# XDS 930 INSTRUCTION LIST - FUNCTIONAL CATEGORIES

| Mnemonic | Instruction Code | Name | Function | Timing | Page Ref. |
|---|---|---|---|---|---|
| **LOAD and STORE** | | | | | |
| LDA | 76 | LOAD A | (M)→A | 2 | 8 |
| STA | 35 | STORE A | (A)→M | 3 | 8 |
| LDB | 75 | LOAD B | (M)→B | 2 | 8 |
| STB | 36 | STORE B | (B)→M | 3 | 8 |
| LDX | 71 | LOAD INDEX | (M)→X | 2 | 8 |
| STX | 37 | STORE INDEX | (X)→M | 3 | 8 |
| XMA | 62 | EXCHANGE M AND A | (A)↔(M) | 3 | 9 |
| EAX | 77 | COPY EFFECTIVE ADDRESS INTO INDEX REGISTER | Effective Address→X | 2 | 8 |
| **ARITHMETIC** | | | | | |
| ADD | 55 | ADD M TO A | (A)+(M)→A | 2 | 9 |
| ADC | 57 | ADD WITH CARRY | (A)+(M)+Carry→A | 2 | 9 |
| ADM | 63 | ADD A TO M | (A)+(M)→M | 3 | 9 |
| MIN | 61 | MEMORY INCREMENT | (M)+1→M | 3 | 9 |
| SUB | 54 | SUBTRACT M FROM A | (A)-(M)→A | 2 | 10 |
| SUC | 56 | SUBTRACT WITH CARRY | (A)-(M)-Carry→A | 2 | 10 |
| MUL | 64 | MULTIPLY | (A)x(M)→A, B | 4 | 10 |
| DIV | 65 | DIVIDE | (A, B)÷(M)→A, R→B | 10 | 11 |
| **LOGICAL** | | | | | |
| ETR | 14 | EXTRACT | (A) and (M)→A | 2 | 11 |
| MRG | 16 | MERGE | (A) or (M)→A | 2 | 11 |
| EOR | 17 | EXCLUSIVE OR | (M)($\overline{A}$) or ($\overline{M}$)(A)→A | 2 | 11 |
| **REGISTER CHANGE** | | | | | |
| CLA | 0 46 00001 | CLEAR A | 0→A | 1 | 12 |
| CLB | 0 46 00002 | CLEAR B | 0→B | 1 | 12 |
| CLR | 0 46 00003 | CLEAR AB | 0→A, B | 1 | 12 |
| CAB | 0 46 00004 | COPY A INTO B | (A)→B | 1 | 12 |
| CBA | 0 46 00010 | COPY B INTO A | (B)→A | 1 | 12 |
| XAB | 0 46 00014 | EXCHANGE A AND B | (A)↔(B) | 1 | 12 |
| BAC | 0 46 00012 | COPY B INTO A, CLEAR B | (B)→A, 0→B | 1 | 13 |
| ABC | 0 46 00005 | COPY A INTO B, CLEAR A | (A)→B, 0→A | 1 | 13 |
| CLX | 2 46 00000 | CLEAR INDEX REGISTER | 0→X | 1 | 13 |
| CXA | 0 46 00200 | COPY INDEX INTO A | (X)→A | 1 | 13 |

| Mnemonic | Instruction Code | Name | Function | Timing | Page Ref. |
|---|---|---|---|---|---|
| REGISTER CHANGE (cont.) | | | | | |
| CAX | 0 46 00400 | COPY A INTO INDEX | (A)→X | 1 | 13 |
| XXA | 0 46 00600 | EXCHANGE INDEX AND A | (X)↔(A) | 1 | 13 |
| CBX | 0 46 00020 | COPY B INTO INDEX | (B)→X | 1 | 13 |
| CXB | 0 46 00040 | COPY INDEX INTO B | (X)→B | 1 | 13 |
| XXB | 0 46 00060 | EXCHANGE INDEX AND B | (X)↔(B) | 1 | 13 |
| STE | 0 46 00122 | STORE EXPONENT | $(B_{15-23})\rightarrow X_{15-23}$<br>$0\rightarrow B_{15-23}, X_{15}\rightarrow X_{0-14}$ | 1<br>1 | 13 |
| LDE | 0 46 00140 | LOAD EXPONENT | $(X_{15-23})\rightarrow B_{15-23}$ | 1 | 14 |
| XEE | 0 46 00160 | EXCHANGE EXPONENTS | $(B_{15-23})\leftrightarrow(X_{15-23})$ | 1 | 14 |
| CNA | 0 46 01000 | COPY NEGATIVE INTO A | -(A)→A | 1 | 14 |
| MEMORY EXTENSION | | | | | |
| | 0 06 200SR | SET EXTENSION REGISTER | SR→ME | 1 | 19 |
| | 0 40 4000T | EXTENSION REGISTER TEST | $(ME)_T=0$ | 2, 3 | 20 |
| BRANCH | | | | | |
| BRU | 01 | BRANCH UNCONDITIONALLY | M→P | 1 | 14 |
| BRX | 41 | INCREMENT INDEX AND BRANCH | (X)+1→X<br>If X Neg., M→P<br>If X Pos., P+1→P | <br>1<br>2 | 14 |
| BRM | 43 | MARK PLACE AND BRANCH | (P)→M; M+1→P | 2 | 15 |
| BRR | 51 | RETURN BRANCH | (M)+1→P | 2 | 15 |
| TEST AND SKIP | | | | | |
| SKE | 50 | SKIP IF A EQUALS M | If (A)≠(M), P+1→P<br>If (A)=(M), P+2→P | 2<br>3 | 15 |
| SKG | 73 | SKIP IF A GREATER THAN M | If (A)≤(M), P+1→P<br>If (A)>(M), P+2→P | 2<br>3 | 15 |
| SKM | 70 | SKIP IF A=M ON B MASK | If (B)(A)≠(B)(M), P+1→P<br>If (B)(A)=(B)(M), P+2→P | 2<br>3 | 15 |
| SKA | 72 | SKIP IF M AND A DO NOT COMPARE ONES | If (A)(M)≠0, P+1→P<br>If (A)(M)=0, P+2→P | 2<br>3 | 16 |
| SKB | 52 | SKIP IF M AND B DO NOT COMPARE ONES | If (B)(M)≠0, P+1→P<br>If (B)(M)=0, P+2→P | 2<br>3 | 16 |
| SKN | 53 | SKIP IF M NEGATIVE | If (M)≥0, P+1→P<br>If (M)<0, P+2→P | 2<br>3 | 16 |
| SKR | 60 | REDUCE M, SKIP IF NEGATIVE | (M)-1→M<br>If (M) Pos., P+1→P<br>If (M) Neg., P+2→P | 3 | 16 |

