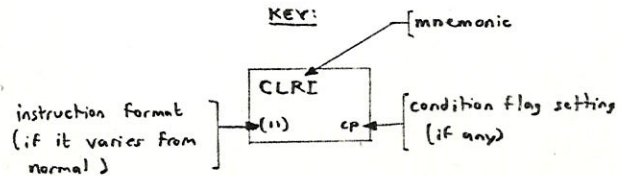


	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	INST FMT
0		ARR <small>as</small>	SRR <small>as</small>	MRR	DRR <small>ov</small>	CRR <small>cp</small>	RRR	SWRR	ORR	NRR	XRR	CLRR <small>cp</small>	TMRR <small>tm</small>	NOP (5)		(UNARY) (9) *	(1)
1	LSHLI	RSHLI	LSHLDI	RSHLDI	LSHI <small>ov</small>	RSHI <small>cp</small>	LSHDI <small>ov</small>	RSHDI	LSHLR	RSHLR	LSHLDR	RSHLDR	LSHR <small>ov</small>	RSHR	LSHDR <small>ov</small>	RSHDR	(1)
2	BF																(4)
3	BT																(4)
4	B																(4)
5		ARI <small>as</small>	SRI <small>as</small>	MRI	DRI <small>ov</small>	CRI <small>cp</small>	RII (11)		ORI	NRi	XRI	CLRI (11) <small>cp</small>	TMRI <small>tm</small>	BCF (7)	RETURN (13)		(6)
6		ARH <small>as</small>	SRH <small>as</small>	MRH	DRH <small>ov</small>	CRH <small>cp</small>	RRH	SWRH	ORH	NRH	XAH	CLRH <small>cp</small>	TMRH <small>tm</small>	CASE (10)		ETC (15)	(8)
7		ARA <small>as</small>	SRA <small>as</small>	MRA	DRA <small>ov</small>	CRA <small>cp</small>	RAA		ORA	NRA	XRA	CLRA <small>cp</small>	TMRA <small>tm</small>			(UNARY) (12) *	(8)
8							R RB	SWRB	ORB	N RB	X RB	CLRB <small>cp</small>	TMRB <small>tm</small>		CLOCK (14)		(8)
9		AHR <small>as</small>	SHR <small>as</small>			CHR <small>cp</small>	RHR	SWHR	OHR	NHR	XHR	CLHR <small>cp</small>	TMHR <small>tm</small>	SEMA (12) sm		(UNARY) (12) *	(9)
A							RBR	SWBR	OBR	NBR	XBR	CLBR <small>cp</small>	TMBR <small>tm</small>				(9)
B		AHI <small>as</small>	SHI <small>as</small>			CHI <small>cp</small>	RHI		OHI	NHI	XHI	CLHI <small>cp</small>	TMHI <small>tm</small>				(16)
C		AHA <small>as</small>	SHA <small>as</small>			CHA <small>cp</small>	RHA		OHA	NHA	XHA	CLHA <small>cp</small>	TMHA <small>tm</small>				(12)
D		AHH <small>as</small>	SHH <small>as</small>			CHH <small>cp</small>	RHH	SWHH	OHH	NHH	XHH	CLHH <small>cp</small>	TMHH <small>tm</small>				(17)
E							RBI		OBI	NBI	XBI	CLBI <small>cp</small>	TMBI <small>tm</small>				(18)
F	SCFEA <small>sc</small>	SCFNA <small>sc</small>	SCBEA <small>sc</small>	SCBNA <small>sc</small>	SCFT <small>st</small>	SEBT <small>st</small>	RCC		OCC	NCC	XCC	CLCC <small>cp</small>		TR	INIT	XFER (20)	(19)

META 4B INSTRUCTION SET



CONDITION FLAG REGISTER (CFR) SETTINGS

code	condition	CFR bit set	S flag	applicable branches	side effects
as	carry out overflow	0 1	(off)	BC BO	
cp	= > <	0 1 2	1 0 0	BE BE BG BNG BL BNL	
ov	overflow	1	(off)	BO	
sc	found -found	0 1	1 0	BS BNS	R1 → char, 0
sm	bit off bit on	0 1	0 1	BZ BNZ BO BNO	
st	found -found	0 1	1 0	BS BNS	R1 → char, R0 = code
tm	zeros ones mixed	0 1 2	0 1 0	BZ BNZ BO BNO BM BNM	
ts	0 + -	0 1 2	0 1 1	BZ BNZ BP BNP BN BNN	

