SPERRY RAND
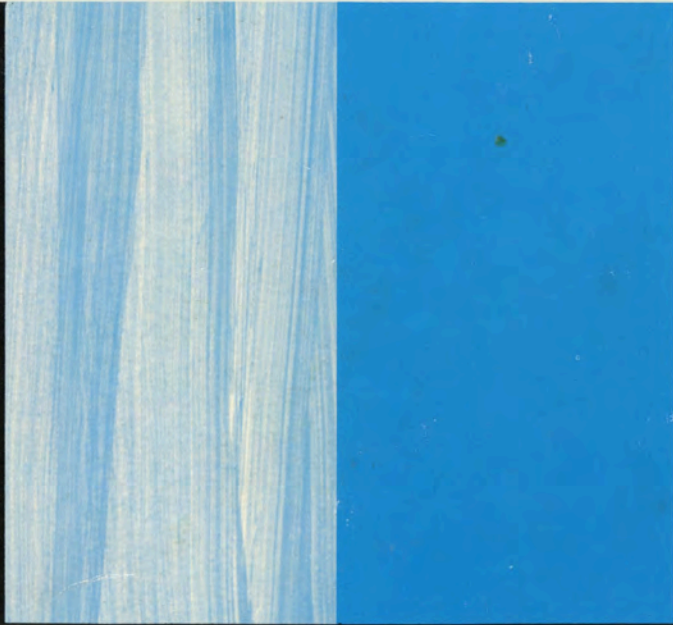
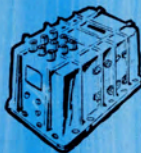# UNIVAC FEDERAL SYSTEMS DIVISION

COMPUTERS

1212

1213

1218

1230

1219

1824

1289

1818

1830A

INTRODUCTION

The computer systems presented on the following pages represent the advanced military computer technology available from UNIVAC Federal Systems Division. Two families of ruggedized systems components, designed and constructed to meet military specifications, are included:

- Fixed-Location and Mobile Surface Systems.
- Aerospace and Avionic Systems.

The hardware capabilities, software capabilities, and available peripheral equipment are shown in tabulated form toward the end of the booklet.

The sizes and weights listed are approximate.

UNIVAC®1212 MILITARY COMPUTER (CP-642B)

MILITARIZED CONSTRUCTION
(MIL-E-16400)

COMPACT
Size: 72"H x 38"W x 37"D
Weight: 2400 pounds

30-BIT WORD LENGTH
Half-Word Option

MEMORY
Magnetic Core Main Memory
32K Words
4-Microsecond Cycle Time
NDRO Memory
64 Words
Magnetic Thin-Film Control Memory
64 Words
667-Nanoseconds Cycle Time

SEVEN INDEX REGISTERS
Located in Control Memory

INSTRUCTIONS
62 Single Address Instructions
15 Logical
Square Root Instruction
Branching Possible On Most

TIMING DEVICES
(Time Increment of 1/1024 Second)

INPUT/OUTPUT CAPABILITIES (Buffered)
16 I/O Channels (Maximum)
Automatic Priority Determination

INTERCOMPUTER
On Any Channel

INTERRUPTS
16 External
65 Internal

RELIABILITY
MTBF of 1500 Hours (Calculated)
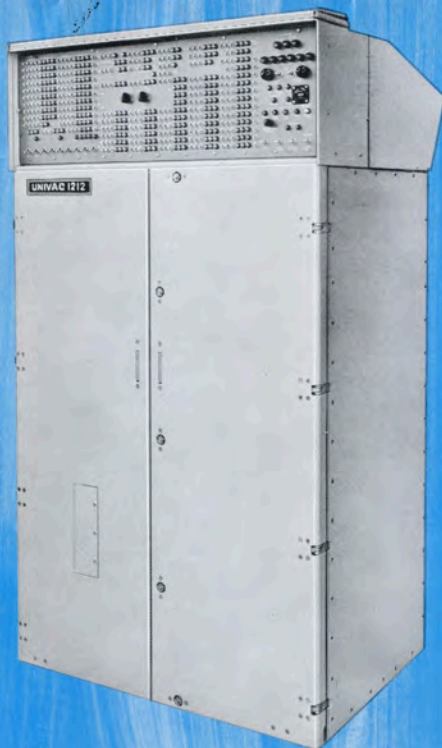
UNIVAC 1213 MILITARY COMPUTER (CP-808 TYK)

