

ADVANCED COMPUTING SYSTEMS

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MOVE OPERATIONS

The move operations are for transferring data between registers of two different types. Examples are moves from a special register to an index register or from an index register to an arithmetic register. Most of the instructions involve movement of entire registers or register pairs. However there is a class of move instructions which move single bits to or from the condition register.

Movement of information to or from special registers involve certain interlock considerations which are treated in the section, "Interlocking".

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Move Index to Arithmetic

MXA

	i	j	k
--	---	---	---

$$A^i \leftarrow X^{j,k}$$

Exceptions: none

Move Arithmetic to Index

MAX

	i	j	k
--	---	---	---

$$X^{i,j} \leftarrow A^k$$

If $i = j$, X^i will be set to $A_{24,\dots,47}^k$.

Exceptions: none

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Move Constant to Left Half Arithmetic

MKL



$A_{0,1,2,\dots,23}^i \leftarrow h$

$A_{24,25,26,\dots,47}^i \leftarrow 0 [24]$

Exceptions: none

Move Constant to Right Half Arithmetic

MKR



$A_{24,25,26,\dots,47}^i \leftarrow h$

Note that bits $A_{0,1,2,\dots,23}^i$ are unchanged.

Exceptions: none

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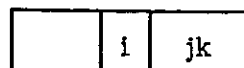
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Move Location to Index

MLX



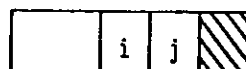
$$X^i \leftarrow ia + jk$$

The value of ia is the 24-bit storage location of the MLX instruction. The 10-bit literal jk-field is extended to a 24-bit quantity before the addition by appending 14 high-order bits equal in value to the high order bit of the jk-field. The addition is performed modulo 2^{24} .

Exceptions: none

Move Index to Special

MXS



$$S^i \leftarrow X^j$$

Exceptions

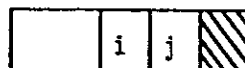
$i \geq 3$ and in problem mode

Exception bit

PV

Move Special to Index

MSX



$$X^i \leftarrow S^j$$

Exceptions

$j \geq 3$ and in problem mode

Exception bit

PV

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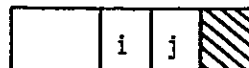
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Move Special to Index and Zero

MSXZ



$$X^i \leftarrow S^j$$

$$S^j \leftarrow 0[24]$$

Exceptions

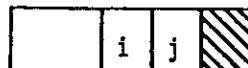
$j \geq 3$ and in problem mode

Exception bit

PV

Move Index to Special by Oring

MXSO



$$S^i \leftarrow S^i \vee X^j$$

Exceptions

$i \geq 3$ and in problem mode

Exception bit

PV

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Move Index Bit to Condition Bit

MXC

	i	j	k
--	---	---	---

$$n \leftarrow X^k$$

$$c_i \leftarrow X_n^j$$

If n exceeds 23, c_i is set to 0.

Exception

c_{24} set to 0 or c_{25} set to 1

Exception bit

CC

Move Condition Bit to Index Bit

MCX

	i	j	k
--	---	---	---

$$n \leftarrow X^k$$

$$X_n^i \leftarrow c_j$$

If n exceeds 23, no bit is set.

Exceptions: none

Move Arithmetic Bit to Condition Bit

MAC

	i	j	k
--	---	---	---

$$n \leftarrow A^k$$

$$c_i \leftarrow A_n^j$$

If n exceeds 47, c_i is set to 0.

Exception

c_{24} set to 0 or c_{25} set to 1

Exception bit

CC