MASK BYTES FOR BCF INSTRUCTIONS (x'5D')

opcode	mask	opcode	mask	opcode	mask	opcode	mask
BC	80	BN	20	BNN	C0		
BE	80	BNE	60	BNO	A0	BO	40
BG	40	BNG	A0	BNP	A0	BP	40
BL	20	BNL	C0	BNS	40	BS	80
BM	20	BNM	C0	BNZ	60	BZ	80

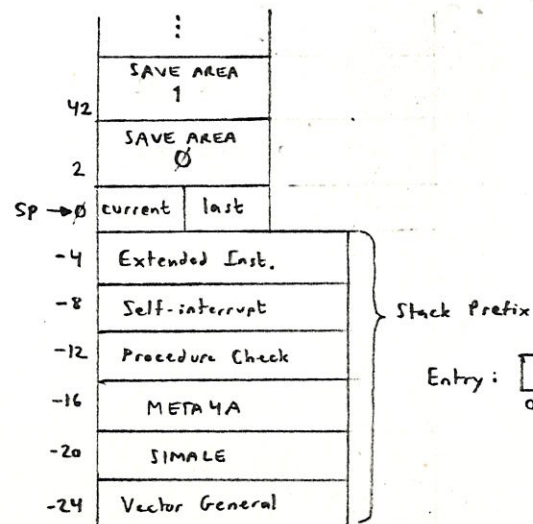
UNARY INSTRUCTIONS

CFR setting	*	0F*	9F*	7F*
	0	SZR	SZH	
	1	SOR	SOH	
	2	IR	IH	
	3	IIR	IIM	
ts	4	DTSR	DTSH	
ts	5	DDTSR	DDTSH	
	6	ABSX	ABSH	
	7	NEGR	NEGH	
ts	8	TJR	TSH	TSA
	9	EXSR		
	A	SQRTR	SQRTH	
	B			
	C	BR	BH	
	D	CALLR	CALLH	CALLA
	E	SINTR	SINTH	SINTA
	F	INTAR	INTAH	INTAA

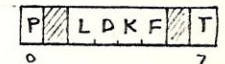
CONTROL REGISTERS

hex no	function
10	PBR
11	PDR
12	CFR
13	ICMR
14	SP
18	VGPR/VGOR
19	VGPIOR/VGPIOW

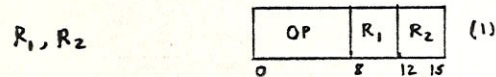
STACK FORMAT



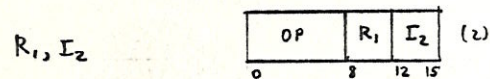
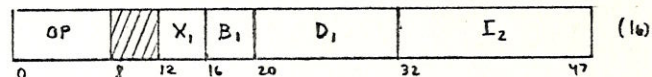
ICMR FORMAT



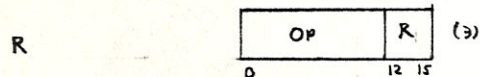
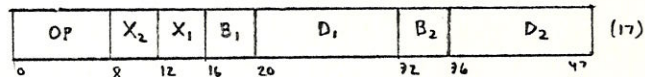
P = P-bit
D = Data Tablet
K = Keyboard
F = Function Keys
A = META4A
QQT: Don't touch!
L T
0 x = LP int remains pending
1 0 = LP int occurs
1 1 = LP int discarded



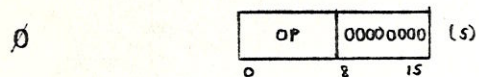
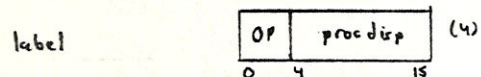
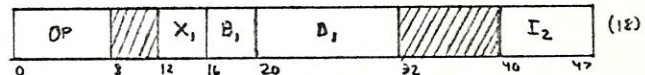
$D_1(X_1, \theta_1), I_2$



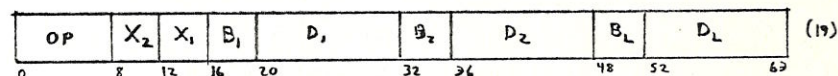
$D_1(X_1, \theta_1), D_2(X_2, \theta_2)$



