

*TMS320 DSP  
DESIGNER'S NOTEBOOK*

# ***Designing Macros for the TMS320C5x***

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*APPLICATION BRIEF: SPRA255*

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# Designing Macros for the TMS320C5x



## Abstract

The TMS320 Assembler includes a powerful macro capability. It provides an effective way to generate a macro function that appears to be a normal instruction, including support of all the normal addressing modes. An example illustrating a lower-limit macro is used to demonstrate the capability. The lower-limit macro has the characteristics typical of many of the native 'C5x instructions.



## Design Problem

What are the tricks to creating a macro that supports all the normal addressing modes for its parameter fields?

How can I be sure that I'm using the correct instruction (CRGT/CRLT) when I want to apply a lower/upper limit to a variable?

## Solution

The TMS320 Assembler includes a powerful macro capability. It provides an effective way to generate a macro function that appears to be a normal instruction, including support of all the normal addressing modes. An example illustrating a lower-limit macro is used to demonstrate the capability. The lower-limit macro has the characteristics typical of many of the native 'C5x instructions.

### *Example 1. Code Listing, llimit.asm*

```
llimit          .macro limit,shift,nextar
                .nolist
;=====
;/
;/              FILE INFORMATION                      //
;/                                                    //
;/ (C) Copyright 1993 Texas Instruments. All rights reserved. //
;/ Use of copyright notice is precautionary and does imply //
;/ publication.                                         //
;/                                                    //
;=====
;/ File          : llimit.asm
;/
;/ Comments :   Perform a lower limit test. The result will be
;/              in both the accumulator and the accumulator
;/              buffer on exit.
;/              The accumulator buffer must contain the value to
;/              be tested upon entry. A total of three
;/              parameters may be passed to llimit. These
;/              parameters must satisfy the syntax for the
;/              lacc/lacl instructions. The limit parameter may
;/              be an immediate value or an address in data
;/              memory containing the value. If the limit
;/              parameter is provided as a direct address or as
;/              an indirect address, the data page pointer or the
;/              ARP, respectively, must be properly set on entry.
;/              In any case, the limit will be loaded into the
;/              accumulator and accumulator buffer compared.
;/              The greater of the two values, either the original
;/              or the lower limit, will be loaded into both the
;/              accumulator and the accumulator buffer.
;/
```







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```
.elseif ($syncmp(tmp1,"#")==0)
.list
lacc      :limit::shft:
.nolist
.else
.list
.emsg     "ERROR - invalid macro parameter to llimit."
.mexit
.endif
.list
crgt
.endm
```