI | Return from interrupt |

| Operand Symbols |
|----------------------------|
| V : Veri (8-bit data) |
| VV : 16-bit data |
| Ri, Rj : 8-bit register |
| Rii, Rjj : 16-bit register |
| S : Sıra (Index) |
| R: Range (incr/decr SK) |

| Branch - Compare | |
|------------------|----------------------------|
| CMP | Compare |
| BIT | Bit test |
| BRA | Branch (unconditional) |
| JMP | Jump (unconditional) |
| JMC | Jump conditionally |
| BEQ | Branch if equal |
| BNE | Branch if not equal |
| BGT | Branch if greater than |
| BGE | Branch if greater or equal |
| BLT | Branch if less than |
| BHI | Branch if higher |
| BHE | Branch if higher or equal |

| 8-bit Registers |
|-------------------|
| A, B, C, D |
| DK : Durum Kütüğü |

| 16-bit Registers |
|---------------------------------------|
| AB, CD |
| SK : Sıralama Kütüğü (Index Register) |
| YG : Yığın Göstergesi (Stack Pointer) |

| Branch - Compare | |
|------------------|------------------------------------|
| BLO | Branch if lower |
| BIO | Branch if overflow |
| BNO | Branch if not overflow |
| BIC | Branch if carry |
| BNC | Branch if not carry |
| BIH | Branch if half carry |
| BNH | Branch if not half carry |
| BSR | Branch to subroutine |
| JSR | Jump to subroutine |
| BSC | Branch to subroutine conditionally |
| JSC | Jump to subroutine conditionally |
| DBNZ | Decrease, branch if not zero |

| Status Flags (DK) |
|-------------------|
| E : Carry |
| Y : Half carry |
| S : Zero |
| N : Negative |
| T : Overflow |
| K : Interrupt |

ÖRNEK-MİB KOMUT SETİ

| Aktarma | |
|---------|----------|
| AKT | Aktar |
| YÜK | Yükle |
| YAZ | Yaz |
| TKS | Takas |
| DĞŞ | Değiştir |

| Direktifler | |
|-------------|-----------|
| BAŞ | Başlangıç |
| EŞT | Eşit |
| YER | Yer ayır |
| VER | Veri |
| SON | Son |

| Operasyonel | |
|-------------|---------------------------|
| ONA | Ondalık akümülatör ayarla |
| YİĞ | Yığ |
| ÇEK | Çek |
| KİZ | Kesmeye izin ver |
| KEN | Kesmeyi engelle |
| GEÇ | Geç |
| KES | Kesme |
| DÖN | Geri dön |
| DÖNK | Kesmeden geri dön |

| Dallanma - Karşılaştırma | |
|--------------------------|--------------------------------------|
| KAR | Karşılaştır |
| SIN | Bit sına |
| DAL | Dallan (koşulsuz) |
| BAĞ | Bağlan (koşulsuz) |
| BAĞK | Bağlan koşullu |
| DEE | Dallan eğer eşitse |
| DED | Dallan eşit değilse |
| DEB | Dallan eğer büyükse |
| DBE | Dallan büyük eşitse |
| DEK | Dallan eğer küçükse |
| DEI | Dallan eğer mutlak büyükse |
| DİE | Dallan eğer mutlak büyük veya eşitse |

| Dallanma - Karşılaştırma | |
|--------------------------|----------------------------|
| DEU | Dallan eğer mutlak ufaksa |
| DTV | Dallan eğer taşma varsa |
| DTY | Dallan eğer taşma yoksa |
| DEV | Dallan elde varsa |
| DEY | Dallan elde yoksa |
| DYV | Dallan yarım elde varsa |
| DYY | Dallan yarım elde yoksa |
| ALT | Alt rutini çağır |
| ALTD | Alt rutine bağlan |
| ALTK | Alt rutini koşullu çağır |
| ALTDK | Alt rutine koşullu bağlan |
| ADED | Azalt, dallan eşit değilse |

| Öteleme / Döndürme | |
|--------------------|----------------------|
| SOL | Sola ötele |
| SAĞ | Sağa ötele |
| SAĞİ | Sağa aritmetik ötele |
| SOLD | Sola döndür |
| SAĞD | Sağa döndür |

| Aritmetik | |
|-----------|-----------------|
| TOP | Topla |
| TOPE | Elde ile topla |
| ÇIK | Çıkart |
| ÇIKE | Elde ile çıkart |
| ÇAR | Çarp |
| BÖL | Böl |
| ART | Artır |
| AZT | Azalt |

| Mantıksal | |
|-----------|----------|
| VE | Ve |
| VEYA | Veya |
| YADA | Yada |
| SİL | Sil |
| KUR | Kur |
| TÜM | Tümleyen |
| EKS | Eksi |

| İşlenen Sembolleri | |
|--------------------|------------------------|
| V | : Veri (8-bit data) |
| VV | : 16-bit data |
| Ri, Rj | : 8-bit register |
| Rii, Rjj | : 16-bit register |
| S | : Sıra (Index) |
| R | : Range (incr/decr SK) |

| 8-bit Registerler | |
|-------------------|----------------|
| A, B, C, D | |
| DK | : Durum Kütüğü |

| 16-bit Registerler | |
|--------------------|------------------------------------|
| AB, CD | |
| SK | : Sıralama Kütüğü (Index Register) |
| YG | : Yığın Göstergesi (Stack Pointer) |

| Durum Registeri Bayrakları | |
|----------------------------|--------------|
| E | : Elde |
| Y | : Yarım elde |
| S | : Sıfır |
| N | : Negatif |
| T | : Taşma |
| K | : Kesme |

| Birinci İşlenenler | |
|--------------------|--|
| Ri | |
| Rii | |
| V | |

| İkinci İşlenenler | |
|-------------------|--|
| Rj | |
| Rjj | |
| V | |
| VV | |
| <Adres> | |
| <CD> | |
| <SK+S> | |
| <SK+S> + - R | |
| <SK+CD+S> | |
| <YG+S> | |

