

Assembly Language Reference

NEGNZ	Get a value, or its additive inverse, based on !Z; p 388.
MIN	Limit minimum of unsigned value to another unsigned value; p 379.
MINS	Limit minimum of signed value to another signed value; p 380.
MAX	Limit maximum of unsigned value to another unsigned value; p 378.
MAXS	Limit maximum of signed value to another signed value; p 378.
ADD	Add two unsigned values; p 354.
ADDABS	Add absolute value to another value; p 355.
ADDS	Add two signed values; p 356.
ADDX	Add two unsigned values plus C; p 357.
ADDSX	Add two signed values plus C; p 356.
SUB	Subtract two unsigned values; p 403.
SUBABS	Subtract an absolute value from another value; p 404.
SUBS	Subtract two signed values; p 404.
SUBX	Subtract unsigned value plus C from another unsigned value; p 406.
SUBSX	Subtract signed value plus C from another signed value; p 405.
SUMC	Sum signed value with another of C-affected sign; p 406.
SUMNC	Sum signed value with another of !C-affected sign; p 407.
SUMZ	Sum signed value with another Z-affected sign; p 408.
SUMNZ	Sum signed value with another of !Z-affected sign; p 408.
MUL	<reserved for future use>
MULS	<reserved for future use>
AND	Bitwise AND two values; p 358.
ANDN	Bitwise AND value with NOT of another; p 359.
OR	Bitwise OR two values; p 392.
XOR	Bitwise XOR two values; p 417.
ONES	<reserved for future use>
ENC	<reserved for future use>
RCL	Rotate C left into value by specified number of bits; p 393.
RCR	Rotate C right into value by specified number of bits; p 394.
REV	Reverse LSBs of value and zero-extend; p 399.
ROL	Rotate value left by specified number of bits; p 400.

5: Assembly Language Reference – COGSTOP

If the third field bit is set (1), the Hub will start the next available (lowest-numbered inactive) cog and return that cog's ID in *Destination* (if the **WR** effect is specified).

If the third field bit is clear (0), the Hub will start or restart the cog identified by *Destination*'s fourth field, bits 2:0.

If the **WZ** effect is specified, the Z flag will be set (1) if the cog ID returned is 0. If the **WC** effect is specified, the C flag will be set (1) if no cog was available. If the **WR** effect is specified, *Destination* is written with the ID of the cog that the hub started, or would have started, if you let it pick one.

Make sure to follow the **COGINIT** instruction with **WC**, **WZ**, and/or **WR** if you wish the flags or *Destination* to be updated with the results.

It is not practical to launch Spin code from user's Propeller Assembly code; we recommend launching only assembly code with this instruction.

COGINIT is a Hub instruction. Hub instructions require 7 to 22 clock cycles to execute depending on the relation between the cog's hub access window and the instruction's moment of execution. See Hub on page 24 for more information.

COGSTOP

Instruction: Stop a cog by its ID.

COGSTOP *CogID*

- CogID* (d-field) is the register containing the ID (0 – 7) of the cog to stop.

-INSTR-	ZCRI	-CON-	-DEST-	-SRC-	Z Result	C Result	Result	Clocks
000011	0001	1111	ddddddddd	-----011	---	---	Not Written	7..22

Explanation

The **COGSTOP** instruction stops a cog whose ID is in the register *CogID*; placing that cog into a dormant state. In the dormant state, the cog ceases to receive System Clock pulses so that power consumption is greatly reduced.

COGSTOP is a Hub instruction. Hub instructions require 7 to 22 clock cycles to execute depending on the relation between the cog's hub access window and the instruction's moment of execution. See Hub on page 24 for more information.

MAX, MAXS – Assembly Language Reference

MAX

Instruction: Limit maximum of unsigned value to another unsigned value.

MAX *Value1*, <#> *Value2*

Result: Lesser of unsigned *Value1* and unsigned *Value2* is stored in *Value1*.

- *Value1* (d-field) is the register containing the value to compare against *Value2* and is the destination in which to write the lesser of the two.
- *Value2* (s-field) is a register or a 9-bit literal whose value is compared against *Value1*.

-INSTR-	ZCRI	-CON-	-DEST-	-SRC-	Z Result	C Result	Result	Clocks
010011	001i	1111	dddddddd	ssssssss	D = S	Unsigned (D < S)	Written	4

Explanation

MAX compares the unsigned values of *Value1* and *Value2* and stores the lesser of the two into the *Value1* register, effectively limiting *Value1* to a maximum of *Value2*.