MILITARIZED CONSTRUCTION
(MIL-E-16400)

COMPACT
Size: 72"H x 38"W x 37"D
Weight: 1650 pounds

30-BIT WORD LENGTH
Half-Word Option

MEMORY
Magnetic Core Main Memory
32K Words
4-Microseconds Cycle Time
NDRO Memory
64 Words
Magnetic Thin-Film Control Memory
64 Words
667-Nanoseconds Cycle Time

SEVEN INDEX REGISTERS
Located in Control Memory

INSTRUCTIONS
62 Single Address Instructions
15 Logical
Square Root Instruction
Branching Possible On Most

TIMING DEVICES
(Time Increment of 1/1024 Second)

INPUT/OUTPUT CAPABÍLITIES (Buffered)
12 I/O Channels (Maximum)
Automatic Priority Determination

INTERCOMPUTER
On Any Channel

INTERRUPTS
16 External
65 Internal

RELIABILITY
MTBF of 1500 Hours (Calculated)

UNIVAC 1218 MILITARY COMPUTER (CP-789/UYK)

MILITARIZED CONSTRUCTION
(MIL-E-16400)

COMPACT
Size: 72"H x 26"W x 30"D
Weight: 830 Pounds (16K 8 I/O)

18-BIT WORD LENGTH
Double-Word Option
Arithmetic
Input/Output Transfer

MEMORY
Magnetic Core
4K, 8K, 16K or 32K Words
32 Words NDRO (Bootstrap)
4-Microseconds Cycle Time

EIGHT INDEX REGISTERS
Located $1-10_8$ in Core Memory
18 Bits Each

98 SINGLE ADDRESS INSTRUCTIONS
16 Logical (Bit Manipulation Type)
4 Double Precision

TIMING DEVICES
(Time Increment of 1/1024 Second)

INPUT/OUTPUT CAPABILITIES (Buffered)
Four or Eight I/O Channels
Forward or Backward
Automatic Priority Determination
ESI and ESA
Dual Channel Capability (36-Bits)

INTERRUPTS
8 External
25 Internal
1 Synchronizing

INTERCOMPUTER
On Any Channel

RELIABILITY
MTBF of 2100 Hours (Calculated)
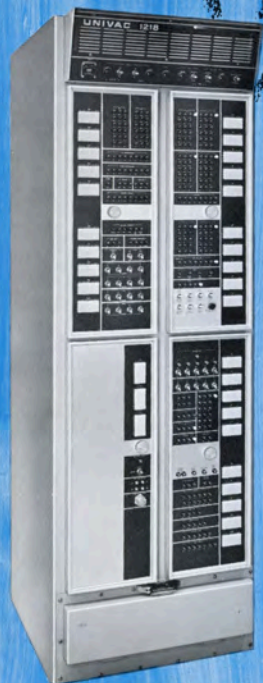
MK 152 for TARTAR + TALOS
(B)

UNIVAC 1219 MILITARY COMPUTER (CP-848/UYK)

MILITARIZED CONSTRUCTION
(MIL-E-16400)

COMPACT
Size: 72"H x 26"W x 30"D
(32K - 8 I/O)
Weight: 1000 Pounds

18-BIT WORD LENGTH
Double-Word Option
Arithmetic
Input/Output Transfer

MEMORY
Magnetic Core Main Memory
2-Microsecond Cycle Time
8K, 16K, 32K, or 65K Words
Fast Core Control Memory
500-Nanosecond Cycle Time
128 18-Bit Words (256 Words Optional)
Fixed Memory
32 18-Bit Words (NDRO)
Bootstrap and Fault Recovery Operations