| Mnemonic | Instruction Code | Name | Function | Timing | Page Ref. |
|---|---|---|---|---|---|
| TEST AND SKIP (cont.) | | | | | |
| SKD | 74 | DIFFERENCE EXPONENTS AND SKIP | $\|(B_{15-23})-(M_{15-23})\| \rightarrow X_{15-23}$ | | 16 |
| | | | If Difference is Pos., P+1 → P | 2 | |
| | | | If Difference is Neg., P+2 → P | 3 | |
| SKS | 40 | SKIP IF SIGNAL NOT SET | If Signal=1, P+1 → P | 2 | 27, 37 |
| | | | If Signal=0, P+2 → P | 3 | 38, 42 |
| SHIFT | | | | | |
| RSH | 0 66 00XXX | RIGHT SHIFT AB | AB Shift Right N Places | 2-7 | 17 |
| RCY | 0 66 20XXX | RIGHT CYCLE AB | AB Cycled Right N Places | 2-7 | 17 |
| LRSH | 0 66 24XXX | LOGICAL RIGHT SHIFT AB | AB Shift Right N Places | 2-7 | 17 |
| LSH | 0 67 00XXX | LEFT SHIFT AB | AB Shift Left N Places | 2-5 | 18 |
| LCY | 0 67 20XXX | LEFT CYCLE AB | AB Cycled Left N Places | 2-5 | 18 |
| NOD | 0 67 10XXX | NORMALIZE AND DECREMENT INDEX | AB Left and X-1 → X until $A_0 \neq A_1$, or N Shifts | 2-5 | 18 |
| CONTROL | | | | | |
| HLT | 00 | HALT | Halts Computation | 1 | 18 |
| NOP | 20 | NO OPERATION | - - - | 1 | 19 |
| EXU | 23 | EXECUTE | Instruction M is Performed, P is Unchanged | 1 | 19 |
| BREAKPOINT TESTS | | | | | |
| BPT1 | 0 40 20400 | BREAKPOINT NO. 1 TEST | Test Breakpoint Switch | 1, 2 | 19 |
| BPT2 | 0 40 20200 | BREAKPOINT NO. 2 TEST | Test Breakpoint Switch | 1, 2 | 19 |
| BPT3 | 0 40 20100 | BREAKPOINT NO. 3 TEST | Test Breakpoint Switch | 1, 2 | 19 |
| BPT4 | 0 40 20040 | BREAKPOINT NO. 4 TEST | Test Breakpoint Switch | 1, 2 | 19 |
| OVERFLOW | | | | | |
| OVT | 0 40 20001 | OVERFLOW INDICATOR TEST AND RESET | Test Overflow Indicator | 1, 2 | 19 |
| ROV | 0 02 20001 | RESET OVERFLOW | Turn Off Overflow Indicator | 1 | 19 |
| REO | 0 02 20010 | RECORD EXPONENT OVERFLOW | 1 → Overflow Indicator if $X_{14} \neq X_{15}$ | 1 | 18 |
| INTERRUPT | | | | | |
| EIR | 0 02 20002 | ENABLE INTERRUPT SYSTEM | | 1 | 23 |
| DIR | 0 02 20004 | DISABLE INTERRUPT SYSTEM | | 1 | 23 |
| IET | 0 40 20004 | INTERRUPT ENABLED TEST | Skip if Interrupt System Enabled | 1, 2 | 23 |
| IDT | 0 40 20002 | INTERRUPT DISABLED TEST | Skip if Interrupt System Disabled | 1, 2 | 23 |
| AIR | 0 02 20020 | ARM INTERRUPTS | | 1 | 23 |

| Mnemonic | Instruction Code | Name | Function | Timing | Page Ref. |
|---|---|---|---|---|---|
| **CHANNEL CONTROL** | | | | | |
| ALC 0 | 0 02 50000 | ALERT CHANNEL W | (For other channel codes, see page 35.) 3 | 1 | 33 |
| DSC 0 | 0 02 00000 | DISCONNECT CHANNEL W | (For other channel codes, see page 35.) | 1 | 33 |
| ASC 0 | 0 02 12000 | ALERT TO STORE ADDRESS IN CHANNEL W | (For other channel codes, see page 35.) | 1 | 33 |
| TOP 0 | 0 02 14000 | TERMINATE OUTPUT ON CHANNEL W | (For other channel codes, see page 35.) | 1 | 33 |
| **CHANNEL TESTS** | | | | | |
| CAT 0 | 0 40 14000 | CHANNEL W ACTIVE TEST; SKIP IF CHANNEL INACTIVE | (For other channel codes, see page 39.) | 2, 3 | 37 |
| CET 0 | 0 40 11000 | CHANNEL W ERROR TEST; SKIP IF NO ERROR | (For other channel codes, see page 39.) | 2, 3 | 37 |
| CIT 0 | 0 40 10400 | CHANNEL W INTER-RECORD TEST | (For other channel codes, see page 40.) | 2, 3 | 38 |
| CZT 0 | 0 40 12000 | CHANNEL W ZERO COUNT TEST; SKIP IF COUNT EQUALS ZERO | (For other channel codes, see page 40.) | 2, 3 | 38 |
| **INPUT/OUTPUT** | | | | | |
| MIW | 12 | M INTO W BUFFER WHEN EMPTY | (M)→W | 2 + wait | 38 |
| MIY | 10 | M INTO Y BUFFER WHEN EMPTY | (M)→Y | 2 + wait | 39 |
| WIM | 32 | W BUFFER INTO M WHEN FULL | (W)→M | 3 + wait | 39 |
| YIM | 30 | Y BUFFER INTO M WHEN FULL | (Y)→M | 3 + wait | 39 |
| PIN | 33 | PARALLEL INPUT | (Unit M)→M in Parallel | 4 + wait | 41 |
| POT | 13 | PARALLEL OUTPUT | (M)→Unit M in Parallel | 3 + wait | 41 |
| EOM | 02 | ENERGIZE OUTPUT M | | 1 | 26, 31 |
| EOD | 06 | ENERGIZE OUTPUT TO DIRECT ACCESS CHANNEL | | 1 | 27, 33 |
| BETW | 0 40 20010 | W BUFFER ERROR TEST | | 1, 2 | 37 |
| BETY | 0 40 20020 | Y BUFFER ERROR TEST | | 1, 2 | 37 |
| BRTW | 0 40 21000 | W BUFFER READY TEST | | 1, 2 | 37 |
| BRTY | 0 40 22000 | Y BUFFER READY TEST | | 1, 2 | 37 |
| **TYPEWRITER** | | | | | |
| RKB 0, 1, 4 | 0 02 02601 | READ KEYBOARD | | | 46 |
| TYP 0, 1, 4 | 0 02 02641 | WRITE TYPEWRITER | | | 46 |
| **PAPER TAPE** | | | | | |
| RPT 0, 1, 4 | 0 02 02604 | READ PAPER TAPE | | 1 | 49 |
| PTL 0, 1, 4 | 0 02 00644 | PUNCH PAPER TAPE WITH LEADER | | 1 | 49 |
| PPT 0, 1, 4 | 0 02 02644 | PUNCH PAPER TAPE WITH NO LEADER | | 1 | 49 |

