

# CONTROL DATA 6400/6500/6600 COMPUTER SYSTEMS CENTRAL PROCESSOR INSTRUCTIONS

## BRANCH UNIT

00	PS	Program Stop
010	RJ	Return Jump to K
013	XJ	Central Exchange Jump
02	JP	Go to K + B1
030	ZR	Go to K if Xj = zero
031	NZ	Go to K if Xj ≠ zero
032	PL	Go to K if Xj = positive
033	NG	Go to K if Xj = negative
034	IR	Go to K if Xj is in range
035	OR	Go to K if Xj is out of range
038	DF	Go to K if Xj is definite
037	ID	Go to K if Xj is indefinite
04	EQ	Go to K if B1 = B2
05	EQ	Go to K if B1 ≠ B2
06	GE	Go to K if B1 ≥ B2
07	LT	Go to K if B1 < B2

## BOOLEAN UNIT

10	BX1	Xj	Xmit Xj to Xi
11	BX1	Xj	* Xk Logical Product
12	BX1	Xj	+ Xk Logical Sum
13	BX1	Xj	- Xk Logical Difference
14	BX1	-Xk	Xmit Xk comp to Xi
15	BX1	-Xk * Xj	Log Prod Xj & Xk comp
16	BX1	-Xk + Xj	Log Sum Xj & Xk comp
17	BX1	-Xk - Xj	Log Diff Xj & Xk comp

## SHIFT UNIT

20	LX1	jk	Left Shift Xi by jk
21	LX1	jk	Right Shift Xi by jk
22	LX1	Bj	Xk Left Shift Xk by Bj to Xi
23	AX1	Bj	Xk Right Shift Xk by Bj to Xi
24	NX1	Bj	Xk Normalize Xk to Xi & Bj
25	ZX1	Bj	Xk Round & Normalize Xk
26	UX1	Bj	Xk Unpack Xk to Xi & Bj
27	PX1	Bj	Xk Pack Xi from Xk & Bj
43	MX1	jk	Form jk mask in Xi

## ADD UNIT

30	FX1	Xj + Xk	Floating Sum
31	FX1	Xj - Xk	Floating Diff
32	DX1	Xj + Xk	Floating DP Sum
33	DX1	Xj - Xk	Floating DP Diff
34	RX1	Xj + Xk	Round Floating Sum
35	RX1	Xj - Xk	Round Floating Diff

## LONG ADD UNIT

36	IX1	Xj + Xk	Integer Sum
37	IX1	Xj - Xk	Integer Difference

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## MULTIPLY UNIT

40	FX1	Xj * Xk	Floating Product
41	RX1	Xj * Xk	Round Floating Product
42	DX1	Xj * Xk	Floating DP Product

## DIVIDE UNIT

44	FX1	Xj/Xk	Floating Divide
45	RX1	Xj/Xk	Round Floating Divide
46	NO		No Operation
47	CX1	Xk	Sum of ones in Xk to Xi

## INCREMENT UNIT

50	SA1	Aj ± K	Sum of Aj & K to Ai
51	SA1	Bj ± K	Sum of Bj & K to Ai
52	SA1	Xj ± K	Sum of Xj & K to Ai
53	SA1	Aj + Bk	Sum of Aj & Bk to Ai
54	SA1	Aj - Bk	Sum of Aj & Bk to Ai
55	SA1	Aj - Bk	Diff of Aj & Bk to Ai
56	SA1	Bj + Bk	Sum of Bj & Bk to Ai
57	SA1	Bj - Bk	Diff of Bj & Bk to Ai

60	SBI	Aj ± K	Sum of Aj & K to Bi
61	SBI	Bj ± K	Sum of Bj & K to Bi
62	SBI	Xj ± K	Sum of Xj & K to Bi
63	SBI	Xj + Bk	Sum of Xj & Bk to Bi
64	SBI	Aj + Bk	Sum of Aj & Bk to Bi
65	SBI	Aj - Bk	Diff of Aj & Bk to Bi
66	SBI	Bj + Bk	Sum of Bj & Bk to Bi
67	SBI	Bj - Bk	Diff of Bj & Bk to Bi