EIGHT INDEX REGISTERS (18-Bits Each)
Located $1\text{-}10_8$ in Control Memory

102 SINGLE ADDRESS INSTRUCTIONS
16 Logical (Bit Manipulation Type)
4 Double Precision

TIMING DEVICES
(Time Increment of 1/1024 Second)

INPUT/OUTPUT CAPABILITIES (Buffered)
Four or Eight I/O Channels
Forward or Backward
Automatic Priority Determination
CDM, ESI and ESA
Dual Channel Capability (36-Bits)

INTERRUPTS
8 or 16 External
27 or 51 Internal

INTERCOMPUTER
On Any Channel

RELIABILITY
MTBF of 1500 Hours (Calculated)

UNIVAC 1230 MILITARY COMPUTER (CP-855/UYK)

MILITARIZED CONSTRUCTION
(MIL-E-16400)

COMPACT
Size: 72"H x 38"W x 37"D
Weight: 2200 Pounds

30-BIT WORD LENGTH
Half-Word Option

MODES OF OPERATION (Switch Selectable)
CP-642A/CP/642B Mode
1230 Mode

MEMORY
Magnetic Core Main Memory
32K to 65K Words
Expandable in 16K Modules
2-Microsecond Cycle Time for Each Bank
Overlap Feature Produces Effective
One-Microsecond Cycle Time
Nondestructive Readout Memory
64 30-Bit Words
Magnetic Thin-Film Control Memory
128 30-Bit Words (256 Words Optional)
400-Nanosecond Cycle Time

SEVEN INDEX REGISTERS
Located in Control Memory

INSTRUCTIONS
78 Single Address Instructions
15 Logical
Square Root Instruction
Branching Possible On Most

TIMING DEVICES
(Time Increment of 1/1024 Second)

INPUT/OUTPUT CAPABILITIES (Buffered)
16 I/O Channels (Maximum)
Automatic Priority Determination
CDM, ESI and ESA

INTERRUPTS
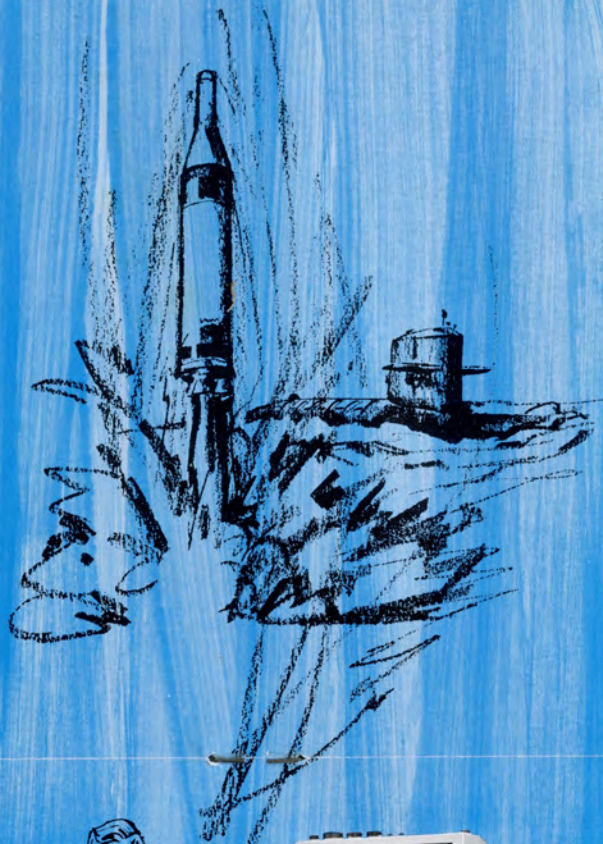16 External
65 Internal

INTERCOMPUTER
On Any Channel

RELIABILITY
MTBF of 1500 Hours (Calculated)

OPTIONS
Floating Point
Expanded Memory

UNIVAC 1289 MILITARY COMPUTER (CP-890/UYK)