| Mnemonic | Instruction Code | Name | Function | Timing | Page Ref. |
|---|---|---|---|---|---|
| PUNCHED CARD | | | | | |
| CRT 0, 1 | 0 40 12006 | CARD READER READY TEST | | 2, 3 | 53 |
| CFT 0, 1 | 0 40 11006 | CARD READER END-OF-FILE TEST | | 2, 3 | 53 |
| RCD 0, 1, 4 | 0 02 02606 | READ CARD DECIMAL (HOLLERITH) | | 1 | 53 |
| RCB 0, 1, 4 | 0 02 03606 | READ CARD BINARY | | 1 | 53 |
| CPT 0, 1 | 0 40 14046 | CARD PUNCH READY TEST | | 2, 3 | 53 |
| PCD 0, 1, 4 | 0 02 02646 | PUNCH CARD DECIMAL (HOLLERITH) | | 1 | 53 |
| PCB 0, 1, 4 | 0 02 03646 | PUNCH CARD BINARY | | 1 | 53 |
| FCT 0, 1 | 0 40 14006 | FIRST COLUMN TEST | | 2, 3 | 53 |
| PBT 0, 1 | 0 40 12046 | PUNCH BUFFER TEST | | 2, 3 | 53 |
| SRC 0, 1 | 0 02 12006 | SKIP REMAINDER OF CARD | | 1 | 53 |
| MAGNETIC TAPE | | | | | |
| TRT 0, n | 0 40 1041n | TAPE READY TEST | | 2, 3 | 57 |
| FPT 0, n | 0 40 1401n | FILE PROTECT TEST | | 2, 3 | 57 |
| BTT 0, n | 0 40 1201n | BEGINNING OF TAPE TEST | | 2, 3 | 57 |
| ETT 0, n | 0 40 1101n | END OF TAPE TEST | | 2, 3 | 58 |
| DT2 0, n | 0 40 1621n | DENSITY TEST, 200 BPI | | 2, 3 | 58 |
| DT5 0, n | 0 40 1661n | DENSITY TEST, 556 BPI | | 2, 3 | 58 |
| DT8 0, n | 0 40 1721n | DENSITY TEST, 800 BPI | | 2, 3 | 58 |
| TFT 0 | 0 40 13610 | TAPE END-OF-FILE TEST | | 2, 3 | 58 |
| TGT 0, n | 0 40 1261n | TAPE GAP TEST | | 2, 3 | 58 |
| WTB 0, n, 4 | 0 02 0365n | WRITE TAPE IN BINARY | | 1 | 58 |
| WTD 0, n, 4 | 0 02 0265n | WRITE TAPE IN DECIMAL (BCD) | | 1 | 58 |
| EFT 0, 4 | 0 02 0367n | ERASE TAPE FORWARD | | 1 | 58 |
| ERT 0, n, 4 | 0 02 0767n | ERASE TAPE IN REVERSE | | 1 | 58 |
| RTB 0, n, 4 | 0 02 0361n | READ TAPE IN BINARY | | 1 | 58 |
| RTD 0, n, 4 | 0 02 0261n | READ TAPE IN DECIMAL (BCD) | | 1 | 58 |
| SFB 0, n, 4 | 0 02 0363n | SCAN FORWARD IN BINARY | | 1 | 58 |
| SFD 0, n, 4 | 0 02 0263n | SCAN FORWARD IN DECIMAL (BCD) | | 1 | 58 |
| SRB 0, n, 4 | 0 02 0763n | SCAN REVERSE IN BINARY | | 1 | 58 |
| SRD 0, n, 4 | 0 02 0663n | SCAN REVERSE IN DECIMAL (BCD) | | 1 | 58 |
| REW 0, n | 0 02 1401n | REWIND | | 1 | 58 |
| | 0 40 1021n | MAGPAK TEST | | 2, 3 | 58 |
| RTS 0 | 0 02 14000 | CONVERT READ TO SCAN | | 1 | 58 |
| SRR 0 | 0 02 13610 | SKIP REMAINDER OF RECORD | | 1 | 58 |
| PRINTER | | | | | |
| PRT 0, 1 | 0 40 12060 | PRINTER READY TEST | | 2, 3 | 63 |
| EPT 0, 1 | 0 40 14060 | END OF PAGE TEST | | 2, 3 | 63 |
| PFT 0, 1 | 0 40 11060 | PRINTER FAULT TEST | | 2, 3 | 63 |
| POL 0, 1 | 0 02 10260 | PRINTER OFF-LINE | | 1 | 63 |
| PSC 0, 1, N | 0 02 1N460 | PRINTER SKIP TO CHANNEL N | | 1 | 63 |
| PSP 0, 1, N | 0 02 1N660 | PRINTER SPACE N LINES | | 1 | 63 |
| PLP 0, 1, 4 | 0 02 02660 | PRINT LINE PRINTER | | 1 | 63 |

# XDS 930 INSTRUCTION LIST - NUMERICAL ORDER

| Instruction Code | Mnemonic | Name | Page References |
|---|---|---|---|
| 00 | HLT | HALT | 18 |
| 01 | BRU | BRANCH UNCONDITIONALLY | 14 |
| 02 | EOM | ENERGIZE OUTPUT M | 25, 26, 27, 28, 31, 34, 41 |
| 0 02 00000 | DSC 0 | DISCONNECT CHANNEL W | For other channel codes see page 33 |
| 0 02 02601 | RKB 0, 1, 4 | READ KEYBOARD | 46 |
| 0 02 02641 | TYP 0, 1, 4 | WRITE TYPEWRITER | 46 |
| 0 02 00644 | PTL 0, 1, 4 | PUNCH PAPER TAPE WITH LEADER | 49 |
| 0 02 02604 | RPT 0, 1, 4 | READ PAPER TAPE | 49 |
| 0 02 02606 | RCD 0, 1, 4 | READ CARD DECIMAL (HOLLERITH) | 53 |
| 0 02 0261n | RTD 0, n, 4 | READ TAPE IN DECIMAL (BCD) | 58 |
| 0 02 0263n | SFD 0, n, 4 | SCAN FORWARD IN DECIMAL (BCD) | 58 |
| 0 02 02644 | PPT 0, 1, 4 | PUNCH PAPER TAPE WITH NO LEADER | 49 |
| 0 02 02646 | PCD 0, 1, 4 | PUNCH CARD DECIMAL (HOLLERITH) | 53 |
| 0 02 0265n | WTD 0, n, 4 | WRITE TAPE IN DECIMAL (BCD) | 58 |
| 0 02 02660 | PLP 0, 1, 4 | PRINT LINE PRINTER | 63 |
| 0 02 03606 | RCB 0, 1, 4 | READ CARD BINARY | 53 |
| 0 02 0361n | RTB 0, n, 4 | READ TAPE IN BINARY | 58 |
| 0 02 0363n | SFB 0, n, 4 | SCAN FORWARD IN BINARY | 58 |
| 0 02 03646 | PCB 0, 1, 4 | PUNCH CARD BINARY | 53 |
| 0 02 0365n | WTB 0, n, 4 | WRITE TAPE IN BINARY | 58 |
| 0 02 0367n | EFT n, 4 | ERASE TAPE FORWARD | 58 |
| 0 02 0663n | SRD 0, n, 4 | SCAN REVERSE IN DECIMAL (BCD) | 58 |
| 0 02 0763n | SRB 0, n, 4 | SCAN REVERSE IN BINARY | 58 |
| 0 02 0767n | ERT 0, n, 4 | ERASE TAPE IN REVERSE | 58 |
| 0 02 10260 | POL 0, 1 | PRINTER OFF-LINE | 63 |
| 0 02 12000 | ASC 0 | ALERT TO STORE ADDRESS IN CHANNEL W | For other channel codes, see page 33 |
| 0 02 12006 | SRC 0 | SKIP REMAINDER OF CARD | 53 |
| 0 02 13610 | SRR 0 | SKIP REMAINDER OF RECORD | 58 |
| 0 02 14000 | TOP 0 | TERMINATE OUTPUT ON CHANNEL W | For other channel codes, see page 34 |
| 0 02 14000 | RTS 0 | CONVERT READ TO SCAN | 58 |
| 0 02 1401n | REW 0, n | REWIND | 58 |
| 0 02 1N460 | PSC 0, 1, N | PRINTER SKIP TO CHANNEL N | 63 |
| 0 02 1N660 | PSP 0, 1, N | PRINTER SPACE N LINES | 63 |
| 0 02 20001 | ROV | RESET OVERFLOW | 19 |
| 0 02 20002 | EIR | ENABLE INTERRUPT SYSTEM | 23 |
| 0 02 20004 | DIR | DISABLE INTERRUPT SYSTEM | 23 |
| 0 02 20010 | REO | RECORD EXPONENT OVERFLOW | 18 |