70	SX1	Aj ± K	Sum of Aj & K to Xi
71	SX1	Bj ± K	Sum of Bj & K to Xi
72	SX1	Xj ± K	Sum of Xj & K to Xi
73	SX1	Xj + Bk	Sum of Xj & Bk to Xi
74	SX1	Aj + Bk	Sum of Aj & Bk to Xi
75	SX1	Aj - Bk	Diff of Aj & Bk to Xi
76	SX1	Bj + Bk	Sum of Bj & Bk to Xi
77	SX1	Bj - Bk	Diff of Bj & Bk to Xi

## EXTENDED CORE STORAGE

011	REC	Bj + K	Read ECS
012	WEC	Bj + K	Write ECS

## EXIT MODE

Bit		
0	Address out of range	
1	Operand out of range (Infinite)	
2	Indefinite operand	

## SYMBOLS

Comp = Complement  
DP = Double Precision  
Xmit = Transmit

# 6400/6500/6600 COMPUTER SYSTEMS PERIPHERAL PROCESSOR INSTRUCTIONS

(A)	=	Contents of A register	
P	=	Program address of current instruction	
d	=	Low order six bits of word at P	
m	=	12-bit word at P + 1	
dm	=	18-bit operand formed by d and m	(constant address)
(d)	=	Operand at location d	(direct address)
((d))	=	Address of operand at location d	(indirect address)
(m+(d))	=	Base address m incremented by (d)	(indexed direct address)
CM	=	Central Memory	

PSN	00	Pass
LJM	01	Long Jump to m+ (d)
RJM	02	Return Jump to m+ (d)
UJN	03	Unconditional Jump d
ZJN	04	Zero Jump d
NJN	05	Non-zero Jump d
PJN	06	Plus Jump d
MJN	07	Minus Jump d
SHN	10	Shift d
LMN	11	Logical Difference d
LPN	12	Logical Product d
SCN	13	Selective Clear d
LDN	14	Load d
LCN	15	Load Complement d
ADN	16	Add d
SBN	17	Subtract d

LDI	40	Load ((d))
ADI	41	Add ((d))
SBI	42	Subtract ((d))
LMI	43	Logical Diff ((d))
STI	44	Store ((d))
RAI	45	Replace Add ((d))
AOI	46	Replace Add one ((d))
SOI	47	Replace Subt one ((d))

LDC	20	Load dm
ADC	21	Add dm
LPC	22	Logical Product dm
LMC	23	Logical Difference dm
PSN	24	Pass
PSN	25	Pass
EXN	260	Exchange Jump
MXN	261	Monitor Exchange Jump
RPN	27	Read Program Address

CRD	60	Read one CM wd from (A) to d
CRM	61	Read (d) CM wds from (A) to m
CWD	62	Write one CM wd from d to (A)
CWM	63	Write (d) CM wds from m to (A)

LDD	30	Load (d)
ADD	31	Add (d)
SBD	32	Subtract (d)
LMD	33	Logical Difference (d)
STD	34	Store (d)
RAD	35	Replace Add (d)
AOD	36	Replace Add one (d)
SOD	37	Replace Subt one (d)

AJM	64	Jump to m if Ch d active
IJM	65	Jump to m if Ch d inactive
FJM	66	Jump to m if Ch d full
EJM	67	Jump to m if Ch d empty
IAN	70	Input to A from Ch d
IAM	71	Input (A) wds to m on Ch d
OAN	72	Output from A on Ch d
OAM	73	Output (A) wds from m on Ch d
ACN	74	Activate Ch d
DCN	75	Disconnect Ch d
FAN	76	Function (A) on Ch d
FNC	77	Function m on Ch d

## CONTROL DATA

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8100 34th AVENUE SOUTH  
MINNEAPOLIS, MINNESOTA 55440

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