MILITARIZED CONSTRUCTION
(MIL-E-16400)
Integrated Circuit Modules

COMPACT
Size: 74"H x 22"W x 18"D
Weight: 700 Pounds Maximum

30-BIT WORD LENGTH
Arithmetic
Input/Output Transfer

MEMORY
Magnetic Core (32-bit; 2 parity bits)
32K to 262K Words
1.8 Microsecond Cycle Time
Overlap Feature Produces Effective
One-Microsecond Cycle Time
Temperature Stable

SEVEN INDEX REGISTERS
Integrated Circuits

105 SINGLE ADDRESS INSTRUCTIONS
Floating Point; Double Precision
Controlled Index Addressing
Indirect Addressing

TIMING DEVICES
(Time Increment of 1/1024 Second)

INPUT/OUTPUT CAPABILITIES
12* to 16 30-Bit Parallel Buffered
I/O Channels
2 Special Input Channels*
2 Special Output Channels*

INTERRUPTS
21 External
72 Internal
 1 Real Time Clock

INTERCOMPUTER
On Any Standard Input/Output Channel

RELIABILITY
MTBF of 2000 Hours (Calculated)

*CP-890 Only

UNIVAC 1818
AVIONICS COMPUTER

MILITARIZED CONSTRUCTION
(MIL-E-5400 Class 2)

COMPACT
Size:*   7.6"H x 9.9"W x 20.5"D
Weight:** 43 Pounds

18-BIT WORD LENGTH
Instruction and Data Words
Double Precision Add/Subtract Optional

MEMORY
Intermix of Coincident Current Core (DRO)***
and Core Rope (NDRO)
4K to 32K Total Capacity
2-Microsecond Cycle Time

THREE INDEX REGISTERS
Located in Core Memory
18-Bits Each

INSTRUCTIONS
27 Basic
62 Total

TIMING
Real Time Interrupt 1024 Hz

INPUT/OUTPUT CAPABILITIES
8 I/O Channels (Maximum)

INTERRUPTS
1 Power
1 Fault
1 Real Time Clock
6 External

INTERCOMPUTER
Optional

RELIABILITY
MTBF of 3410 Hours (Calculated)

*Up to 12K Memory and 8 I/O Channels
**For 4K Memory Configuration
***Unprotected or Protected Core

UNIVAC 1824
AEROSPACE COMPUTER

MILITARIZED CONSTRUCTION
Designed for Aerospace Environment
(MIL-STD-810; FED-STD-151;
Classified Document for Nuclear
Radiation; Meets Severe Re-Entry
Environment)

COMPACT*
Size: 9.1"H x 9.4"W x 15.3"D
Weight: 44.6 Pounds

16-BIT INSTRUCTION WORD LENGTH

24-BIT DATA WORD LENGTH

MEMORY
Magnetic Thin-Film
4-Microsecond Cycle Time
DRO: 256-1024 24-Bit Words
NDRO: 1024 to 8192 48-Bit Words
(Up to 24,516 16-Bit Instructions)
Random Access
Electrically Alterable

THREE INDEX REGISTERS
Located in Film Memory

INSTRUCTIONS
41 Instructions (16-Bits)

TIMING
Real Time Clock

INPUT/OUTPUT CAPABILITY
Complete I/O Circuit Family
Available; Can Be Readily Tailored
to Specific I/O Requirements

INTERRUPTS
2 External
1 Internal

RELIABILITY
MTBF of 10,000 Hours (Calculated)

*For 4096-Word 48-Bit NDRO, 512-Word 24-Bit DRO Memory
Configuration

UNIVAC 1830A AVIONICS COMPUTER (CP-901)

MILITARIZED CONSTRUCTION
(MIL-E-5400)

COMPACT*
Size: 51"H x 13.5"W x 17.6"D
Weight: 345 Pounds

30-BIT WORD LENGTH
Single Word
Arithmetic
Input/Output Transfer

MEMORY
Magnetic Core
4K to 65K Words (Expandable to 131K)
512 Words NDRO (Core Rope Bootstrap)
2-Microseconds Cycle Time Without Overlap
1-Microsecond (Effective) Cycle Time With Overlap