| Instruction Code | Mnemonic | Name | Page References |
|---|---|---|---|
| 0 02 20020 | AIR | ARM INTERRUPTS | 23 |
| 0 02 50000 | ALC 0 | ALERT CHANNEL W | For other channel codes, see page 33 |
| 06 | EOD | ENERGIZE OUTPUT TO DIRECT ACCESS CHANNEL | 27, 28, 33, 34 |
| 0 06 200SR | | SET EXTENSION REGISTER | 19 |
| 10 | MIY | M INTO Y BUFFER WHEN EMPTY | 39 |
| 12 | MIW | M INTO W BUFFER WHEN EMPTY | 38 |
| 13 | POT | PARALLEL OUTPUT | 41 |
| 14 | ETR | EXTRACT | 11 |
| 16 | MRG | MERGE | 11 |
| 17 | EOR | EXCLUSIVE OR | 11 |
| 20 | NOP | NO OPERATION | 19 |
| 23 | EXU | EXECUTE | 19 |
| 30 | YIM | Y BUFFER INTO M WHEN FULL | 39 |
| 32 | WIM | W BUFFER INTO M WHEN FULL | 39 |
| 33 | PIN | PARALLEL INPUT | 41 |
| 35 | STA | STORE A | 8 |
| 36 | STB | STORE B | 8 |
| 37 | STX | STORE INDEX | 8 |
| 40 | SKS | SKIP IF SIGNAL NOT SET | 27, 37, 38, 42 |
| 0 40 1021n | | MAGPAK TEST | 58 |
| 0 40 10400 | CIT 0 | CHANNEL W INTER-RECORD TEST | For other channel codes, see page 38 |
| 0 40 1041n | TRT 0, n | TAPE READY TEST | 57 |
| 0 40 11000 | CET 0 | CHANNEL W ERROR TEST; SKIP IF NO ERROR | For other channel codes, see page 37 |
| 0 40 11006 | CFT 0, 1 | CARD READER END-OF-FILE TEST | 53 |
| 0 40 1101n | ETT 0, n | END OF TAPE TEST | 58 |
| 0 40 11060 | PFT 0, 1 | PRINTER FAULT TEST | 63 |
| 0 40 12000 | CZT 0 | CHANNEL W ZERO COUNT TEST; SKIP IF COUNT EQUALS ZERO | For other channel codes, see page 38 |
| 0 40 12006 | CRT 0, 1 | CARD READER READY TEST | 53 |
| 0 40 1201n | BTT 0, n | BEGINNING OF TAPE TEST | 57 |
| 0 40 12046 | PBT 0, 1 | PUNCH BUFFER TEST | 53 |
| 0 40 12060 | PRT 0, 1 | PRINTER READY TEST | 63 |
| 0 40 12610 | TGT 0 | TAPE GAP TEST | 58 |
| 0 40 13610 | TFT 0 | TAPE END-OF-FILE TEST | 58 |
| 0 40 14000 | CAT 0 | CHANNEL W ACTIVE TEST; SKIP IF CHANNEL INACTIVE | For other channel codes, see page 37 |
| 0 40 14006 | FCT 0, 1 | FIRST COLUMN TEST | 53 |
| 0 40 1401n | FPT 0, n | FILE PROTECT TEST | 57 |
| 0 40 14046 | CPT 0, 1 | CARD PUNCH READY TEST | 53 |
| 0 40 14060 | EPT 0, 1 | END OF PAGE TEST | 63 |
| 0 40 1621n | DT2 0, n | DENSITY TEST, 200 BPI | 58 |
| 0 40 1661n | DT5 0, n | DENSITY TEST, 556 BPI | 58 |

| Instruction Code | Mnemonic | Name | Page References |
|---|---|---|---|
| 0 40 1721n | DT8 0, n | DENSITY TEST, 800 BPI | 58 |
| 0 40 20001 | OVT | OVERFLOW INDICATOR TEST AND RESET | 19 |
| 0 40 20002 | IDT | INTERRUPT DISABLED TEST | 23 |
| 0 40 20004 | IET | INTERRUPT ENABLED TEST | 23 |
| 0 40 20010 | BETW | W BUFFER ERROR TEST | 37 |
| 0 40 20020 | BETY | Y BUFFER ERROR TEST | 37 |
| 0 40 20040 | BPT4 | BREAKPOINT NO. 4 TEST | 19 |
| 0 40 20100 | BPT3 | BREAKPOINT NO. 3 TEST | 19 |
| 0 40 20200 | BPT2 | BREAKPOINT NO. 2 TEST | 19 |
| 0 40 20400 | BPT1 | BREAKPOINT NO. 1 TEST | 19 |
| 0 40 21000 | BRTW | W BUFFER READY TEST | 37 |
| 0 40 22000 | BRTY | Y BUFFER READY TEST | 37 |
| 0 40 4000T | | EXTENSION REGISTER TEST | 20 |
| 41 | BRX | INCREMENT INDEX AND BRANCH | 14 |
| 43 | BRM | MARK PLACE AND BRANCH | 15 |
| 0 46 00001 | CLA | CLEAR A | 12 |
| 0 46 00002 | CLB | CLEAR B | 12 |
| 0 46 00003 | CLR | CLEAR AB | 12 |
| 0 46 00004 | CAB | COPY A INTO B | 12 |
| 0 46 00005 | ABC | COPY A INTO B, CLEAR A | 13 |
| 0 46 00010 | CBA | COPY B INTO A | 12 |
| 0 46 00012 | BAC | COPY B INTO A, CLEAR B | 13 |
| 0 46 00014 | XAB | EXCHANGE A AND B | 12 |
| 0 46 00020 | CBX | COPY B INTO INDEX | 13 |
| 0 46 00040 | CXB | COPY INDEX INTO B | 13 |
| 0 46 00060 | XXB | EXCHANGE INDEX AND B | 13 |
| 0 46 00122 | STE | STORE EXPONENT | 13 |
| 0 46 00140 | LDE | LOAD EXPONENT | 14 |
| 0 46 00160 | XEE | EXCHANGE EXPONENTS | 14 |
| 0 46 00200 | CXA | COPY INDEX INTO A | 13 |
| 0 46 00400 | CAX | COPY A INTO INDEX | 13 |
| 0 46 01000 | CNA | COPY NEGATIVE INTO A | 14 |
| 2 46 00000 | CLX | CLEAR INDEX REGISTER X | 13 |
| 50 | SKE | SKIP IF E EQUALS M | 15 |
| 51 | BRR | RETURN BRANCH | 15 |
| 52 | SKB | SKIP IF M AND B DO NOT COMPARE ONES | 16 |
| 53 | SKN | SKIP IF M NEGATIVE | 16 |
| 54 | SUB | SUBTRACT | 10 |
| 55 | ADD | ADD M TO A | 9 |
| 56 | SUC | SUBTRACT WITH CARRY | 10 |
| 57 | ADC | ADD WITH CARRY | 9 |
| 60 | SKR | REDUCE M, SKIP IF NEGATIVE | 16 |
| 61 | MIN | MEMORY INCREMENT | 9 |

