



Field	Description
rA	R reg file A-port addr
rB	R reg file B-port addr, write addr, RH addr
aS	ALU Source
aF	ALU Function
aD	ALU Destination
Cin	ALU CarryIn, Shift Ends, writeU if enU=1
mem	Memory Operation
fS	Function field Selector
fX	X Function
fY	Y Function
fZ	Z Function
INIA	Next Instruction Address

aS	X	Y	aF	F		sh..aD	R[rB]	Q	U
0	R[rA]	Q	0	X + Y + Cin	X LRot0	0	no write	F	F
1	R[rA]	R[rB]	1	Y - X - Cin'	X LRot2	1	no write	no write	F
2	0	Q	2	X - Y - Cin'	X LRot4	2	F	no write	A
3	0	R[rB]	3	X or Y	X LRot6	3	F	no write	F
4	0	R[rA]	4	X and Y	X LRot8	4	F/2	Q/2	F
5	x	R[rA]	5	-X and Y	X LRot10	5	F/2	no write	F
6	x	Q	6	X xor Y	X LRot12	6	2F	2Q	F
7	x	0	7	-X xor Y	X LRot14	7	2F	no write	F

x = U reg or source selected by fY or fZ, or -1 if no source selected

F\_ LRot2n if fX, fY, fZ = LRot2n  
 F\_ MDu if mem=\_MDu  
 F\_ MDv if mem=\_MDv

sh\_fX = shift1 or rot1

mem		fS[2..0]	fS[3]=0	fS[3]=1	fZ	U addr
0	MAR_*	0	fYNorm	DispBr	fZNorm	rA,,fZ
1	AAR_	1	fYNorm	DispBr	fZNorm	Stkp
2	Map_	2	fYNorm	DispBr	fZNorm	.
3	MDR_	3	fYNorm	DispBr	fZNorm	.
4	_MDu	4	fYNorm	DispBr	Uaddr	rA,,fZ
5	_MDv	5	fYNorm	DispBr	Nibble	Stkp
6	DBLR	6	fYNorm	DispBr	Nibble	.
7	Noop	7	fYNorm	Byte	Nibble	.

\* SplitALU, IF PgCross THEN  
 Cancel MDR\_,  
 Cancel AwIBDisp,  
 Cancel IBDisp

enable U registers if fS.1=0

fX		fY	fYNorm	DispBr	fZ	fZNorm
0	pCall/Ret0	0	AwIBDisp	IBDisp	0	_ib
1	pCall/Ret1	1	ClrInt	ZeroBr	1	_ibLow
2	pCall/Ret2	2	ClrErrors	NZeroBr	2	_ibHigh
3	pCall/Ret3	3	SetEOP	NibCarryBr	3	_ibPtrs
4	ibPtrs_	4	ClrEOP	PgCarryBr	4	_TimeL
5	IB_	5	SplitALU	CarryBr	5	_TimeH
6	shift1	6	DbIW	PgCrOvDisp	6	Cin_LCout
7	rot1	7	_AltStkp	ESIDisp	7	AStkp
8	Noop	8	Noop	FNegBr	8	Noop
9	Cin_bpc	9	bpc_F0	FOddBr	9	Cin_bpc
A	Stkp_	A	PState_	F5Br	A	_Stkp
B	RH_	B	_PState	F4Br	B	_RH
C	StkpState_	C	_StkpState	F76Disp	C	_OFF
D	LRot2n	D	LRot2n	FDisp	D	LRot2n
E	pop	E		XLDisp	E	pop
F	push	F	push	XDisp	F	push

pCall when previous INIA[4]=0  
 pRet when previous INIA[4]=1  
 AwIBDisp does not trap on EOP, Int, or insufficient IB bytes

## IBIP Microinstruction Format