SEVEN INDEX REGISTERS
Hardware Index Registers (15-Bits)

70 SINGLE ADDRESS INSTRUCTIONS
7 Branch Designator
7 Operand Interpretation Designators

TIMING DEVICES
(Time Increment of 1/1024 Second)

INPUT/OUTPUT CAPABILITIES (Buffered)
16 I/O Channels (Maximum)
Automatic Priority Determination
ESA, and ESI (Optional)

INTERRUPTS
4 Internal
5 I/O (Unique Types)

INTERCOMPUTER
On Any Channel

RELIABILITY
MTBF of 2000 Hours (Calculated)

For 1830A with 65K Memory

2010 DATA
TRANSMISSION UNIT

1540 MAGNETIC
TAPE UNIT

1532 INPUT/OUTPUT CONSOLE

1551 DISPLAY UNIT

1259 TELETYPEWRITER SET

1569 HIGH SPEED PRINTER

1549 CARD READER-PUNCH-INTERPRETER

UNIVAC PERIPHERAL EQUIPMENT

ON-LINE TYPEWRITER
  *1532 I/O Console
        Keyboard IN — 10 Characters
        Per Second Printer
  *Teletypewriter and Adapter Unit
   UGC-6, 13 or FGC 20, 25, 52

PAPER TAPE READER
  *1532 I/O Console...............300 cps
   Commercial Subsystem...........400 cps

PAPER TAPE PUNCH
  *1532 I/O Console................110 cps
   Commercial Subsystems..........110 cps

CARD EQUIPMENT
   Military Card Punch........200 cards/min
   Military Card Reader ....400 cards/min
   Commercial Card Punch.....200 cards/min
   Commercial Card Reader ....615 cards/min

HIGH-SPEED PRINTERS
   1569 Printer..................600 lpm

MASS STORAGE
   786,432 Character Drum
   4.7 Million Character Drum
   132 Million Character Drum

MAGNETIC TAPE
  *1243 (NTDS Service Test)
   1240 (556 BPI, 112.5 IPS, Pinch Roller)
   1245 (200 BPI, 112.5 IPS, Pinch Roller)
  *1540 (800 BPI, 120 IPS, Pinch Roller)
  *RD 261 (1600 BPI, 30 IPS, Pinch Roller)

DISPLAY TERMINAL
   1551 Alphanumeric Display Unit
        25 Lines, 80 Characters
        Flexible Data Entry and
        Control Structure

COMMUNICATIONS EQUIPMENT
  *Teletypewriter
   Standard Communications Subsystem
   Communications Multiplexer (CM)
        Scanner Selectors
   Communication Line Terminals (CLT)
   Communication Control Units (CCU)
        Scanner Selectors
  *Data Transmission Unit (DTU)

*MILITARIZED EQUIPMENT

COMPUTER COMPARISON TABLE

		1212/ CP-642B	1213/ CP-808	1218/ CP-789	1219/ CP-848	1230/ CP-855	1289/ CP-890	1818	1824	1830A/ CP-901
Word Size (Bits)		30	30	18	18	30	30	18	16	30
Indirect Addressing		Some	Some	Some	Some	Some	Some	No	No	Some
MEMORY / Main	Capacity (Words)	32K	32K	4K-32K	32K-65K	16K-131K	32K-262K	4K-32K	3K-16K	4K-131K
	Cycle Time	4μs	4μs	4μs	2μs	2μs	1.8μs	2μs	4μs	2μs
	Overlapped Banks	No	No	No	No	Yes	Yes	No	No	Yes
	Data Size (Bits)	15 or 30	15 or 30	18 or 36	18 or 36	15 or 30	15 or 30	18 or 36	24	15 or 30
Control	Capacity (Words)	64	64	None	128 or 256	128 or 256	128	None	None	N/A
	Cycle Time	0.667μs	0.667μs	N/A	0.5μs	0.4μs	0.1μs	N/A	N/A	N/A
	Bootstrap (Words)	64	64	32	32	64	128	No	1	512
Index Registers		7(Film)	7(Film)	8(Core)	8(Fast Core)	7(Film)	7▲	3(Core)	3(Film)	7▲
Instructions		62	62	98	102	78□	105	27	41	70
Basic Add Time		8μs	8μs	8μs	4μs	2μs ◆	1.8μs ◆	2μs	8μs	2μs
Interrupts		82	82	34	51	98	120	9	2	85
I/O Channel (Max)		16	12	8	16	16△	16	16	$2^{12}+2^4$	16
ESI or ESA Options		No	No	ESI/ESA	ESI/ESA	ESI/ESA	ESI/ESA	ESI	ESI	Yes
Real-Time Clocks		1	1	1	2	1 or 2	2,	1	1	2

