

AROUND THE INDUSTRY

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Texas Instruments recently sent us one of their new "Programmer" model calculators for evaluation. I've always felt someone would eventually come up with a decimal/octal/hexadecimal calculator for us computer types ... I just wish it had arrived sooner. After using this one for a couple of weeks, I've come to the conclusion I wouldn't ever be without it (TI loaned it to me ... but, rather than return it, I think I'll buy it!).

Trying to do even the simplest hexadecimal arithmetic has always been a pain for me. For example, if you wanted to find out how many memory locations a particular assembly-language program occupied, you would simply subtract the starting address from the ending address, right? Here, put this one down on paper just to give it a try: 1D00 minus 153F. After going through all that base-16 borrowing, you come up with a hexadecimal answer (it's hoped) ... which isn't too meaningful. It will have to be converted to decimal to be of any value, right? You remember how to do that, of course. You learned it way back in your early college days ... or was it that first tech school you attended for programming or digital electronics?

There's an easier way! First, grasp your trusty "Programmer" in your left hand and hit the ON button with your right (or vice versa for you lefties). Next, hit the HEX switch, which will put you in the hexadecimal mode of operation (indicated by a quote sign (") at the left side of the display). Hit 1D00 ... then the - sign ... then 153F ... and then the = sign. Aha, we have a hex answer of 7C1.

To convert this to decimal, we simply hit the DEC key and the conversion is performed ... 1985₁₀ locations. As a matter of fact, if we wanted to see what 1,985 is in octal, we would simply press the OCT key (and get an answer of 3701). The octal mode is indicated by a single prime sign (') at the left of the display.

The preceding was a simple example of having to do hexadecimal calculations (and octal, of course). I would think the greatest value to be derived from this little gem would be when we want to do some hex arithmetic operations within a machine-language program ... and being able to run through the whole sequence in *decimal and hex* with the calculator first.

How about getting two's complement of a number? Simple. Enter the positive value of the number in octal or hex and then push the ± key in the lower right-hand corner (see Photo 1). You have the two's complement. Depressing the key again will take you back to the positive value.

Referring again to Photo 1, notice there are several *logical* functions that you can perform with the Programmer, also. For example, you can take the Exclusive OR (XOR) of two values or perform a logical AND or a logical OR. Left shifts, one bit at a time, are possible using the SHF key. For example, enter IF, then SHF, then 1 (for 1 place), then = ... and you get an answer of 3E.

Parentheses, along with memory store, recall and sum operations make the Programmer a good general-purpose decimal calculator. Unfortunately, I don't find myself using it for everyday



Photo 1. TI's Programmer calculator ... from hex to dec.

math. I say "unfortunate" because I feel TI sort of dropped the ball in the human engineering department. The Programmer sits on my desk right next to my old reliable TI SR-10 ... at the same angle shown in Photo 2. At that angle I can reach over and easily see which key is which on the SR-10. I can't see the labeling for the keys on the Programmer. In order to use the Programmer I have to pull it over to me. Now, it's not that I'm lazy ... it's just that I think they did a much better job with the nice big keys on their older calculators (but then, the newer ones have a lot more functions, don't they?).

One other minor fault I found with the Programmer is that it will not directly convert noninteger values from one base to another.

But, with a little minipulation (described in the manual) it can be done.

As I said, I don't ever plan to part with it. It's the greatest boon to computing since the microprocessor (and, of course, I never exaggerate). The calculator is being test marketed initially on a direct-mail basis from Texas Instruments. Got that? *Test* marketed. That means we'd better get busy and buy some ... or they'll probably take it off the market. The price is \$49.95. Heck, I'll gladly pay that just to keep from ever having to do another hex calculation on paper again!

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Photo 2. Comparison of Programmer and SR-10 shows the latter's more convenient operating stance.