| | | | | | | | |
|------------------------|----|-------------------------|----|--------------------------|---|---------------------------|---|
| <u>8 Bit Registers</u> | | <u>16 Bit Registers</u> | | <u>Status Flags(DK).</u> | | <u>Addressing Methods</u> | |
| Accumulator A | A | Accumulator pair | AB | Carry | E | Immediate | V |
| Accumulator B | B | AUX register pair | CD | Half Carry | Y | Immediate memory | Y |
| AUX Register C | C | Index register | SK | Zero | S | Register | L |
| AUX Register D | D | Stack pointer | YG | Negative | N | Direct | D |
| Status Register | DK | Program counter | PS | Overflow | T | Indirect | K |
| | | | | Interrupt | K | Relative | B |
| | | | | | | Indexed (SK) | S |
| | | | | | | Incremental SK | R |
| | | | | | | Decremental SK | Z |
| | | | | | | Indirect SK | U |
| | | | | | | Indexed (YG) | Y |
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| ARITHMETIC INSTRUCTIONS - (8 bit) | | | | | | | | | | | | | | | |
|-----------------------------------|--------------|---------|--------------------|---------|---------|--------------------|-------------|---|---|---|---|---|-------------------------------------|--|--|
| Oper | Op Code | Adr met | Instruction Format | | | | Status Reg. | | | | | A | Explanation | | |
| | | | 1. Byte | 2. Byte | 3. Byte | 4. Byte | T | S | N | Y | E | | | | |
| ADD | AI,V | V | 00000011 | 000000 | AI | Data | | | | | | 3 | $AI \leftarrow AI + V$ | | |
| | AI,KI | L | 01000011 | 00 | AI KI | | | | | | | 3 | $AI \leftarrow AI + KI$ | | |
| | AI,<adr> | D | 00000011 | 001000 | AI | Adr (H) Adr (L) | | | | | | 4 | $AI \leftarrow AI + <Adr>$ | | |
| | AI,<CD> | K | 00000011 | 010000 | AI | | | | | | | 6 | $AI \leftarrow AI + <<CD>>$ | | |
| | AI,<SK+S> | S | 00000011 | 011000 | AI | S | | | | | | 7 | $AI \leftarrow AI + <SK+S>$ | | |
| | AI,<SK+S>+R | R | 00000011 | 100000 | AI | S R | | | | | | 7 | $AI \leftarrow AI + <SK+S> + R$ | | |
| | AI,<SK+S>-R | Z | 00000011 | 101000 | AI | S R | | | | | | 7 | $AI \leftarrow AI + <SK+S> - R$ | | |
| | AI,<SK+CD+S> | U | 00000011 | 110000 | AI | S | | | | | | 8 | $AI \leftarrow AI + <SK+CD+S>$ | | |
| ADC | AI,<YG+S> | Y | 00000011 | 111000 | AI | S | | | | | | 7 | $AI \leftarrow AI + <YG+S>$ | | |
| | AI,V | V | 00000100 | 000000 | AI | Data | | | | | | 3 | $AI \leftarrow AI + V + E$ | | |
| | AI,KI | L | 01000100 | 00 | AI KI | | | | | | | 3 | $AI \leftarrow AI + KI + E$ | | |
| | AI,<adr> | D | 00000100 | 001000 | AI | Adr (H) Adr (L) | | | | | | 4 | $AI \leftarrow AI + <Adr> + E$ | | |
| | AI,<CD> | K | 00000100 | 010000 | AI | | | | | | | 6 | $AI \leftarrow AI + <<CD>> + E$ | | |
| | AI,<SK+S> | S | 00000100 | 011000 | AI | S | | | | | | 7 | $AI \leftarrow AI + <SK+S> + E$ | | |
| | AI,<SK+S>+R | R | 00000100 | 100000 | AI | S R | | | | | | 7 | $AI \leftarrow AI + <SK+S> + E + R$ | | |
| | AI,<SK+S>-R | Z | 00000100 | 101000 | AI | S R | | | | | | 7 | $AI \leftarrow AI + <SK+S> + E - R$ | | |
| SUB | AI,<SK+CD+S> | U | 00000100 | 110000 | AI | S | | | | | | 8 | $AI \leftarrow AI + <SK+CD+S> + E$ | | |
| | AI,<YG+S> | Y | 00000100 | 111000 | AI | S | | | | | | 7 | $AI \leftarrow AI + <YG+S> + E$ | | |
| | AI,V | V | 00000101 | 000000 | AI | Data | | | | | | 3 | $AI \leftarrow AI - V$ | | |
| | AI,KI | L | 01000101 | 00 | AI KI | | | | | | | 3 | $AI \leftarrow AI - KI$ | | |
| | AI,<adr> | D | 00000101 | 001000 | AI | Adr (H) Adr (L) | | | | | | 4 | $AI \leftarrow AI - <Adr>$ | | |
| | AI,<CD> | K | 00000101 | 010000 | AI | | | | | | | 6 | $AI \leftarrow AI - <<CD>>$ | | |
| | AI,<SK+S> | S | 00000101 | 011000 | AI | S | | | | | | 7 | $AI \leftarrow AI - <SK+S>$ | | |
| | AI,<SK+S>+R | R | 00000101 | 100000 | AI | S R | | | | | | 7 | $AI \leftarrow AI - <SK+S> + R$ | | |
| SUE | AI,<SK+S>-R | Z | 00000101 | 101000 | AI | S R | | | | | | 7 | $AI \leftarrow AI - <SK+S> - R$ | | |
| | AI,<SK+CD+S> | U | 00000101 | 110000 | AI | S | | | | | | 8 | $AI \leftarrow AI - <SK+CD+S>$ | | |
| | AI,<YG+S> | Y | 00000101 | 111000 | AI | S | | | | | | 7 | $AI \leftarrow AI - <YG+S>$ | | |
| | AI,V | V | 00000110 | 000000 | AI | Data | | | | | | 3 | $AI \leftarrow AI - V - E$ | | |
| | AI,KI | L | 01000110 | 00 | AI KI | | | | | | | 3 | $AI \leftarrow AI - KI - E$ | | |
| | AI,<adr> | D | 00000110 | 001000 | AI | Adr (H) Adr (L) | | | | | | 4 | $AI \leftarrow AI - <Adr> - E$ | | |
| | AI,<CD> | K | 00000110 | 010000 | AI | | | | | | | 6 | $AI \leftarrow AI - <<CD>> - E$ | | |
| | AI,<SK+S> | S | 00000110 | 011000 | AI | S | | | | | | 7 | $AI \leftarrow AI - <SK+S> - E$ | | |
| SUE | AI,<SK+S>+R | R | 00000110 | 100000 | AI | S R | | | | | | 7 | $AI \leftarrow AI - <SK+S> - E + R$ | | |
| | AI,<SK+S>-R | Z | 00000110 | 101000 | AI | S R | | | | | | 7 | $AI \leftarrow AI - <SK+S> - E - R$ | | |
| | AI,<SK+CD+S> | U | 00000110 | 110000 | AI | S | | | | | | 8 | $AI \leftarrow AI - <SK+CD+S> - E$ | | |
| | AI,<YG+S> | Y | 00000110 | 111000 | AI | S | | | | | | 7 | $AI \leftarrow AI - <YG+S> - E$ | | |

| ARITHMETIC INSTRUCTIONS - (16 bit) | | | | | | | | | | | | | | | |
|------------------------------------|--------------|---------|--------------------|---------|---------|----------------------|-------------|---|---|---|---|----|--|--|--|
| Oper | Op Code | Adr met | Instruction Format | | | | Status Reg. | | | | | A | Explanation | | |
| | | | 1. Byte | 2. Byte | 3. Byte | 4. Byte | T | S | N | Y | E | | | | |
| ADD | AB,VV | V | 00100011 | 000000 | AB | Data(H) Data(L) | | | | | | 4 | $AB \leftarrow AB + VV$ | | |
| | AB,KII | L | 01100011 | 00 | AB KII | | | | | | | 4 | $AB \leftarrow AB + KII$ | | |
| | AB,<adr> | D | 00100011 | 001000 | AB | Adr (H) Adr (L) | | | | | | 5 | $AB \leftarrow AB + (<Adr> + <Adr+1>)$ | | |
| | AB,<CD> | K | 00100011 | 010000 | AB | | | | | | | 7 | $AB \leftarrow AB + (<<CD>> + <<CD+1>>)$ | | |
| | AB,<SK+S> | S | 00100011 | 011000 | AB | S | | | | | | 8 | $AB \leftarrow AB + (<SK+S> + <SK+S+1>)$ | | |
| | AB,<SK+S>+R | R | 00100011 | 100000 | AB | S R | | | | | | 8 | $AB \leftarrow AB + (<SK+S> + <SK+S+1>) + R$ | | |
| | AB,<SK+S>-R | Z | 00100011 | 101000 | AB | S R | | | | | | 8 | $AB \leftarrow AB + (<SK+S> + <SK+S+1>) - R$ | | |
| | AB,<SK+CD+S> | U | 00100011 | 110000 | AB | S | | | | | | 9 | $AB \leftarrow AB + (<SK+CD+S> + <SK+CD+S+1>)$ | | |
| SUB | AB,<YG+S> | Y | 00100011 | 111000 | AB | S | | | | | | 8 | $AB \leftarrow AB + (<YG+S> + <YG+S>)$ | | |
| | AB,VV | V | 00100101 | 000000 | AB | Data (H) Data (L) | | | | | | 4 | $AB \leftarrow AB - VV$ | | |
| | AB,KII | L | 01100101 | 00 | AB KII | | | | | | | 4 | $AB \leftarrow AB - KII$ | | |
| | AB,<adr> | D | 00100101 | 001000 | AB | Adr (H) Adr (L) | | | | | | 5 | $AB \leftarrow AB - (<Adr> + <Adr+1>)$ | | |
| | AB,<CD> | K | 00100101 | 010000 | AB | | | | | | | 7 | $AB \leftarrow AB - (<<CD>> + <<CD+1>>)$ | | |
| | AB,<SK+S> | S | 00100101 | 011000 | AB | S | | | | | | 8 | $AB \leftarrow AB - (<SK+S> + <SK+S+1>)$ | | |
| | AB,<SK+S>+R | R | 00100101 | 100000 | AB | S R | | | | | | 8 | $AB \leftarrow AB - (<SK+S> + <SK+S+1>) + R$ | | |
| | AB,<SK+S>-R | Z | 00100101 | 101000 | AB | S R | | | | | | 8 | $AB \leftarrow AB - (<SK+S> + <SK+S+1>) - R$ | | |
| MUL | AB,<SK+CD+S> | U | 00100101 | 110000 | AB | S | | | | | | 9 | $AB \leftarrow AB - (<SK+CD+S> + <SK+CD+S+1>)$ | | |
| | AB,<YG+S> | Y | 00100101 | 111000 | AB | S | | | | | | 8 | $AB \leftarrow AB - (<YG+S> + <YG+S>)$ | | |
| | A,V | V | 00000111 | 000000 | A | Data | | | | | | 24 | $AB \leftarrow A * V$ | | |
| | A,KI | L | 01000111 | 00 | A KI | | | | | | | 24 | $AB \leftarrow A * KI$ | | |
| | A,<adr> | D | 00000111 | 001000 | A | Adr (H) Adr (L) | | | | | | 26 | $AB \leftarrow A * <Adr>$ | | |
| | A,<CD> | K | 00000111 | 010000 | A | | | | | | | 28 | $AB \leftarrow A * <<CD>>$ | | |
| | A,<SK+S> | S | 00000111 | 011000 | A | S | | | | | | 30 | $AB \leftarrow A * <SK+S>$ | | |
| | A,<SK+S>+R | R | 00000111 | 100000 | A | S R | | | | | | 31 | $AB \leftarrow A * <SK+S> + R$ | | |
| DIV | A,<SK+S>-R | Z | 00000111 | 101000 | A | S R | | | | | | 31 | $AB \leftarrow A * <SK+S> - R$ | | |
| | A,<SK+CD+S> | U | 00000111 | 110000 | A | S | | | | | | 32 | $AB \leftarrow A * <SK+CD+S>$ | | |
| | A,<YG+S> | Y | 00000111 | 111000 | A | S | | | | | | 30 | $AB \leftarrow A * <YG+S>$ | | |
| | AB,V | V | 00100111 | 000000 | AB | Data | | | | | | 32 | $AB \leftarrow AB / V$ | | |
| | AB,KI | L | 01100111 | 000000 | AB | | | | | | | 32 | $AB \leftarrow AB / KI$ | | |
| | AB,<adr> | D | 00100111 | 001000 | AB | Adr (H) Adr (L) | | | | | | 34 | $AB \leftarrow AB / <Adr>$ | | |
| | AB,<CD> | K | 00100111 | 010000 | AB | | | | | | | 36 | $AB \leftarrow AB / <<CD>>$ | | |
| | AB,<SK+S> | S | 00100111 | 011000 | AB | S | | | | | | 38 | $AB \leftarrow AB / <SK+S>$ | | |

