SmartDMA Hand-Assembly Guides

LCD (basic):

31	30	29	28					23	22	21	20					15	14	13	12	11					6	5			3	2			0
LCD	EXT	*	Index 0 Initialization					+	*	Index 1 Initialization						Term Usage			*	Termination Condition						Index 0 Increment Var.				Index 1 Increment Var.			
1																																	
1																																	
1																																	
1																																	
1																																	

LCD[28:23] or LCD[20:15] or LCD[11:6]	Index-Variable Initialization or Termination-Condition
0nnnnn	`for (i = varN;` *or* `; i < varN;`

011nnn	`for (i = incN; //inc0=var24`
	or `; i < incN;`

101nnn	`for (i = extraN; //extra0=var32`
	or `; i < extraN;`

11nnnn	`for (i = indexN;` *or* `; i < indexN;`

LCD[14:13]	Termination Usage
00	Termination Condition is used with Index 0's Variable in this LCD
01	Termination Condition is used with Index 1's Variable in this LCD
10	Literal-Initialization LCD
11	Termination Condition is not used with this LCD

Inc [31:29]	Comparison
000	Exactly one-time execution
001	<
010	>
011	!=

Inc [31:29]	Comparison
100	==
101	<=
110	>=
111	No comparison (loop forever)

Literal-Initialization LCD:

31	30	29														15	14	13	12														0
LCD	BASE	Bits 27:13 of Literal Initialization Value															Term Usage			Bits 12:0 of Literal Initialization Value													
1																	1	0															
1																	1	0															
1																	1	0															
1																	1	0															
1																	1	0															

DRD1A (no extensions allowed):

31	30	29	28	27	26	25 … 21	20	19	18	17	16	15 … 10	9 … 3	2 … 0
LCD	EXT	TYPE	MORE	TFD	INT	Initiator	Read Data Size		Write Data Size		SCAL	Memory Write Destination	Memory Write Source	EU Function Number
0	0	0												
0	0	0												
0	0	0												
0	0	0												

DRD2A (initial):

31	30	29	28	27	26	25 … 21	20	19	18	17	16	15 … 12	11 … 8	7 … 4	3 … 0
LCD	EXT	TYPE	MORE	TFD	INT	Initiator	Read Data Size		Write Data Size		SCAL	Execution-Unit-0 Function Number	Execution-Unit-1 Function Number	Execution-Unit-2 Function Number	Execution-Unit-3 Function Number
0	1	1													
0	1	1													
0	1	1													
0	1	1													

DRD2B1(extension):

31	30	29	28	27 … 22	21	20 … 14	13	12	11 … 6	5 … 0
LCD	EXT	TYPE	rsrv	Memory Write Destination	rsrv	Memory Write Source	Exe. Unit Number	Execution Unit Operand 0 Source		Execution Unit Operand 1 Source
0		0	0		0					
0		0	0		0					
0		0	0		0					
0		0	0		0					

DRD2B2(extension):

31	30	29	28	27	26	25 … 20	14	13	12	11 … 6	5 … 0
LCD	EXT	TYPE	rsrv	Exe. Unit Number	Execution Unit Operand 0/2/4/6 Source	Execution Unit Operand 1/3/5/7 Source	Exe. Unit Number	Execution Unit Operand 0/2/4/6 Source		Execution Unit Operand 1/3/5/7 Source	
0		1	0								
0		1	0								
0		1	0								
0		1	0								

Encoding		Write Destination
bit[5]	bits[4:0]	
0	nnnnn	varN = <something>;
1	0nnnn	indexN = <something>;
1	1nnnn	*indexN = <something>;

DRD Memory Write Source Value		Source of Memory-Write Data
bits[6:5]	bits[4:0]	
00	nnnnn	<something> = varN;
01	00nnn	<something> = incN;
01	01nnn	<something> = extraN;
01	10000	Execution Unit 0 Result: <something> = f();
01	10001	Execution Unit 1 Result: <something> = f();
01	10010	Execution Unit 2 Result: <something> = f();
01	10011	Execution Unit 3 Result: <something> = f();
01	101xx	Reserved
01	110xx	Reserved
01	1110x	Reserved
01	11110	Reserved
01	11111	Nothing
10	0xxxx	Reserved
10	10000	Contents of Address Pointed to by EU 0 Result: <something> = *f();
10	10001	Contents of Address Pointed to by EU1 Result: <something> = *f();
10	10010	Contents of Address Pointed to by EU2 Result: <something> = *f();
10	10011	Contents of Address Pointed to by EU3 Result: <something> = *f();
10	101xx	Reserved
10	11xxx	Reserved
11	0nnnn	<something> = indexN;
11	1nnnn	<something> = *indexN;

DRD Operand Source Field Value (all other encodings reserved)		Source providing data
bit[5]	bits[4:0]	
0	nnnnn	varN (N = 0 to 23 only)
0	11000	Execution Unit 0 Result: f()
0	11001	Execution Unit 1 Result: f()
0	11010	Execution Unit 2 Result: f()
0	11011	Execution Unit 3 Result: f()
0	11111	Nothing
1	0nnnn	indexN
1	1nnnn	*indexN