| Instruction Code | Mnemonic | Name | Page References |
|---|---|---|---|
| 62 | XMA | EXCHANGE M AND A | 9 |
| 63 | ADM | ADD A TO M | 9 |
| 64 | MUL | MULTIPLY | 10 |
| 65 | DIV | DIVIDE | 11 |
| 0 66 00XXX | RSH | RIGHT SHIFT AB | 17 |
| 0 66 20XXX | RCY | RIGHT CYCLE AB | 17 |
| 0 66 24XXX | LRSH | LOGICAL RIGHT SHIFT AB | 17 |
| 0 67 00XXX | LSH | LEFT SHIFT AB | 18 |
| 0 67 10XXX | NOD | NORMALIZE AND DECREMENT INDEX | 18 |
| 0 67 20XXX | LCY | LEFT CYCLE AB | 18 |
| 70 | SKM | SKIP IF A=M ON B MASK | 15 |
| 71 | LDX | LOAD INDEX | 8 |
| 72 | SKA | SKIP IF M AND A DO NOT COMPARE ONES | 16 |
| 73 | SKG | SKIP IF A GREATER THAN M | 15 |
| 74 | SKD | DIFFERENCE EXPONENTS AND SKIP | 16 |
| 75 | LDB | LOAD B | 8 |
| 76 | LDA | LOAD A | 8 |
| 77 | EAX | COPY EFFECTIVE ADDRESS INTO INDEX REGISTER | 8 |

# XDS 930 INSTRUCTION LIST - ALPHABETICAL ORDER

| Mnemonic | Instruction Code | Name | Page References |
|---|---|---|---|
| ABC | 0 46 00005 | COPY A INTO B, CLEAR A | 13 |
| ADC | 57 | ADD WITH CARRY | 9 |
| ADD | 55 | ADD M TO A | 9 |
| ADM | 63 | ADD A TO M | 9 |
| AIR | 0 02 20020 | ARM INTERRUPTS | 23 |
| ALC 0 | 0 02 50000 | ALERT CHANNEL W | For other channel codes, see page 33 |
| ASC 0 | 0 02 12000 | ALERT TO STORE ADDRESS IN CHANNEL W | For other channel codes, see page 33 |
| BAC | 0 46 00012 | COPY B INTO A, CLEAR B | 13 |
| BETW | 0 40 20010 | W BUFFER ERROR TEST | 37 |
| BETY | 0 40 20020 | Y BUFFER ERROR TEST | 37 |
| BPT1 | 0 40 20400 | BREAKPOINT NO. 1 TEST | 19 |
| BPT2 | 0 40 20200 | BREAKPOINT NO. 2 TEST | 19 |
| BPT3 | 0 40 20100 | BREAKPOINT NO. 3 TEST | 19 |
| BPT4 | 0 40 20040 | BREAKPOINT NO. 4 TEST | 19 |
| BRM | 43 | MARK PLACE AND BRANCH | 15 |
| BRR | 51 | RETURN BRANCH | 15 |
| BRTW | 0 40 21000 | W BUFFER READY TEST | 37 |
| BRTY | 0 40 22000 | Y BUFFER READY TEST | 37 |
| BRU | 01 | BRANCH UNCONDITIONALLY | 14 |
| BRX | 41 | INCREMENT INDEX AND BRANCH | 14 |
| BTT 0, n | 0 40 1201n | BEGINNING OF TAPE TEST | 57 |
| CAB | 0 46 00004 | COPY A INTO B | 12 |
| CAT 0 | 0 40 14000 | CHANNEL W ACTIVE TEST; SKIP IF CHANNEL INACTIVE | For other channel codes, see page 37 |
| CAX | 0 46 00400 | COPY A INTO INDEX | 13 |
| CBA | 0 46 00010 | COPY B INTO A | 12 |
| CBX | 0 46 00020 | COPY B INTO INDEX | 13 |
| CET 0 | 0 40 11000 | CHANNEL W ERROR TEST; SKIP IF NO ERROR | For other channel codes, see page 37 |
| CFT 0, 1 | 0 40 11006 | CARD READER END-OF-FILE TEST | 53 |
| CIT 0 | 0 40 10400 | CHANNEL W INTER-RECORD TEST | For other channel codes, see page 38 |
| CLA | 0 46 00001 | CLEAR A | 12 |
| CLB | 0 46 00002 | CLEAR B | 12 |
| CLR | 0 46 00003 | CLEAR AB | 12 |
| CLX | 2 46 00000 | CLEAR INDEX REGISTER X | 13 |
| CNA | 0 46 01000 | COPY NEGATIVE INTO A | 14 |
| CPT 0, 1 | 0 40 14046 | CARD PUNCH READY TEST | 53 |
| CRT 0, 1 | 0 40 12006 | CARD READER READY TEST | 53 |