	1212/ CP-642B	1213/ CP-808	1218/ CP-789	1219/ CP-848	1230/ CP-855	1289/ CP-890	1818	1824	1830A/ CP-901
I/O UNITS Day Clock (Input)	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes
Magnetic Drums	Yes	Yes	Yes	Yes	Yes		No	No	Yes
Magnetic Tapes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes
Printers	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Paper Tape	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Punched Cards	80 Col	80 Col	80 Col	80 Col	80 Col	80 Col	No	No	80 Col
CUUs and CTUs	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No
Software	FORTRAN CS-1 SYCOL SYMON Executive	FORTRAN CS-1 SYCOL SYMON Executive	FORTRAN Trim Assembler	FORTRAN Trim Assembler	FORTRAN SYMON SYCOL CS-1 Service Library	SYCOL CS-1 Service Library	Assembler Utility Package	Assembler Interpreter Service Library	SYMON□ SYCOL□ CS-1□ LIBIN□ FORTRAN IV□ Service■ Library
Hardware Diagnostics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Circuit Cards (Full Machine)	3400	3400	1200	2000	3400			2000▲	510
MTBF (Calculated in Hours)	1500	1500	2100	1500	1500	2000	3410	10,000	2000

* Circuit Cards and Circuit Blocks

▲ Microelectronic Circuits △ Plus 4 Additional Channels in EMU

□ Basic Instruction

◆ Overlapped

■ Programs Will Run on This Computer

□ Programs Will Not Run on This Computer But May Be Used on Other Computers to Generate Instructions for the Computer Listed.

AVAILABLE PERIPHERAL EQUIPMENT AND SOFTWARE TABLE

PERIPHERAL EQUIPMENT	1212/ CP-642B	1213/ CP-808	1218/ CP-789	1219/ CP-848	1230/ CP-855	1289/ CP-890	1818	1824	1830A/ CP-901
ON-LINE CONTROL DEVICES	x	x	x	x	x		x*		x*
TYPEWRITERS	x	x	x	x	x	x	x	x	x
PAPER TAPE	x	x	x	x	x	x	x	x	x
MAGNETIC TAPE	x	x	x	x	x	x			x
CARD EQUIPMENT	x	x	x	x	x	x			x
HIGH SPEED PRINTERS	x	x	x	x	x	x			x
MASS STORAGE	x	x	x	x	x	x			
SOFTWARE									
ASSEMBLERS	x	x	x	x	x		x	x**	
COMPILERS									
CS-1	x	x			x	x			
SYCOL	x	x	x	x	x	x			
FORTRAN	x	x	x	x	x				
JOVIAL			x	x					
SERVICE ROUTINE									
MATHEMATICS	x	x	x	x	x	x		x	x
FLOATING POINT	x	x	x	x	x	x			
UTILITY	x	x	x	x	x	x	x	x	x
SYMON MONITOR					x	x			
HARDWARE DIAGNOSTICS	x	x	x	x	x	x	x	x	x
LIBRARIAN	x	x	x	x	x	x			
DEBUGGING AID	x	x	x	x	x	x			x
CONVERSION	x	x	x	x	x	x			x

*Operator's Control Panel
**On Univac 1206 or 490 Computer

UNIVAC

FEDERAL SYSTEMS DIVISION
St. Paul, Minnesota

PX 2907F 11.7