If the WZ effect is specified, the Z flag is set (1) if *Value1* and *Value2* are equal. If the WC effect is specified, the C flag is set (1) if the unsigned *Value1* is less than the unsigned *Value2*. The lesser of the two values is written to *Value1* unless the NR effect is specified.

MAXS

Instruction: Limit maximum of signed value to another signed value.

MAXS *SValue1*, <#> *SValue2*

Result: Lesser of signed *SValue1* and signed *SValue2* is stored in *SValue1*.

- *SValue1* (d-field) is the register containing the value to compare against *SValue2* and is the destination in which to write the lesser of the two.
- *SValue2* (s-field) is a register or a 9-bit literal whose value is compared against *SValue1*.

-INSTR-	ZCRI	-CON-	-DEST-	-SRC-	Z Result	C Result	Result	Clocks
010001	001i	1111	dddddddd	ssssssss	D = S	Signed (D < S)	Written	4

Explanation

MAXS compares the signed values of *SValue1* and *SValue2* and stores the **lesser** of the two into the *SValue1* register, **effectively limiting *SValue1* to a maximum of *SValue2***.

If the **WZ** effect is specified, the Z flag is set (1) if *SValue1* and *SValue2* are equal. If the **WC** effect is specified, the C flag is set (1) if the signed *SValue1* is less than the signed *SValue2*. The **lesser** of the two values is written to *SValue1* unless the **NR** effect is specified.

MIN

Instruction: **Limit minimum of unsigned value to another unsigned value.**

MIN *Value1*, <#> *Value2*

Result: **Greater** of unsigned *Value1* and unsigned *Value2* is stored in *Value1*.

- *Value1* (d-field) is the register containing the value to compare against *Value2* and is the destination in which to write the **greater** of the two.
- *Value2* (s-field) is a register or a 9-bit literal whose value is compared against *Value1*.

-INSTR-	ZCRI	-CON-	-DEST-	-SRC-	Z Result	C Result	Result	Clocks
010010	001i	1111	dddddddd	ssssssss	D = S	Unsigned (D < S)	Written	4

Explanation

MIN compares the unsigned values of *Value1* and *Value2* and stores the **greater** of the two into the *Value1* register, **effectively limiting *Value1* to a minimum of *Value2***.

If the **WZ** effect is specified, the Z flag is set (1) if *Value1* and *Value2* are equal. If the **WC** effect is specified, the C flag is set (1) if the unsigned *Value1* is less than the unsigned *Value2*. The **greater** of the two values is written to *Value1* unless the **NR** effect is specified.

MINS, MOV – Assembly Language Reference

MINS

Instruction: Limit minimum of signed value to another signed value.

MINS *SValue1*, <#> *SValue2*

Result: Greater of signed *SValue1* and signed *SValue2* is stored in *SValue1*.

- *SValue1* (d-field) is the register containing the value to compare against *SValue2* and is the destination in which to write the greater of the two.
- *SValue2* (s-field) is a register or a 9-bit literal whose value is compared against *SValue1*.

-INSTR-	ZCRI	-CON-	-DEST-	-SRC-	Z Result	C Result	Result	Clocks
010000	001i	1111	dddddddd	ssssssss	D = S	Signed (D < S)	Written	4

Explanation

MINS compares the signed values of *SValue1* and *SValue2* and stores the greater of the two into the *SValue1* register, effectively limiting *SValue1* to a minimum of *SValue2*.

If the **WZ** effect is specified, the Z flag is set (1) if *SValue1* and *SValue2* are equal. If the **WC** effect is specified, the C flag is set (1) if the signed *SValue1* is less than the signed *SValue2*. The greater of the two values is written to *SValue1* unless the **NR** effect is specified.

MOV

Instruction: Set a register to a value.

MOV *Destination*, <#> *Value*

Result: *Value* is stored in *Destination*.

- *Destination* (d-field) is the register in which to store *Value*.
- *Value* (s-field) is a register or a 9-bit literal whose value is stored into *Destination*.

-INSTR-	ZCRI	-CON-	-DEST-	-SRC-	Z Result	C Result	Result	Clocks
101000	001i	1111	dddddddd	ssssssss	Result = 0	S[31]	Written	4