| Mnemonic | Instruction Code | Name | Page References |
|---|---|---|---|
| CXA | 0 46 00200 | COPY INDEX INTO A | 13 |
| CXB | 0 46 00040 | COPY INDEX INTO B | 13 |
| CZT 0 | 0 40 12000 | CHANNEL W ZERO COUNT TEST; SKIP IF COUNT EQUALS ZERO | 38 |
| DIR | 0 02 20004 | DISABLE INTERRUPT SYSTEM | 23 |
| DIV | 65 | DIVIDE | 11 |
| DSC 0 | 0 02 00000 | DISCONNECT CHANNEL W | For other channel codes, see page 33 |
| DT2 0, n | 0 40 1621n | DENSITY TEST, 200 BPI | 58 |
| DT5 0, n | 0 40 1661n | DENSITY TEST, 556 BPI | 58 |
| DT8 0, n | 0 40 1721n | DENSITY TEST, 800 BPI | 58 |
| EAX | 77 | COPY EFFECTIVE ADDRESS INTO INDEX REGISTER | 8 |
| EFT n, 4 | 0 02 0367n | ERASE TAPE FORWARD | 58 |
| EIR | 0 02 20002 | ENABLE INTERRUPT SYSTEM | 23 |
| EOD | 06 | ENERGIZE OUTPUT TO DIRECT ACCESS CHANNEL | 27, 28, 33, 34 |
| EOM | 02 | ENERGIZE OUTPUT M | 25, 26, 27, 28, 31, 34, 41 |
| EOR | 17 | EXCLUSIVE OR | 11 |
| EPT 0, 1 | 0 40 14060 | END OF PAGE TEST | 63 |
| ERT 0, n, 4 | 0 02 0767n | ERASE TAPE IN REVERSE | 58 |
| ETR | 14 | EXTRACT | 11 |
| ETT 0, n | 0 40 1101n | END OF TAPE TEST | 58 |
| EXU | 23 | EXECUTE | 19 |
| FCT 0, 1 | 0 40 14006 | FIRST COLUMN TEST | 53 |
| FPT 0, n | 0 40 1401n | FILE PROTECT TEST | 57 |
| HLT | 00 | HALT | 18 |
| IDT | 0 40 20002 | INTERRUPT DISABLED TEST | 23 |
| IET | 0 40 20004 | INTERRUPT ENABLED TEST | 23 |
| IORD | | I/O OF A RECORD AND DISCONNECT | 35 |
| IORP | | I/O OF A RECORD AND PROCEED | 35 |
| IOSD | | I/O UNTIL SIGNAL THEN DISCONNECT | 35 |
| IOSP | | I/O UNTIL SIGNAL THEN PROCEED | 36 |
| LCY | 0 67 20XXX | LEFT CYCLE AB | 18 |
| LDA | 76 | LOAD A | 8 |
| LDB | 75 | LOAD B | 8 |
| LDE | 0 46 00140 | LOAD EXPONENT | 14 |
| LDX | 71 | LOAD INDEX | 8 |
| LRSH | 0 66 24XXX | LOGICAL RIGHT SHIFT AB | 17 |
| LSH | 0 67 00XXX | LEFT SHIFT AB | 18 |
| MIN | 61 | MEMORY INCREMENT | 9 |
| MIW | 12 | M INTO W BUFFER WHEN EMPTY | 38 |
| MIY | 10 | M INTO Y BUFFER WHEN EMPTY | 39 |
| MRG | 16 | MERGE | 11 |

| Mnemonic | Instruction Code | Name | Page References |
|---|---|---|---|
| MUL | 64 | MULTIPLY | 10 |
| NOD | 0 67 10XXX | NORMALIZE AND DECREMENT INDEX | 18 |
| NOP | 20 | NO OPERATION | 19 |
| OVT | 0 40 20001 | OVERFLOW INDICATOR TEST AND RESET | 19 |
| PBT 0, 1 | 0 20 12046 | PUNCH BUFFER TEST | 53 |
| PCB 0, 1, 4 | 0 02 03646 | PUNCH CARD BINARY | 53 |
| PCD 0, 1, 4 | 0 02 02646 | PUNCH CARD DECIMAL (HOLLERITH) | 53 |
| PFT 0, 1 | 0 40 11060 | PRINTER FAULT TEST | 63 |
| PIN | 33 | PARALLEL INPUT | 41 |
| PLP 0, 1, 4 | 0 02 02660 | PRINT LINE PRINTER | 63 |
| POL 0, 1 | 0 02 10260 | PRINTER OFF LINE | 63 |
| POT | 13 | PARALLEL OUTPUT | 41 |
| PPT 0, 1, 4 | 0 02 02644 | PUNCH PAPER TAPE WITH NO LEADER | 49 |
| PRT 0, 1 | 0 40 12060 | PRINTER READY TEST | 63 |
| PSC 0, 1, N | 0 02 1N460 | PRINTER SKIP TO CHANNEL N | 63 |
| PSP 0, 1, N | 0 02 1N660 | PRINTER SPACE N LINES | 63 |
| PTL 0, 1, 4 | 0 02 00644 | PUNCH PAPER TAPE WITH LEADER | 49 |
| RCB 0, 1, 4 | 0 02 03606 | READ CARD BINARY | 53 |
| RCD 0, 1, 4 | 0 02 02606 | READ CARD DECIMAL (HOLLERITH) | 53 |
| RCY | 0 66 20XXX | RIGHT CYCLE AB | 17 |
| REO | 0 02 20010 | RECORD EXPONENT OVERFLOW | 18 |
| REW 0, n | 0 02 1401n | REWIND | 58 |
| RKB 0, 1, 4 | 0 02 02601 | READ KEYBOARD | 46 |
| ROV | 0 02 20001 | RESET OVERFLOW | 19 |
| RPT 0, 1, 4 | 0 02 02604 | READ PAPER TAPE | 49 |
| RSH | 0 66 00XXX | RIGHT SHIFT AB | 17 |
| RTB 0, n, 4 | 0 02 0361n | READ TAPE IN BINARY | 58 |
| RTD 0, n, 4 | 0 02 0261n | READ TAPE IN DECIMAL (BCD) | 58 |
| RTS 0 | 0 02 14000 | CONVERT READ TO SCAN | 58 |
| SFB 0, n, 4 | 0 02 0363n | SCAN FORWARD IN BINARY | 58 |
| SFD 0, n, 4 | 0 02 0263n | SCAN FORWARD IN DECIMAL (BCD) | 58 |
| SKA | 72 | SKIP IF M AND A DO NOT COMPARE ONES | 16 |
| SKB | 52 | SKIP IF M AND B DO NOT COMPARE ONES | 16 |
| SKD | 74 | DIFFERENCE EXPONENTS AND SKIP | 16 |
| SKE | 50 | SKIP IF A EQUALS M | 15 |
| SKG | 73 | SKIP IF A GREATER THAN M | 15 |
| SKM | 70 | SKIP IF A=M ON B MASK | 15 |
| SKN | 53 | SKIP IF M NEGATIVE | 16 |
| SKR | 60 | REDUCE M, SKIP IF NEGATIVE | 16 |

