

Data exchange format

Data

Data in this system is represented similarly as in GMP standard (absolute value and sign). It is represented as follows:

time *	type	data								
x	header	number of limbs format	unused	nan flag	one flag	zero flag	Last flag	sign of number	unused	number of limbs (8-0)
		63	62-22	21	20	19	18-16	15	14-9	9-0
		b0 - LFSR	(others=>'0')	0 - regular number	0 - number != 1	0 - number != 0	b001 - size=1	b0 - positive number	(others=>'0')	size
		b1 - NBC		1 - not a number	1 - number == 1	1 - number == 0	b010 - size=2 b100 - size=3 b000 - others	b1 - negative number	to be used for higher precisions	
x+1	limb 0	least significant limb (LSL)								
x+2	limb 1									
...	limb...									
x+size	limb (size-1)	most significant limb (MSL)								

*The time column represents just an ideal case scenario. In reality the 64 bit words can be separated by not valid values (AXI 4 STREAM).

Instructions

Single operand instructions are represented as follows (example of loading data from bus B to register 5):

time *	7-4	3-0	last
x	opcode (0x2*)	operand (0x5)	b1

* value obtained from section [Assembler instructions for the core](#)

Two-three operand instructions are represented as follows (example of subtraction $R12 = R6 - R1$):

time	7-4	3-0	last
x	result (0xC)	operand 2 (0x1)	b0
x+1	opcode (0xA*)	operand 1 (0x6)	b1

* value obtained from section [Assembler instructions for the core](#)