| TRANSFER INSTRUCTIONS -(8 bit) | | | | | | | | | | | | | | |
|--------------------------------|--------------|---------|--------------------|--------------|---------|---------|---------|-------------|---|---|---|---|---|-------------------------|
| Oper | Op Code | Adr met | Instruction Format | | | | | Status Reg. | | | | | A | Explanation |
| | | | 1. Byte | 2. Byte | 3. Byte | 4. Byte | 5. Byte | T | S | N | Y | E | | |
| MOV | Ki,Kj | L | 0 1 0 0 0 0 0 0 | 0 0 Ki Kj | | | | | | | | | 1 | Ki ← Kj |
| EXC | Ki,Kj | L | 0 1 0 0 0 0 0 1 | 0 0 Ki Kj | | | | | | | | | 3 | Ki ↔ Kj |
| CHN | Ki | L | 0 1 0 0 0 0 1 0 | 0 1 | | | | | | | | | 5 | D3 D2 D1 D0 D7 D6 D5 D4 |
| LDA | Ki,V | V | 0 0 0 0 0 0 0 0 | 0 0 0 0 0 Ki | Data | | | | | | | | 1 | Ki ← V |
| | Ki,<adr> | D | 0 0 0 0 0 0 0 0 | 0 0 1 0 0 Ki | Adr (H) | Adr (L) | | | | | | | 2 | Ki ←<Adr> |
| | Ki,<CD> | K | 0 0 0 0 0 0 0 0 | 0 1 0 0 0 Ki | | | | | | | | | 3 | Ki ←<<CD>> |
| | Ki,<SK+S> | S | 0 0 0 0 0 0 0 0 | 0 1 1 0 0 Ki | S | | | | | | | | 4 | Ki ←<SK+S> |
| | Ki,<SK+S>+R | R | 0 0 0 0 0 0 0 0 | 1 0 0 0 0 Ki | S | R | | | | | | | 5 | Ki ←<SK+S> +R |
| | Ki,<SK+S>-R | Z | 0 0 0 0 0 0 0 0 | 1 0 1 0 0 Ki | S | R | | | | | | | 5 | Ki ←<SK+S> -R |
| | Ki,<SK+CD+S> | U | 0 0 0 0 0 0 0 0 | 1 1 0 0 0 Ki | S | | | | | | | | 6 | Ki ←<SK+CD+S> |
| | Ki,<YG+S> | Y | 0 0 0 0 0 0 0 0 | 1 1 1 0 0 Ki | S | | | | | | | | 5 | Ki ←<YG+S> |
| STR | V,Adr | V | 0 0 0 0 0 0 0 1 | 0 0 0 0 1 | Datai | Adr (H) | Adr (L) | | | | | | 3 | Adr ← V |
| | Ki,<adr> | D | 0 0 0 0 0 0 0 1 | 0 0 1 0 0 Ki | Adr (H) | Adr (L) | | | | | | | 2 | Adr ← Ki |
| | Ki,<CD> | K | 0 0 0 0 0 0 0 1 | 0 1 0 0 0 Ki | | | | | | | | | 3 | <<CD>> ← Ki |
| | Ki,<SK+S> | S | 0 0 0 0 0 0 0 1 | 0 1 1 0 0 Ki | S | | | | | | | | 4 | <SK+S> ← Ki |
| | Ki,<SK+S>+R | R | 0 0 0 0 0 0 0 1 | 1 0 0 0 0 Ki | S | R | | | | | | | 5 | <SK+S> ← Ki + R |
| | Ki,<SK+S>-R | Z | 0 0 0 0 0 0 0 1 | 1 0 1 0 0 Ki | S | R | | | | | | | 5 | <SK+S> ← Ki - R |
| | Ki,<SK+CD+S> | U | 0 0 0 0 0 0 0 1 | 1 1 0 0 0 Ki | S | | | | | | | | 6 | <SK+CD+S> ← Ki |
| | Ki,<YG+S> | Y | 0 0 0 0 0 0 0 1 | 1 1 1 0 0 Ki | S | | | | | | | | 5 | <YG+S> ← Ki |

| TRANSFER INSTRUCTIONS - (16 bit) | | | | | | | | | | | | | |
|----------------------------------|---------------|---------|--------------------|-----------------|---------|---------|-------------|---|---|---|---|---|--|
| Oper | Op Code | Adr met | Instruction Format | | | | Status Reg. | | | | | A | Explanation |
| | | | 1. Byte | 2. Byte | 3. Byte | 4. Byte | T | S | N | Y | E | | |
| MOV | Kii,Kjj | L | 0 1 1 0 0 0 0 0 | 0 0 Kii Kjj | | | — | — | — | — | — | 2 | $Kii \leftarrow Kjj$ |
| EXC | Kii,Kjj | L | 0 1 1 0 0 0 0 1 | 0 0 Kii Kjj | | | — | — | — | — | — | 4 | $Kii \leftrightarrow Kjj$ |
| LDA | Kii,VV | V | 0 0 1 0 0 0 0 0 | 0 0 0 0 0 0 Kii | Datai | Data | — | — | — | — | — | 2 | $Kii \leftarrow VV$ |
| | Kii,<adr> | D | 0 0 1 0 0 0 0 0 | 0 0 1 0 0 Kii | Adr (H) | Adr (L) | — | — | — | — | — | 3 | $Kii \leftarrow \langle \text{Adr} \rangle + \langle \text{Adr} + 1 \rangle$ |
| | Kii,<CD> | K | 0 0 1 0 0 0 0 0 | 0 1 0 0 0 Kii | | | — | — | — | — | — | 4 | $Kii \leftarrow \langle \langle \text{CD} \rangle \rangle + \langle \langle \text{CD} + 1 \rangle \rangle$ |
| | Kii,<SK+S> | S | 0 0 1 0 0 0 0 0 | 0 1 1 0 0 Kii | S | | — | — | — | — | — | 5 | $Kii \leftarrow \langle \text{SK} + \text{S} \rangle + \langle \text{SK} + \text{S} + 1 \rangle$ |
| | Kii,<SK+S>+R | R | 0 0 1 0 0 0 0 0 | 1 0 0 0 0 Kii | S | R | — | — | — | — | — | 6 | $Kii \leftarrow \langle \text{SK} + \text{S} \rangle + \langle \text{SK} + \text{S} + 1 \rangle + \text{R}$ |
| | Kii,<SK+S>-R | Z | 0 0 1 0 0 0 0 0 | 1 0 1 0 0 Kii | S | R | — | — | — | — | — | 6 | $Kii \leftarrow \langle \text{SK} + \text{S} \rangle + \langle \text{SK} + \text{S} + 1 \rangle - \text{R}$ |
| | Kii,<SK+CD+S> | U | 0 0 1 0 0 0 0 0 | 1 1 0 0 0 Kii | S | | — | — | — | — | — | 7 | $Kii \leftarrow \langle \text{SK} + \text{CD} + \text{S} \rangle + \langle \text{SK} + \text{CD} + \text{S} + 1 \rangle$ |
| | Kii,<YG+S> | Y | 0 0 1 0 0 0 0 0 | 1 1 1 0 0 Kii | S | | — | — | — | — | — | 6 | $Kii \leftarrow \langle \text{YG} + \text{S} \rangle + \langle \text{YG} + \text{S} + 1 \rangle$ |
| STR | Kii,<adr> | D | 0 0 1 0 0 0 0 1 | 0 0 1 0 0 Kii | Adr (H) | Adr (L) | — | — | — | — | — | 3 | $\text{Adr} + \langle \text{Adr} + 1 \rangle \leftarrow Kii$ |
| | Kii,<CD> | K | 0 0 1 0 0 0 0 1 | 0 1 0 0 0 Kii | | | — | — | — | — | — | 4 | $\langle \langle \text{CD} \rangle \rangle + \langle \langle \text{CD} + 1 \rangle \rangle \leftarrow Kii$ |
| | Kii,<SK+S> | S | 0 0 1 0 0 0 0 1 | 0 1 1 0 0 Kii | S | | — | — | — | — | — | 5 | $\langle \text{SK} + \text{S} \rangle + \langle \text{SK} + \text{S} + 1 \rangle \leftarrow Kii$ |
| | Kii,<SK+S>+R | R | 0 0 1 0 0 0 0 1 | 1 0 0 0 0 Kii | S | R | — | — | — | — | — | 6 | $\langle \text{SK} + \text{S} \rangle + \langle \text{SK} + \text{S} + 1 \rangle \leftarrow Kii + \text{R}$ |
| | Kii,<SK+S>-R | Z | 0 0 1 0 0 0 0 1 | 1 0 1 0 0 Kii | S | R | — | — | — | — | — | 6 | $\langle \text{SK} + \text{S} \rangle + \langle \text{SK} + \text{S} + 1 \rangle \leftarrow Kii - \text{R}$ |
| | Kii,<SK+CD+S> | U | 0 0 1 0 0 0 0 1 | 1 1 0 0 0 Kii | S | | — | — | — | — | — | 7 | $\langle \text{SK} + \text{CD} + \text{S} \rangle + \langle \text{SK} + \text{CD} + \text{S} + 1 \rangle \leftarrow Kii$ |
| | Kii,<YG+S> | Y | 0 0 1 0 0 0 0 1 | 1 1 1 0 0 Kii | S | | — | — | — | — | — | 6 | $\langle \text{YG} + \text{S} \rangle + \langle \text{YG} + \text{S} + 1 \rangle \leftarrow Kii$ |

