

18 March 2002



162162

DIGITAL SIGNAL PROCESSOR WITH VARIABLE WIDTH
INSTRUCTIONS



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Abstract of the Disclosure

A digital signal processor (10) which supports an instruction set including both 16-bit instructions and 32-bit instructions, so that particular portions of a program requiring only 16-bit instructions may be encoded in a 16-bit mode, thus reducing the program memory needed to store these portions. The digital signal processor switches between the 16- and 32-bit modes only in response to flow control instructions such as JUMP, CALL or RETURN instructions. JUMP and CALL instructions are coded to indicate the processor mode applicable to the instructions to which the JUMP or CALL instruction goes to, so that the processor may change modes as needed when executing the JUMP or CALL instruction. When a CALL is executed the current processor mode is stored on the processor's stack, so that in response to a RETURN instruction the processor can return to this mode by retrieving the stored mode from the stack.