| Mnemonic | Instruction Code | Name | Page References |
|---|---|---|---|
| SKS | 40 | SKIP IF SIGNAL NOT SET | 27, 37, 38, 42 |
| SRB 0, n, 4 | 0 02 0763n | SCAN REVERSE IN BINARY | 58 |
| SRC 0, 1 | 0 02 12006 | SKIP REMAINDER OF CARD | 53 |
| SRD 0, n, 4 | 0 02 0663n | SCAN REVERSE IN DECIMAL (BCD) | 58 |
| SRR 0 | 0 02 13610 | SKIP REMAINDER OF RECORD | 58 |
| STA | 35 | STORE A | 8 |
| STB | 36 | STORE B | 8 |
| STE | 0 46 00122 | STORE EXPONENT | 13 |
| STX | 37 | STORE INDEX | 8 |
| SUB | 54 | SUBTRACT | 10 |
| SUC | 56 | SUBTRACT WITH CARRY | 10 |
| TFT 0 | 0 40 13610 | TAPE END-OF-FILE TEST | 58 |
| TGT 0 | 0 40 12610 | TAPE GAP TEST, CHANNEL W | 58 |
| TOP 0 | 0 02 14000 | TERMINATE OUTPUT OF CHANNEL W | 33, 34 |
| TRT 0, n | 0 40 1041n | TAPE READY TEST | 57 |
| TYP 0, 1, 4 | 0 02 02641 | WRITE TYPEWRITER | 46 |
| WIM | 32 | W BUFFER INTO M WHEN FULL | 39 |
| WTB 0, n, 4 | 0 02 0365n | WRITE TAPE IN BINARY | 58 |
| WTD 0, n, 4 | 0 02 0265n | WRITE TAPE IN DECIMAL (BCD) | 58 |
| XAB | 0 46 00014 | EXCHANGE A AND B | 12 |
| XEE | 0 46 00160 | EXCHANGE EXPONENTS | 14 |
| XMA | 62 | EXCHANGE M AND A | 9 |
| XXA | 0 46 00600 | EXCHANGE INDEX AND A | 13 |
| XXB | 0 46 00060 | EXCHANGE INDEX AND B | 13 |
| YIM | 30 | Y BUFFER INTO M WHEN FULL | 39 |

# XDS 930 INPUT/OUTPUT INSTRUCTIONS

| Mnemonic | | Octal Code | Name | Page Ref. |
|---|---|---|---|---|
| **GENERAL** | | | | |
| EOM | A | 02 | Energize Output M | 26 |
| EOD | A | 06 | Energize Output to Direct Access Channel | 27 |
| MIW | A,T | 12 | Memory into W when Empty | 38 |
| MIY | A,T | 10 | Memory into Y when Empty | 39 |
| PIN | A,T | 33 | Parallel Input | 41 |
| POT | A,T | 13 | Parallel Output | 41 |
| WIM | A,T | 32 | W into Memory when Full | 39 |
| YIM | A,T | 30 | Y into Memory when Full | 39 |
| **CHANNEL** | | | | |
| ALC | C | 0 02 50000 | Alert Channel | 33 |
| DSC | C | 0 02 00000 | Disconnect Channel | 33 |
| TOP | C | 0 02 14000 | Terminate Output | 33 |
| BET | W | 0 40 20010 | Buffer Error Test W | 37 |
| BET | Y | 0 40 20020 | Buffer Error Test Y | 37 |
| BRT | W | 0 40 21000 | Buffer Ready Test W | 37 |
| BRT | Y | 0 40 22000 | Buffer Ready Test Y | 37 |
| ASC | C | 0 02 12000 | Alert to Store Address | 33 |
| CAT | C | 0 40 14000 | Channel Active Test; Skip if Inactive | 37 |
| CET | C | 0 40 11000 | Channel Error Test; Skip if no Error | 37 |
| CIT | C | 0 40 10400 | Channel Inter-Record Test | 38 |
| CZT | C | 0 40 12000 | Channel 0 Count Test; Skip if Count=0 | 38 |

## PERIPHERAL DEVICE INSTRUCTIONS AND TESTS

Octal Codes given are for the W Channel, device number 0 (bits 21-23), and 4 character/word mode (bits 15, 16).

| Mnemonic | | Octal Code | Name | Page Ref. |
|---|---|---|---|---|
| **PAPER TAPE** | | | | |
| RPT | C,U,CC | 0 02 02604 | Read Paper Tape | 49 |
| PTL | C,U,CC | 0 02 00644 | Punch Paper Tape, Leader | 49 |
| PPT | C,U,CC | 0 02 02644 | Punch Paper Tape, No Leader | 49 |
| **CARD** | | | | |
| CRT | C,U | 0 40 12006 | Card Reader Ready Test | 53 |
| FCT | C,U | 0 40 14006 | First Column Test | 53 |
| RCD | C,U,CC | 0 02 02606 | Read Card Decimal (Hollerith) | 53 |
| RCB | C,U,CC | 0 02 03606 | Read Card Binary | 53 |
| CFT | C,U | 0 40 11006 | Card Reader EOF Test | 53 |
| SRC | C,U | 0 02 12006 | Skip Remainder of Card | 53 |
| CPT | C,U | 0 40 14046 | Card Punch Ready Test | 53 |
| PBT | C,U | 0 40 12046 | Punch Buffer Test | 53 |
| PCD | C,U,CC | 0 02 02646 | Punch Card Decimal (Hollerith) | 53 |
| PCB | C,U,CC | 0 02 03646 | Punch Card Binary | 53 |

| Mnemonic | | Octal Code | Name | Page Ref. |
|---|---|---|---|---|
| **MAGNETIC TAPE** | | | | |
| TRT | C,U | 0 40 10410 | Tape Ready Test | 57 |
| FPT | C,U | 0 40 14010 | File Protect Test | 57 |
| BTT | C,U | 0 40 12010 | Beginning of Tape Test | 57 |
| TGT | C | 0 40 12610 | Tape Gap Test | 58 |
| ETT | C,U | 0 40 11010 | End of Tape Test | 58 |
| DT2 | C,U | 0 40 16210 | Density Test, 200 BPI | 58 |
| DT5 | C,U | 0 40 16610 | Density Test, 556 BPI | 58 |
| DT8 | C,U | 0 40 17210 | Density Test, 800 BPI | 58 |
| TFT | C | 0 40 13610 | Tape EOF Test | 58 |
| | | 0 40 10210 | MAGPAK Test | 58 |
| RTD | C,U,CC | 0 02 02610 | Read Tape Decimal (BCD) | 58 |
| RTB | C,U,CC | 0 02 03610 | Read Tape Binary | 58 |
| RTS | C | 0 02 14000 | Convert READ to Scan | 58 |
| SRR | C | 0 02 13610 | Skip Remainder of Record | 58 |
| SFD | C,U,CC | 0 02 02630 | Scan Forward Decimal (BCD) | 58 |
| SFB | C,U,CC | 0 02 03630 | Scan Forward Binary | 58 |
| SRD | C,U,CC | 0 02 06630 | Scan Reverse Decimal (BCD) | 58 |
| SRB | C,U,CC | 0 02 07630 | Scan Reverse Binary | 58 |
| WTD | C,U,CC | 0 02 02650 | Write Tape Decimal (BCD) | 58 |
| WTB | C,U,CC | 0 02 03650 | Write Tape Binary | 58 |
| EFT | C,U, CC | 0 02 03670 | Erase Forward Tape | 58 |
| ERT | C,U,CC | 0 02 07670 | Erase Reverse Tape | 58 |
| REW | C,U | 0 02 14010 | Rewind | 58 |
| **LINE PRINTER** | | | | |
| PRT | C,U | 0 40 12060 | Printer Ready Test | 63 |
| EPT | C,U | 0 40 14060 | End of Page Test | 63 |
| PFT | C,U | 0 40 11060 | Printer Fault Test | 63 |
| POL | C,U | 0 02 10260 | Print Off-Line | 63 |
| PSC | C,U,N | 0 02 1N460 | Printer Skip to Channel N | 63 |
| PSP | C,U,N | 0 02 1N660 | Printer Space N Lines | 63 |
| PLP | C,U,CC | 0 02 02660 | Print Line Printer | 63 |
| **TYPEWRITER** | | | | |
| RKB | C,U,CC | 0 02 02601 | Read Keyboard | 46 |
| TYP | C,U,CC | 0 02 02641 | Write Typewriter | 46 |