| LOGIC INSTRUCTIONS - (8 bit) | | | | | | | | | | | | | |
|------------------------------|--------------|---------|--------------------|--------------|---------|---------|-------------|---|---|---|---|---|--|
| Oper | Op Code | Adr met | Instruction Format | | | | Status Reg. | | | | | A | Explanation |
| | | | 1. Byte | 2. Byte | 3. Byte | 4. Byte | T | S | N | Y | E | | |
| AND | Ai,V | V | 0 0 0 0 1 0 0 0 | 0 0 0 0 0 Ai | | | — | — | — | — | — | 3 | $Ai \leftarrow Ai \cdot V$ |
| | Ai,Ki | L | 0 1 0 0 1 0 0 0 | 0 0 Ai Ki | | | — | — | — | — | — | 3 | $Ai \leftarrow Ai \cdot Ki$ |
| | Ai,<adr> | D | 0 0 0 0 1 0 0 0 | 0 0 1 0 0 Ai | Adr (H) | Adr (L) | — | — | — | — | — | 4 | $Ai \leftarrow Ai \cdot \langle \text{Adr} \rangle$ |
| | Ai,<CD> | K | 0 0 0 0 1 0 0 0 | 0 1 0 0 0 Ai | | | — | — | — | — | — | 6 | $Ai \leftarrow Ai \cdot \langle \langle \text{CD} \rangle \rangle$ |
| | Ai,<SK+S> | S | 0 0 0 0 1 0 0 0 | 0 1 1 0 0 Ai | S | | — | — | — | — | — | 7 | $Ai \leftarrow Ai \cdot \langle \text{SK} + \text{S} \rangle$ |
| | Ai,<SK+S>+R | R | 0 0 0 0 1 0 0 0 | 1 0 0 0 0 Ai | S | R | — | — | — | — | — | 7 | $Ai \leftarrow Ai \cdot \langle \text{SK} + \text{S} \rangle + \text{R}$ |
| | Ai,<SK+S>-R | Z | 0 0 0 0 1 0 0 0 | 1 0 1 0 0 Ai | S | R | — | — | — | — | — | 7 | $Ai \leftarrow Ai \cdot \langle \text{SK} + \text{S} \rangle - \text{R}$ |
| | Ai,<SK+CD+S> | U | 0 0 0 0 1 0 0 0 | 1 1 0 0 0 Ai | S | | — | — | — | — | — | 8 | $Ai \leftarrow Ai \cdot \langle \text{SK} + \text{CD} + \text{S} \rangle$ |
| OR | Ai,<YG+S> | Y | 0 0 0 0 1 0 0 0 | 1 1 1 0 0 Ai | S | | — | — | — | — | — | 7 | $Ai \leftarrow Ai \cdot \langle \text{YG} + \text{S} \rangle$ |
| | Ai,V | V | 0 0 0 0 1 0 0 1 | 0 0 0 0 0 Ai | | | — | — | — | — | — | 3 | $Ai \leftarrow Ai + V$ |
| | Ai,Ki | L | 0 1 0 0 1 0 0 1 | 0 0 Ai Ki | | | — | — | — | — | — | 3 | $Ai \leftarrow Ai + Ki$ |
| | Ai,<adr> | D | 0 0 0 0 1 0 0 1 | 0 0 1 0 0 Ai | Adr (H) | Adr (L) | — | — | — | — | — | 4 | $Ai \leftarrow Ai + \langle \text{Adr} \rangle$ |
| | Ai,<CD> | K | 0 0 0 0 1 0 0 1 | 0 1 0 0 0 Ai | | | — | — | — | — | — | 6 | $Ai \leftarrow Ai + \langle \langle \text{CD} \rangle \rangle$ |
| | Ai,<SK+S> | S | 0 0 0 0 1 0 0 1 | 0 1 1 0 0 Ai | S | | — | — | — | — | — | 7 | $Ai \leftarrow Ai + \langle \text{SK} + \text{S} \rangle$ |
| | Ai,<SK+S>+R | R | 0 0 0 0 1 0 0 1 | 1 0 0 0 0 Ai | S | R | — | — | — | — | — | 7 | $Ai \leftarrow Ai + \langle \text{SK} + \text{S} \rangle + \text{R}$ |
| | Ai,<SK+S>-R | Z | 0 0 0 0 1 0 0 1 | 1 0 1 0 0 Ai | S | R | — | — | — | — | — | 7 | $Ai \leftarrow Ai + \langle \text{SK} + \text{S} \rangle - \text{R}$ |
| XOR | Ai,<SK+CD+S> | U | 0 0 0 0 1 0 0 1 | 1 1 0 0 0 Ai | S | | — | — | — | — | — | 8 | $Ai \leftarrow Ai + \langle \text{SK} + \text{CD} + \text{S} \rangle$ |
| | Ai,<YG+S> | Y | 0 0 0 0 1 0 0 1 | 1 1 1 0 0 Ai | S | | — | — | — | — | — | 7 | $Ai \leftarrow Ai + \langle \text{YG} + \text{S} \rangle$ |
| | Ai,V | V | 0 0 0 0 1 0 1 0 | 0 0 0 0 0 Ai | | | — | — | — | — | — | 3 | $Ai \leftarrow Ai \oplus V$ |
| | Ai,Ki | L | 0 1 0 0 1 0 1 0 | 0 0 Ai Ki | | | — | — | — | — | — | 3 | $Ai \leftarrow Ai \oplus Ki$ |
| | Ai,<adr> | D | 0 0 0 0 1 0 1 0 | 0 0 1 0 0 Ai | Adr (H) | Adr (L) | — | — | — | — | — | 4 | $Ai \leftarrow Ai \oplus \langle \text{Adr} \rangle$ |
| | Ai,<CD> | K | 0 0 0 0 1 0 1 0 | 0 1 0 0 0 Ai | | | — | — | — | — | — | 6 | $Ai \leftarrow Ai \oplus \langle \langle \text{CD} \rangle \rangle$ |
| | Ai,<SK+S> | S | 0 0 0 0 1 0 1 0 | 0 1 1 0 0 Ai | S | | — | — | — | — | — | 7 | $Ai \leftarrow Ai \oplus \langle \text{SK} + \text{S} \rangle$ |
| XOR | Ai,<SK+S>+R | R | 0 0 0 0 1 0 1 0 | 1 0 0 0 0 Ai | S | R | — | — | — | — | — | 7 | $Ai \leftarrow Ai \oplus \langle \text{SK} + \text{S} \rangle + \text{R}$ |
| | Ai,<SK+S>-R | Z | 0 0 0 0 1 0 1 0 | 1 0 1 0 0 Ai | S | R | — | — | — | — | — | 7 | $Ai \leftarrow Ai \oplus \langle \text{SK} + \text{S} \rangle - \text{R}$ |
| | Ai,<SK+CD+S> | U | 0 0 0 0 1 0 1 0 | 1 1 0 0 0 Ai | S | | — | — | — | — | — | 8 | $Ai \leftarrow Ai \oplus \langle \text{SK} + \text{CD} + \text{S} \rangle$ |
| | Ai,<YG+S> | Y | 0 0 0 0 1 0 1 0 | 1 1 1 0 0 Ai | S | | — | — | — | — | — | 7 | $Ai \leftarrow Ai \oplus \langle \text{YG} + \text{S} \rangle$ |