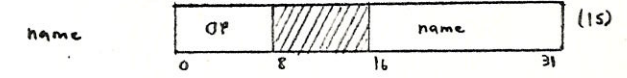
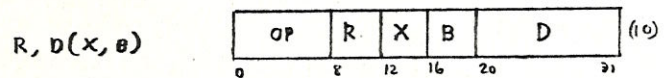
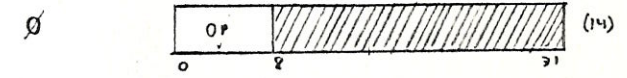
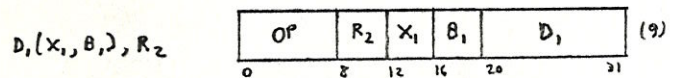
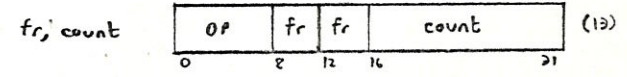
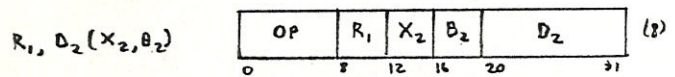
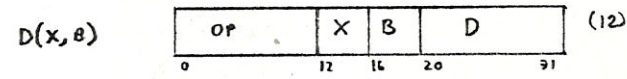
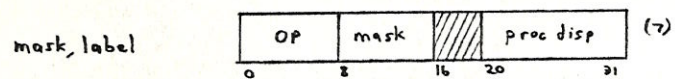
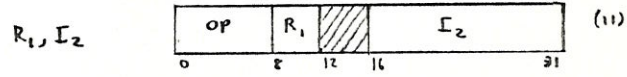
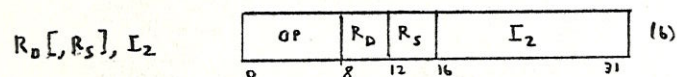
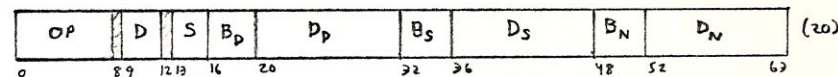
$D_1(X_1, \theta_1), I_2$



$D_1(X_1, \theta_1), D_2(X_2, \theta_2), D_L(\theta_L)$



$D, D_D(B_D), S, D_S(B_S), D_N(B_N)$



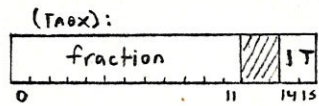
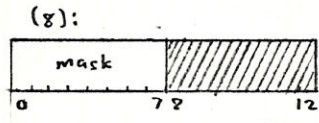
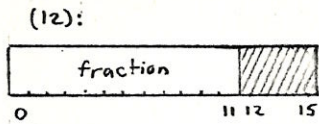
META 4B INSTRUCTION FORMATS

XFER S/D codes : 0 R - Register file
 1 LS - Local Store
 2 MS - Main Store
 3 VGR - Vector, General Register;
 4-7 (unused - gives zeroes when source)

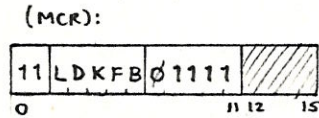
VG REGISTER NAMES

hex no.	name	format
00	VGFKL0	(8)
01	VGFKL8	.
02	VG TABX	(TABX)
03	VG TABY	(12)
05	VG MCR	(MCR)
08	VG XCOORD	(12)
09	VG YCOORD	.
0A	VG ZCOORD	.
0D	VG ISR	.
11	VG XSCALE	.
13	VG YSCALE	.
14	VG XDISP	.
15	VG YDISP	.
34	VGFKL16	(8)
35	VGFKL24	.
43	VGJOYX	(12)
44	VGJOYY	.
45	VGJOYZ	.
46	VG DIAL1	.
47	VG DIAL2	.
48	VG DIAL3	.
49	VG DIAL4	.
4A	VG DIAL5	.
4B	VG DIAL6	.
4C	VG DIAL7	.
4D	VG DIAL8	.
4E	VG DIAL9	.
4F	VG DIAL10	.