### OCTAL CODE CHANNEL SELECTION

| Channel | EOM (02) | SKS (40) |
|---|---|---|
| W | 00000000 | 00000000 |
| Y | 00000100 | 00000100 |
| C | 20000000 | 20000000 |
| D | 20000100 | 20000100 |
| E | 00600000 | 00040000 |
| F | 00600100 | 00040100 |
| G | 20600000 | 20040000 |
| H | 20600100 | 20040100 |

Add the appropriate entry to the octal code to select the channel.
Example: PCD (i.e., 00202646) for channel G is 20602646.

Legend:

A = address; T = tag field; C = channel number; U = unit number; CC = character/word count; N = number.

XDS

Xerox Data Systems 701 South Aviation Blvd. / El Segundo, California 90245 (213) 772-4511 / Cable SCIDATA / Telex 674839 / TWX 910-325-6908

EASTERN TECHNOLOGY CENTER
12150 Parklawn Drive
Rockville, Maryland 20852
(301) 933-5900

PRINTED CIRCUITS DEPT.
600 East Bonita Avenue
Pomona, Calif. 91767
(714) 624-8011

TECHNICAL TRAINING
5250 West Century Blvd.
Los Angeles, Calif. 90045
(213) 772-4511

INTERNATIONAL MANUFACTURING SUBSIDIARY

Scientific Data Systems Israel, Ltd.
P.O. Box 5101
Haifa, Israel
04-530253, 04-64589
Telex 922 4474

SALES OFFICES

**Western Region**

Building Arts Bldg.
Suite G100
5045 N. 12th St.
Phoenix, Arizona 85014
(602) 264-9324

1360 So. Anaheim Blvd.
Anaheim, Calif. 92805
(714) 774-0461

*5250 West Century Blvd.
Los Angeles, Calif. 90045
(213) 772-4511

Vista Del Lago Office Center
122 Saratoga Avenue
Santa Clara, Calif. 95050
(408) 246-8330

Wells Fargo Building
Suite 500
21535 Hawthorne Blvd.
Torrance, Calif. 90503
(213) 542-5561

3333 South Bannock
Suite 400
Englewood, Colo. 80110
(303) 761-2645

320 Ward Avenue
Honolulu, Hawaii 96814
(808) 531-8257

Fountain Professional Bldg.
9004 Menaul Blvd., N.E.
Albuquerque, N.M. 87112
(505) 298-7683

El Paso Natural Gas Bldg.
Suite 201
315 E. 2nd South Street
Salt Lake City, Utah 84111
(801) 322-0501

400 Building
Suite 415
400 108th Avenue N.E.
Bellevue, Wash. 98004
(206) 454-3991

**Midwestern Region**

*2720 Des Plaines Avenue
Des Plaines, Illinois 60018
(312) 824-8147

Clausen Bldg., Suite 310
16000 W. Nine Mile Road
Southfield, Michigan 48075
(313) 353-7360

4410 Woodson Road
Suite 111
St. Louis, Missouri 63134
(314) 423-6200

One Erieview Plaza
13th Floor
Cleveland, Ohio 44114
(216) 522-1850

Seven Parkway Center
Suite 238
Pittsburgh, Pa. 15220
(412) 921-3640

**Southern Region**

State National Bank Bldg.
Suite 620
200 W. Court Square
Huntsville, Alabama 35801
(205) 539-5131

Orlando Executive Center
1080 Woodcock Road
Orlando, Florida 32803
(305) 841-6371

2964 Peachtree Road, N.W.
Suite 350
Atlanta, Georgia 30305
(404) 261-5323

Jefferson Bank Bldg.
Suite 720
3525 N. Causeway Blvd.
Metairie, Louisiana 70002
(504) 837-1515

4920 S. Lewis Avenue
Suite 103
Tulsa, Oklahoma 74105
(918) 743-7753

8383 Stemmons Freeway
Suite 233
Dallas, Texas 75247
(214) 637-4340

*2300 West Loop South
Suite 150
Houston, Texas 77027
(713) 623-0510

**Eastern Region**

10227 Wincopin Circle
Suite 716
Columbia, Maryland 21043
(301) 730-4900

20 Walnut Street
Wellesley Hills, Mass. 02181
(617) 237-2300

Brearley Office Building
190 Moore Street
Hackensack, N. J. 07601
(201) 489-0100

The Fortune Building
280 North Central Avenue
Hartsdale, New York 10530
(914) 948-2929

*1301 Avenue of the Americas
New York City, N.Y. 10019
(212) 765-1230

673 Panorama Trail West
Rochester, New York 14625
(716) 586-1500

P.O. Box 168
535 Pennsylvania Ave.
Ft. Washington Industrial Park
Ft. Washington, Pa. 19034
(215) 643-4250

Kogerama Building
Suite 212
No. 1 Tidewater
Executive Center
Norfolk, Virginia 23502
(703) 497-6811

**Washington (D.C.) Operations**

*2351 Research Blvd.
Rockville, Maryland 20850
(301) 948-8190

**Canada**

864 Lady Ellen Place
Ottawa 3, Ontario
(613) 722-8387

1009 7th Avenue, S.W.
Calgary 2, Alberta
(403) 265-8134

280 Belfield Road
Rexdale 605, Ontario
(416) 677-8422

1901 North Service Road
Trans Canada Highway
Dorval, P.Q.
(514) 683-3755

INTERNATIONAL OFFICES & REPRESENTATIVES

**European/African Headquarters**

Scientific Data Systems
I.L.I. House, Olympic Way
Wembley Park (London)
Middlesex, England
(01) 903-2511, Telex 27992

**Sweden**

Nordisk Elektronik AB
Stureplan 3
Stockholm 7
(08) 24 83 40

**Denmark**

A/S Nordisk Elektronik
Danasvej 2
Copenhagen V
EVA 8285/EVA 8238

**Norway**

Nordisk Elektronik (Norge) A/S
Middelthunsgt. 27
Oslo 3
(2) 60 25 90

**France**

Compagnie Internationale
pour l'Informatique, C.I.I.
66, Route de Versailles
78-Louveciennes
Yvelines
951 86 00 (Paris area)

**Israel**

Elbit Computers Ltd.
Subsidiary of Elron
Electronic Industries Ltd.
88 Hagiborim Street
Haifa
6 4613

*Regional Headquarters