| OPERATION - I | | | | | | | | | | | | | |
|---------------|-------------|---------|--------------------|----------|-----------|-----------|--------------|---|---|---|---|---|---------------------------|
| Oper | Op Code | Adr met | Instruction Format | | | | Status Flags | | | | | A | Explanation |
| | | | 1. Byte | 2. Byte | 3. Byte | 4. Byte | T | S | N | Y | E | | |
| CLR | Ki | L | 01001011 | 0111Ki | | | 0 | 1 | 0 | 0 | 0 | 3 | Ki ← 0 |
| | <Adr> | D | 00001011 | 001011 | Adr (Yük) | Adr (Düş) | 0 | 1 | 0 | 0 | 0 | 4 | <Adr> ← 0 |
| | <CD> | K | 00001011 | 010011 | | | 0 | 1 | 0 | 0 | 0 | 6 | <<CD>> ← 0 |
| | <SK+S> | S | 00001011 | 011011 | S | | 0 | 1 | 0 | 0 | 0 | 7 | <SK+S> ← 0 |
| | <SK+S>+R | R | 00001011 | 100011 | S | R | 0 | 1 | 0 | 0 | 0 | 7 | <SK+S> ← 0, + R |
| | <SK+S>-R | Z | 00001011 | 101011 | S | R | 0 | 1 | 0 | 0 | 0 | 7 | <SK+S> ← 0, - R |
| | <SK+CD+S> | U | 00001011 | 110011 | S | | 0 | 1 | 0 | 0 | 0 | 8 | <SK+CD+S> ← 0 |
| INC | <YG+S> | Y | 00001011 | 111011 | S | | 0 | 1 | 0 | 0 | 0 | 7 | <YG+S> ← 0 |
| | Ki | L | 01011000 | 0111Ki | | | ↑ | ↑ | ↑ | ↑ | ↑ | 3 | Ki ← Ki + 1 |
| | <Adr> | D | 00011000 | 001011 | Adr (Yük) | Adr (Düş) | ↑ | ↑ | ↑ | ↑ | ↑ | 4 | <Adr> ← <Adr> + 1 |
| | <CD> | K | 00011000 | 010011 | | | ↑ | ↑ | ↑ | ↑ | ↑ | 6 | <<CD>> ← <<CD>> + 1 |
| | <SK+S> | S | 00011000 | 011011 | S | | ↑ | ↑ | ↑ | ↑ | ↑ | 7 | <SK+S> ← <SK+S> + 1 |
| | <SK+S>+R | R | 00011000 | 100011 | S | R | ↑ | ↑ | ↑ | ↑ | ↑ | 7 | <SK+S> ← <SK+S> + 1, + R |
| | <SK+S>-R | Z | 00011000 | 101011 | S | R | ↑ | ↑ | ↑ | ↑ | ↑ | 7 | <SK+S> ← <SK+S> + 1, - R |
| DEC | <SK+CD+S> | U | 00011000 | 110011 | S | | ↑ | ↑ | ↑ | ↑ | ↑ | 8 | <SK+CD+S> ← <SK+CD+S> + 1 |
| | <YG+S> | Y | 00011000 | 111011 | S | | ↑ | ↑ | ↑ | ↑ | ↑ | 7 | <YG+S> ← <YG+S> + 1 |
| | Ki | L | 01011000 | 0111Ki | | | ↓ | ↓ | ↓ | ↓ | ↓ | 3 | Ki ← Ki - 1 |
| | <Adr> | D | 00011000 | 001011 | Adr (Yük) | Adr (Düş) | ↓ | ↓ | ↓ | ↓ | ↓ | 4 | <Adr> ← <Adr> - 1 |
| | <CD> | K | 00011000 | 010011 | | | ↓ | ↓ | ↓ | ↓ | ↓ | 6 | <<CD>> ← <<CD>> - 1 |
| | <SK+S> | S | 00011000 | 011011 | S | | ↓ | ↓ | ↓ | ↓ | ↓ | 7 | <SK+S> ← <SK+S> - 1 |
| | <SK+S>+R | R | 00011000 | 100011 | S | R | ↓ | ↓ | ↓ | ↓ | ↓ | 7 | <SK+S> ← <SK+S> - 1, + R |
| COM | <SK+S>-R | Z | 00011000 | 101011 | S | R | ↓ | ↓ | ↓ | ↓ | ↓ | 7 | <SK+S> ← <SK+S> - 1, - R |
| | <SK+CD+S> | U | 00011000 | 110011 | S | | ↓ | ↓ | ↓ | ↓ | ↓ | 8 | <SK+CD+S> ← <SK+CD+S> - 1 |
| | <YG+S> | Y | 00011000 | 111011 | S | | ↓ | ↓ | ↓ | ↓ | ↓ | 7 | <YG+S> ← <YG+S> - 1 |
| | Ki | L | 01011001 | 0111Ki | | | ← | ← | ← | ← | ← | 3 | Ki ← com<Ki> |
| | <Adr> | D | 00011001 | 001011 | Adr (Yük) | Adr (Düş) | ← | ← | ← | ← | ← | 4 | <Adr> ← com<Adr> |
| | <CD> | K | 00011001 | 010011 | | | ← | ← | ← | ← | ← | 6 | <<CD>> ← com<<CD>> |
| | <SK+S> | S | 00011001 | 011011 | S | | ← | ← | ← | ← | ← | 7 | <SK+S> ← com<SK+S> |
| NEG | <SK+S>+R | R | 00011001 | 100011 | S | R | ← | ← | ← | ← | ← | 7 | <SK+S> ← com<SK+S>, + R |
| | <SK+S>-R | Z | 00011001 | 101011 | S | R | ← | ← | ← | ← | ← | 7 | <SK+S> ← com<SK+S>, - R |
| | <SK+CD+S> | U | 00011001 | 110011 | S | | ← | ← | ← | ← | ← | 8 | <SK+CD+S> ← com<SK+CD+S> |
| | <YG+S> | Y | 00011001 | 111011 | S | | ← | ← | ← | ← | ← | 7 | <YG+S> ← com<YG+S> |
| | Ki | L | 01011001 | 0111Ki | | | ← | ← | ← | ← | ← | 3 | Ki ← neg<Ki> |
| | <Adr> | D | 00011001 | 001011 | Adr (Yük) | Adr (Düş) | ← | ← | ← | ← | ← | 4 | <Adr> ← neg<Adr> |
| | <CD> | K | 00011001 | 010011 | | | ← | ← | ← | ← | ← | 6 | <<CD>> ← neg<CD>> |
| CLR | <SK+S> | S | 00011001 | 011011 | S | | ← | ← | ← | ← | ← | 7 | <SK+S> ← neg<SK+S> |
| | <SK+S>+R | R | 00011001 | 100011 | S | R | ← | ← | ← | ← | ← | 7 | <SK+S> ← neg<SK+S>, + R |
| | <SK+S>-R | Z | 00011001 | 101011 | S | R | ← | ← | ← | ← | ← | 7 | <SK+S> ← neg<SK+S>, - R |
| | <SK+CD+S> | U | 00011001 | 110011 | S | | ← | ← | ← | ← | ← | 8 | <SK+CD+S> ← neg<SK+CD+S> |
| | <YG+S> | Y | 00011001 | 111011 | S | | ← | ← | ← | ← | ← | 7 | <YG+S> ← neg<YG+S> |
| | N,Ki | L | 01001110 | 1111N Ki | | | ← | ← | ← | ← | ← | 3 | Ki ← Ki(N=0) |
| | N,<adr> | D | 00001110 | 001110N | Adr (Yük) | Adr (Düş) | ← | ← | ← | ← | ← | 4 | <Adr> ← <Adr,N=0> |
| SET | N,<CD> | K | 00001110 | 010110N | | | ← | ← | ← | ← | ← | 6 | <<CD>> ← <CD,N=0> |
| | N,<SK+S> | S | 00001110 | 011110N | S | | ← | ← | ← | ← | ← | 7 | <SK+S> ← <SK+S,N=0> |
| | N,<SK+S>+R | R | 00001110 | 100110N | S | R | ← | ← | ← | ← | ← | 7 | <SK+S> ← <SK+S,N=0>, + R |
| | N,<SK+S>-R | Z | 00001110 | 101110N | S | R | ← | ← | ← | ← | ← | 7 | <SK+S> ← <SK+S,N=0>, - R |
| | N,<SK+CD+S> | U | 00001110 | 110110N | S | | ← | ← | ← | ← | ← | 8 | <SK+CD+S> ← <SK+CD+S,N=0> |
| | N,<YG+S> | Y | 00001110 | 111110N | S | | ← | ← | ← | ← | ← | 7 | <YG+S> ← <YG+S,N=0> |
| | N,Ki | L | 01001111 | 1111N Ki | | | ← | ← | ← | ← | ← | 3 | Ki ← Ki(N=1) |
| CLR | N,<adr> | D | 00001111 | 001110N | Adr (Yük) | Adr (Düş) | ← | ← | ← | ← | ← | 4 | <Adr> ← <Adr,N=1> |
| | N,<CD> | K | 00001111 | 010110N | | | ← | ← | ← | ← | ← | 6 | <<CD>> ← <CD,N=1> |
| | N,<SK+S> | S | 00001111 | 011110N | S | | ← | ← | ← | ← | ← | 7 | <SK+S> ← <SK+S,N=1> |
| | N,<SK+S>+R | R | 00001111 | 100110N | S | R | ← | ← | ← | ← | ← | 7 | <SK+S> ← <SK+S,N=1>, + R |
| | N,<SK+S>-R | Z | 00001111 | 101110N | S | R | ← | ← | ← | ← | ← | 7 | <SK+S> ← <SK+S,N=1>, - R |
| | N,<SK+CD+S> | U | 00001111 | 110110N | S | | ← | ← | ← | ← | ← | 8 | <SK+CD+S> ← <SK+CD+S,N=1> |
| | N,<YG+S> | Y | 00001111 | 111110N | S | | ← | ← | ← | ← | ← | 7 | <YG+S> ← <YG+S,N=1> |