VG REGISTER FORMATS



I: near bit
T: touch bit

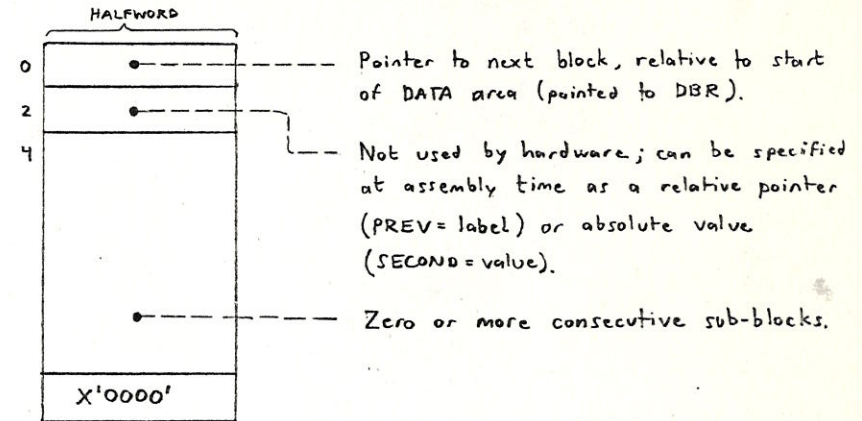


L: light pen
D: data tablet
K: keyboard
F: function keys
B: blink

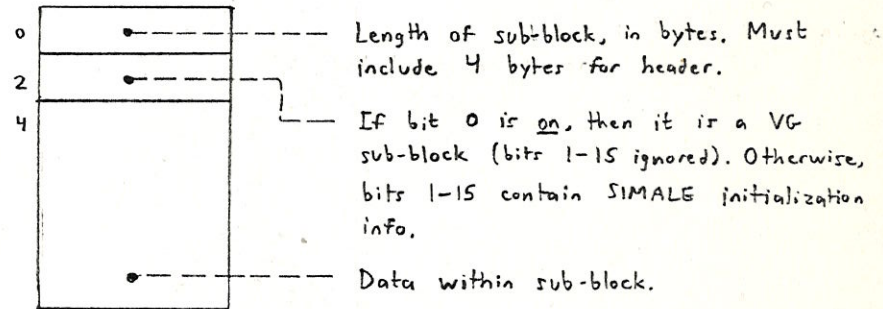
ETC REGISTERS

hex no.	name	abr/rel.	
20	DBR	abs	} setup before ETC
21	BP	rel	
22	SBP	rel	
28	FDBR	abs	
29	FBP	rel	
2A	FSBP	rel	
2B	FDP	rel	
2F	ETCNAME		

BLOCK FORMAT



SUB-BLOCK FORMAT

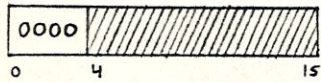


MACROS

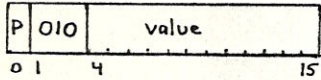
```

[label0] DATA
[label1] BLK next_blk [, PREV=label | SECOND=value ]
[label2] SUBLK VG | simale-info
[label3] ENDSUBLK
[label4] ENDBLK
[label5] ENDDATA
    
```

VGNOP



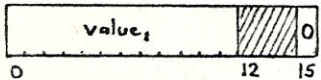
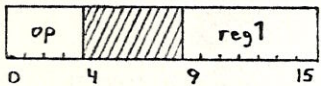
VGSPEC [DATA = value][, PBIT = N|Y]



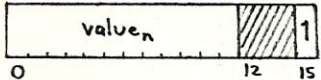
↑
Default

VGLOAD reg1, value1, ..., valuen

VGOR
VGAND
VGADD

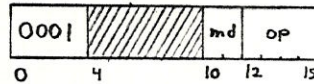


⋮



op bits	command
0100	VGLOAD
0101	VGOR
0110	VGAND
0111	VGADD

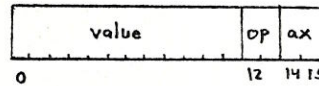
VGABS [MODE = <md>] VGREL



op bits	command
0000	VGREL
0100	VGABS

md bits	<md>
00	LINE (default)
01	DASHED
10	DOTTED
11	POINT

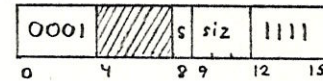
VGC value, op, axis



bits	op	axis
00	L	AI
01	LD	X
10	LM	Y
11	LDT	Z

last hex digit in VGC	axis →			
	AI	X	Y	Z
L	0	1	2	3
LD	4	5	6	7
LM	8	9	A	B
LDT	C	D	E	F

VGCHAR [SIZE = <sz>][, SLANT = <s>]



s bit	<s>
0	HORIZONTAL (default)
1	VERTICAL

sz bits	<sz>	width	height
000	PREVIOUS	-	-
100	60x120	.0167 (34)	.0333 (68)
101	40x80	.0250 (51)	.0500 (102)
110	30x60	.0333 (68)	.0667 (136)
111	16x32	.0625 (128)	.1250 (256)

Notes: the <sz> figures are the number of characters, in rows x columns per screen. The width and height are the character spacings, in coordinate fractions and (raster units).

ASCII CODE CHART

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	NUL								BS	LF				CR		
1			DEL-SZ	INC-SZ	TERM											
2	□	!	"	#	\$	%	&	'	()	*	+	,	-	.	/
3	0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
4	@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
5	P	Q	R	S	T	U	V	W	X	Y	Z	[\]	↑	_
6	`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
7	p	q	r	s	t	u	v	w	x	y	z	{		}	~	