| OPERATION - II | | | | | | | | | | | | | |
|----------------|-------------|---------|--------------------|----------|-----------|-----------|--------------|---|---|---|---|---|---------------------------|
| Oper | Op Code | Adr met | Instruction Format | | | | Status Flags | | | | | A | Explanation |
| | | | 1. Byte | 2. Byte | 3. Byte | 4. Byte | T | S | N | Y | E | | |
| NEG | Ki | L | 01011001 | 0111Ki | | | ← | ← | ← | ← | ← | 3 | Ki ← neg<Ki> |
| | <Adr> | D | 00011001 | 001011 | Adr (Yük) | Adr (Düş) | ← | ← | ← | ← | ← | 4 | <Adr> ← neg<Adr> |
| | <CD> | K | 00011001 | 010011 | | | ← | ← | ← | ← | ← | 6 | <<CD>> ← neg<CD>> |
| | <SK+S> | S | 00011001 | 011011 | S | | ← | ← | ← | ← | ← | 7 | <SK+S> ← neg<SK+S> |
| | <SK+S>+R | R | 00011001 | 100011 | S | R | ← | ← | ← | ← | ← | 7 | <SK+S> ← neg<SK+S>, + R |
| | <SK+S>-R | Z | 00011001 | 101011 | S | R | ← | ← | ← | ← | ← | 7 | <SK+S> ← neg<SK+S>, - R |
| | <SK+CD+S> | U | 00011001 | 110011 | S | | ← | ← | ← | ← | ← | 8 | <SK+CD+S> ← neg<SK+CD+S> |
| CLR | <YG+S> | Y | 00011001 | 111011 | S | | ← | ← | ← | ← | ← | 7 | <YG+S> ← neg<YG+S> |
| | N,Ki | L | 01001110 | 1111N Ki | | | ← | ← | ← | ← | ← | 3 | Ki ← Ki(N=0) |
| | N,<adr> | D | 00001110 | 001110N | Adr (Yük) | Adr (Düş) | ← | ← | ← | ← | ← | 4 | <Adr> ← <Adr,N=0> |
| | N,<CD> | K | 00001110 | 010110N | | | ← | ← | ← | ← | ← | 6 | <<CD>> ← <CD,N=0> |
| | N,<SK+S> | S | 00001110 | 011110N | S | | ← | ← | ← | ← | ← | 7 | <SK+S> ← <SK+S,N=0> |
| | N,<SK+S>+R | R | 00001110 | 100110N | S | R | ← | ← | ← | ← | ← | 7 | <SK+S> ← <SK+S,N=0>, + R |
| | N,<SK+S>-R | Z | 00001110 | 101110N | S | R | ← | ← | ← | ← | ← | 7 | <SK+S> ← <SK+S,N=0>, - R |
| SET | N,<SK+CD+S> | U | 00001110 | 110110N | S | | ← | ← | ← | ← | ← | 8 | <SK+CD+S> ← <SK+CD+S,N=0> |
| | N,<YG+S> | Y | 00001110 | 111110N | S | | ← | ← | ← | ← | ← | 7 | <YG+S> ← <YG+S,N=0> |
| | N,Ki | L | 01001111 | 1111N Ki | | | ← | ← | ← | ← | ← | 3 | Ki ← Ki(N=1) |
| | N,<adr> | D | 00001111 | 001110N | Adr (Yük) | Adr (Düş) | ← | ← | ← | ← | ← | 4 | <Adr> ← <Adr,N=1> |
| | N,<CD> | K | 00001111 | 010110N | | | ← | ← | ← | ← | ← | 6 | <<CD>> ← <CD,N=1> |
| | N,<SK+S> | S | 00001111 | 011110N | S | | ← | ← | ← | ← | ← | 7 | <SK+S> ← <SK+S,N=1> |
| | N,<SK+S>+R | R | 00001111 | 100110N | S | R | ← | ← | ← | ← | ← | 7 | <SK+S> ← <SK+S,N=1>, + R |
| CLR | N,<SK+S>-R | Z | 00001111 | 101110N | S | R | ← | ← | ← | ← | ← | 7 | <SK+S> ← <SK+S,N=1>, - R |
| | N,<SK+CD+S> | U | 00001111 | 110110N | S | | ← | ← | ← | ← | ← | 8 | <SK+CD+S> ← <SK+CD+S,N=1> |
| | N,<YG+S> | Y | 00001111 | 111110N | S | | ← | ← | ← | ← | ← | 7 | <YG+S> ← <YG+S,N=1> |

| OPERATION INSTRUCTIONS | | | | | | | | | | | | | |
|------------------------|---------|---------|--------------------|----|---------|-----|-------------|---|---|---|---|----|--------------------------|
| Oper | Op Code | Adr met | Instruction Format | | | | Status Reg. | | | | | A | Explanation |
| | | | 1. Byte | | 2. Byte | | T | S | N | Y | E | | |
| CLR | E | L | 010011100 | 10 | | 000 | — | — | — | — | 0 | 1 | $E \leftarrow 0$ |
| | Y | L | 010011100 | 10 | | 001 | — | — | — | 0 | — | 1 | $Y \leftarrow 0$ |
| | N | L | 010011100 | 10 | | 010 | — | — | 0 | — | — | 1 | $N \leftarrow 0$ |
| | S | L | 010011100 | 10 | | 011 | — | 0 | — | — | — | 1 | $S \leftarrow 0$ |
| | T | L | 010011100 | 10 | | 100 | 0 | — | — | — | — | 1 | $T \leftarrow 1$ |
| SET | E | L | 010011110 | 10 | | 000 | — | — | — | — | 1 | 1 | $E \leftarrow 1$ |
| | Y | L | 010011110 | 10 | | 001 | — | — | — | 1 | — | 1 | $Y \leftarrow 1$ |
| | N | L | 010011110 | 10 | | 010 | — | — | 1 | — | — | 1 | $N \leftarrow 1$ |
| | S | L | 010011110 | 10 | | 011 | — | 1 | — | — | — | 1 | $S \leftarrow 1$ |
| | T | L | 010011110 | 10 | | 100 | 1 | — | — | — | — | 1 | $T \leftarrow 1$ |
| INC | Kii | L | 011110000 | 01 | | Kii | ↕ | ↕ | ↕ | — | ↕ | 2 | $Kii \leftarrow Kii + 1$ |
| DEC | Kii | L | 011110001 | 01 | | Kii | ↕ | ↕ | ↕ | — | ↕ | 2 | $Kii \leftarrow Kii - 1$ |
| DAA | Ai | L | 010101010 | 01 | | Ai | — | — | — | 0 | 0 | 2 | Binary to Decimal |
| PSH | Ai | L | 010101011 | 01 | | Ai | — | — | — | — | — | 2 | Push Ai to Stack |
| PUL | Ai | L | 010101010 | 01 | | Ai | — | ↕ | ↕ | — | — | 2 | Pull Stack to Ai |
| EIN | | L | 110000000 | | | | — | — | — | — | — | 1 | Enable Interrupt |
| DIN | | L | 110000001 | | | | — | — | — | — | — | 1 | Disable Interrupt |
| NOP | | L | 110000010 | | | | — | — | — | — | — | 1 | No Operation |
| RTS | | L | 110000100 | | | | — | — | — | — | — | 5 | Return from subroutine |
| RTI | | L | 110000101 | | | | — | — | — | — | — | 15 | Return from interrupt |
| INT | | L | 110000111 | | | | — | — | — | — | — | 15 | Software Interrupt |

| SHIFT & ROTATE INSTRUCTIONS | | | | | | | | | | | | | |
|-----------------------------|-----------|---------|--------------------|--------------|---------|---------|-------------|---|---|---|---|---|-------------|
| Oper | Op Code | Adr met | Instruction Format | | | | Status Reg. | | | | | A | Explanation |
| | | | 1. Byte | 2. Byte | 3. Byte | 4. Byte | T | S | N | Y | E | | |
| LSL | Ki | L | 010101111 | 01 000000 Ki | | | ↕ | ↕ | ↕ | ↕ | ↕ | 1 | |
| | <Adr> | D | 000101111 | 00 0101 0000 | Adr (H) | Adr (L) | ↕ | ↕ | ↕ | ↕ | ↕ | 2 | |
| | <CD> | K | 000101111 | 01 0000 0000 | | | ↕ | ↕ | ↕ | ↕ | ↕ | 3 | |
| | <SK+S> | S | 000101111 | 01 1001 0000 | \$ | | ↕ | ↕ | ↕ | ↕ | ↕ | 4 | |
| | <SK+S>+R | R | 000101111 | 10 0001 0000 | \$ | R | ↕ | ↕ | ↕ | ↕ | ↕ | 5 | |
| | <SK+S>-R | Z | 000101111 | 10 1001 0000 | \$ | R | ↕ | ↕ | ↕ | ↕ | ↕ | 5 | |
| | <SK+CD+S> | U | 000101111 | 11 0001 0000 | \$ | | ↕ | ↕ | ↕ | ↕ | ↕ | 6 | |
| | <YG+S> | Y | 000101111 | 11 1001 0000 | \$ | | ↕ | ↕ | ↕ | ↕ | ↕ | 4 | |
| LSR | Ki | L | 010111000 | 01 000000 Ki | | | ↕ | ↕ | ↕ | ↕ | ↕ | 1 | |
| | <Adr> | D | 000111000 | 00 0101 0000 | Adr (H) | Adr (L) | ↕ | ↕ | ↕ | ↕ | ↕ | 2 | |
| | <CD> | K | 000111000 | 01 0000 0000 | | | ↕ | ↕ | ↕ | ↕ | ↕ | 3 | |
| | <SK+S> | S | 000111000 | 01 1001 0000 | \$ | | ↕ | ↕ | ↕ | ↕ | ↕ | 4 | |
| | <SK+S>+R | R | 000111000 | 10 0001 0000 | \$ | R | ↕ | ↕ | ↕ | ↕ | ↕ | 5 | |
| | <SK+S>-R | Z | 000111000 | 10 1001 0000 | \$ | R | ↕ | ↕ | ↕ | ↕ | ↕ | 5 | |
| | <SK+CD+S> | U | 000111000 | 11 0001 0000 | \$ | | ↕ | ↕ | ↕ | ↕ | ↕ | 6 | |
| | <YG+S> | Y | 000111000 | 11 1001 0000 | \$ | | ↕ | ↕ | ↕ | ↕ | ↕ | 4 | |
| ASR | Ki | L | 010111001 | 01 000000 Ki | | | ↕ | ↕ | ↕ | ↕ | ↕ | 1 | |
| | <Adr> | D | 000111001 | 00 0101 0000 | Adr (H) | Adr (L) | ↕ | ↕ | ↕ | ↕ | ↕ | 2 | |
| | <CD> | K | 000111001 | 01 0000 0000 | | | ↕ | ↕ | ↕ | ↕ | ↕ | 3 | |
| | <SK+S> | S | 000111001 | 01 1001 0000 | \$ | | ↕ | ↕ | ↕ | ↕ | ↕ | 4 | |
| | <SK+S>+R | R | 000111001 | 10 0001 0000 | \$ | R | ↕ | ↕ | ↕ | ↕ | ↕ | 5 | |
| | <SK+S>-R | Z | 000111001 | 10 1001 0000 | \$ | R | ↕ | ↕ | ↕ | ↕ | ↕ | 5 | |
| | <SK+CD+S> | U | 000111001 | 11 0001 0000 | \$ | | ↕ | ↕ | ↕ | ↕ | ↕ | 6 | |
| | <YG+S> | Y | 000111001 | 11 1001 0000 | \$ | | ↕ | ↕ | ↕ | ↕ | ↕ | 4 | |
| ROL | Ki | L | 010111010 | 01 000000 Ki | | | ↕ | ↕ | ↕ | ↕ | ↕ | 1 | |
| | <Adr> | D | 000111010 | 00 0101 0000 | Adr (H) | Adr (L) | ↕ | ↕ | ↕ | ↕ | ↕ | 2 | |
| | <CD> | K | 000111010 | 01 0000 0000 | | | ↕ | ↕ | ↕ | ↕ | ↕ | 3 | |
| | <SK+S> | S | 000111010 | 01 1001 0000 | \$ | | ↕ | ↕ | ↕ | ↕ | ↕ | 4 | |
| | <SK+S>+R | R | 000111010 | 10 0001 0000 | \$ | R | ↕ | ↕ | ↕ | ↕ | ↕ | 5 | |
| | <SK+S>-R | Z | 000111010 | 10 1001 0000 | \$ | R | ↕ | ↕ | ↕ | ↕ | ↕ | 5 | |
| | <SK+CD+S> | U | 000111010 | 11 0001 0000 | \$ | | ↕ | ↕ | ↕ | ↕ | ↕ | 6 | |
| | <YG+S> | Y | 000111010 | 11 1001 0000 | \$ | | ↕ | ↕ | ↕ | ↕ | ↕ | 4 | |
| ROR | Ki | L | 010111011 | 01 000000 Ki | | | ↕ | ↕ | ↕ | ↕ | ↕ | 1 | |
| | <Adr> | D | 000111011 | 00 0101 0000 | Adr (H) | Adr (L) | ↕ | ↕ | ↕ | ↕ | ↕ | 2 | |
| | <CD> | K | 000111011 | 01 0000 0000 | | | ↕ | ↕ | ↕ | ↕ | ↕ | 3 | |
| | <SK+S> | S | 000111011 | 01 1001 0000 | \$ | | ↕ | ↕ | ↕ | ↕ | ↕ | 4 | |
| | <SK+S>+R | R | 000111011 | 10 0001 0000 | \$ | R | ↕ | ↕ | ↕ | ↕ | ↕ | 5 | |
| | <SK+S>-R | Z | 000111011 | 10 1001 0000 | \$ | R | ↕ | ↕ | ↕ | ↕ | ↕ | 5 | |
| | <SK+CD+S> | U | 000111011 | 11 0001 0000 | \$ | | ↕ | ↕ | ↕ | ↕ | ↕ | 6 | |
| | <YG+S> | Y | 000111011 | 11 1001 0000 | \$ | | ↕ | ↕ | ↕ | ↕ | ↕ | 4 | |

| COMPARE INSTRUCTIONS | | | | | | | | | | | |
|----------------------|---------------|---------|--------------------|-----------------|----------|----------|-------------|---|---|---|---|
| Oper | Op Code | Adr met | Instruction Format | | | | Status Reg. | | | | |
| | | | 1. Byte | 2. Byte | 3. Byte | 4. Byte | T | S | N | Y | E |
| CMP | Ki,V | V | 0 0 0 1 1 1 1 0 0 | 0 0 0 0 0 0 Ki | Data | | ◆ | ◆ | ◆ | ◆ | ◆ |
| | Ki,Kj | L | 0 1 0 1 1 1 1 0 0 | 0 0 Ki Kj | | | ◆ | ◆ | ◆ | ◆ | ◆ |
| | Ki,<adr> | D | 0 0 0 1 1 1 1 0 0 | 0 0 1 0 0 Ki | Adr (H) | Adr (L) | ◆ | ◆ | ◆ | ◆ | ◆ |
| | Ki,<CD> | K | 0 0 0 1 1 1 1 0 0 | 0 1 0 0 0 Ki | | | ◆ | ◆ | ◆ | ◆ | ◆ |
| | Ki,<SK+S> | S | 0 0 0 1 1 1 1 0 0 | 0 1 1 0 0 Ki | S | | ◆ | ◆ | ◆ | ◆ | ◆ |
| | Ki,<SK+S>+R | R | 0 0 0 1 1 1 1 0 0 | 1 0 0 0 0 Ki | S | R | ◆ | ◆ | ◆ | ◆ | ◆ |
| | Ki,<SK+S>-R | Z | 0 0 0 1 1 1 1 0 0 | 1 0 1 0 0 Ki | S | R | ◆ | ◆ | ◆ | ◆ | ◆ |
| | Ki,<SK+CD+S> | U | 0 0 0 1 1 1 1 0 0 | 1 1 0 0 0 Ki | S | | ◆ | ◆ | ◆ | ◆ | ◆ |
| CMP | Kii,VV | V | 0 0 1 1 1 1 1 0 0 | 0 0 0 0 0 0 Kii | Data (H) | Data (L) | ◆ | ◆ | ◆ | ◆ | ◆ |
| | Kii,Kij | L | 0 1 1 1 1 1 1 0 0 | 0 0 Kii Kij | | | ◆ | ◆ | ◆ | ◆ | ◆ |
| | Kii,<adr> | D | 0 0 1 1 1 1 1 0 0 | 0 0 1 0 0 Kii | Adr (H) | Adr (L) | ◆ | ◆ | ◆ | ◆ | ◆ |
| | Kii,<CD> | K | 0 0 1 1 1 1 1 0 0 | 0 1 0 0 0 Kii | | | ◆ | ◆ | ◆ | ◆ | ◆ |
| | Kii,<SK+S> | S | 0 0 1 1 1 1 1 0 0 | 0 1 1 0 0 Kii | S | | ◆ | ◆ | ◆ | ◆ | ◆ |
| | Kii,<SK+S>+R | R | 0 0 1 1 1 1 1 0 0 | 1 0 0 0 0 Kii | S | R | ◆ | ◆ | ◆ | ◆ | ◆ |
| | Kii,<SK+S>-R | Z | 0 0 1 1 1 1 1 0 0 | 1 0 1 0 0 Kii | S | R | ◆ | ◆ | ◆ | ◆ | ◆ |
| | Kii,<SK+CD+S> | U | 0 0 1 1 1 1 1 0 0 | 1 1 0 0 0 Kii | S | | ◆ | ◆ | ◆ | ◆ | ◆ |
| BIT | Ki,V | V | 0 0 0 1 1 1 1 0 1 | 0 0 0 0 0 0 Ki | Data | | ◆ | ◆ | ◆ | ◆ | ◆ |
| | Ki,Kj | L | 0 1 0 1 1 1 1 0 1 | 0 0 Ki Kj | | | ◆ | ◆ | ◆ | ◆ | ◆ |
| | Ki,<adr> | D | 0 0 0 1 1 1 1 0 1 | 0 0 1 0 0 Ki | Adr (H) | Adr (L) | ◆ | ◆ | ◆ | ◆ | ◆ |
| | Ki,<CD> | K | 0 0 0 1 1 1 1 0 1 | 0 1 0 0 0 Ki | | | ◆ | ◆ | ◆ | ◆ | ◆ |
| | Ki,<SK+S> | S | 0 0 0 1 1 1 1 0 1 | 0 1 1 0 0 Ki | S | | ◆ | ◆ | ◆ | ◆ | ◆ |
| | Ki,<SK+S>+R | R | 0 0 0 1 1 1 1 0 1 | 1 0 0 0 0 Ki | S | R | ◆ | ◆ | ◆ | ◆ | ◆ |
| | Ki,<SK+S>-R | Z | 0 0 0 1 1 1 1 0 1 | 1 0 1 0 0 Ki | S | R | ◆ | ◆ | ◆ | ◆ | ◆ |
| | Ki,<SK+CD+S> | U | 0 0 0 1 1 1 1 0 1 | 1 1 0 0 0 Ki | S | | ◆ | ◆ | ◆ | ◆ | ◆ |

| JUMP & BRANCH INSTRUCTIONS | | | | | | | | | | | |
|----------------------------|---------|--------------------|-------------------|------------|---------|---|--|--|--|--|--|
| Op Code | Adr met | Instruction Format | | | | A | Explanation | | | | |
| | | 1. Byte | 2. Byte | 3. Byte | 4. Byte | | | | | | |
| BRA V | B | 1 0 0 0 0 0 0 0 0 | Step count | | | 2 | Branch Always (V step) | | | | |
| JMP Adr | D | 0 0 0 1 1 1 1 1 0 | 0 0 1 0 1 | Adr (H) | Adr (L) | 2 | Jump Always (To address) | | | | |
| JMC S,Adr | D | 0 0 0 1 1 1 1 1 1 | 0 0 1 1 1 0 1 1 | Adr (H) | Adr (L) | 3 | S=1 => jump to address | | | | |
| JMC N,Adr | D | 0 0 0 1 1 1 1 1 1 | 0 0 1 1 1 0 1 0 | Adr (H) | Adr (L) | 3 | N=1 => jump to address | | | | |
| JMC E,Adr | D | 0 0 0 1 1 1 1 1 1 | 0 0 1 1 1 0 0 0 | Adr (H) | Adr (L) | 3 | E=1 => jump to address | | | | |
| JMC T,Adr | D | 0 0 0 1 1 1 1 1 1 | 0 0 1 1 1 1 1 0 0 | Adr (H) | Adr (L) | 3 | T=1 => jump to address | | | | |
| BEQ | B | 1 0 0 0 0 0 0 0 1 | Step count | | | 2 | Branch if equal (V step) | | | | |
| BNE | B | 1 0 0 0 0 0 0 1 0 | Step count | | | 2 | Branch if not equal (V step) | | | | |
| BGT V | B | 1 0 0 0 0 0 0 1 1 | Step count | | | 2 | Branch if greater (V step) | | | | |
| BGE V | B | 1 0 0 0 0 0 1 0 0 | Step count | | | 2 | Branch if greater or equal | | | | |
| BLS V | B | 1 0 0 0 0 0 1 0 1 | Step count | | | 2 | Branch if less than | | | | |
| BHI V | B | 1 0 0 0 0 0 1 1 0 | Step count | | | 2 | Branch if higher | | | | |
| BHE V | B | 1 0 0 0 0 0 1 1 1 | Step count | | | 2 | Branch if higher or equal | | | | |
| BLO V | B | 1 0 0 0 0 1 0 0 0 | Step count | | | 2 | Branch if lower | | | | |
| BIO V | B | 1 0 0 0 0 1 0 0 1 | Step count | | | 2 | T=1 => jump V step | | | | |
| BNO V | B | 1 0 0 0 0 1 0 1 0 | Step count | | | 2 | T=0 => jump V step | | | | |
| BIC V | B | 1 0 0 0 0 1 0 1 1 | Step count | | | 2 | E=1 => jump V step | | | | |
| BNC V | B | 1 0 0 0 0 1 1 0 0 | Step count | | | 2 | E=0 => jump V step | | | | |
| BIH V | B | 1 0 0 0 0 1 1 0 1 | Step count | | | 2 | Y=1 => jump V step | | | | |
| BNH V | B | 1 0 0 0 0 1 1 1 0 | Step count | | | 2 | Y=0 => jump V step | | | | |
| BSR V | B | 1 0 0 0 0 1 1 1 1 | Step count | | | 2 | Branch to subprogram (V step) | | | | |
| JSR Adr | D | 0 0 0 1 0 1 0 0 0 | 0 0 1 0 1 | Adr (H) | Adr (L) | 5 | Branch to subprogram (Address) | | | | |
| BSC S,V | B | 1 0 0 1 0 0 0 1 1 | Step count | | | 6 | S=1 => jump to subprogram (V step) | | | | |
| BSC N,V | B | 1 0 0 1 0 0 0 1 0 | Step count | | | 6 | N=1 => jump to subprogram (V step) | | | | |
| BSC E,V | B | 1 0 0 1 0 0 0 0 0 | Step count | | | 6 | E=1 => jump to subprogram (V step) | | | | |
| BSC T,V | B | 1 0 0 1 0 1 0 0 0 | Step count | | | 6 | T=1 => jump to subprogram (V step) | | | | |
| BSC S,Adr | D | 0 0 0 1 0 1 0 1 1 | 0 0 1 1 1 0 1 1 | Adr (H) | Adr (L) | 6 | S=1 => jump to subprogram (Address) | | | | |
| BSC N,Adr | D | 0 0 0 1 0 1 0 1 0 | 0 0 1 1 1 0 1 0 | Adr (H) | Adr (L) | 6 | N=1 => jump to subprogram (Address) | | | | |
| BSC E,Adr | D | 0 0 0 1 0 1 0 1 0 | 0 0 1 1 1 0 0 0 | Adr (H) | Adr (L) | 6 | E=1 => jump to subprogram (Address) | | | | |
| BSC T,Adr | D | 0 0 0 1 0 1 0 1 0 | 0 0 1 1 1 1 1 0 0 | Adr (H) | Adr (L) | 6 | T=1 => jump to subprogram (Address) | | | | |
| DBNZ Ki,V | B | 1 1 0 0 0 0 1 1 0 | 0 1 Ki | Step count | | 8 | Decrease Ki, branch if not zero (V step) | | | | |
| DBNZ <Adr>,V | B | 1 1 0 0 0 0 1 1 1 | Step count | Adr (H) | Adr (L) | 9 | Decrease M[adr], branch if not zero (V step) | | | | |