

Pioneer will be available in three versions, technical, business and custom. We will address the custom version. The first two will be sold by dealers. The three versions of the calculator will vary slightly in appearance. The custom unit I picture as a "Blank Nuts", but with different internal electronics from the other two. Tell us what you would like to have. We need your inputs on form to some extent, but mostly on the internal configuration.

#### Description:

Estimated US list price: \$80 to \$100 (without extra Custom ROM, EEPROM or RAM).

CHIP SET will be the Saturn, the same as the HP 71, but will run twice as fast.

TWO CHIPS: The CPU containing Operating System, ROM, OUTPUT and RAM (1-4Kb). The "Custom" chip which will be either ROM, EEPROM or RAM, but not a combination. Either one of the options mentioned will be factory installed.

Custom ROM: 64Kb at \$30

EEPROM cost : 8Kb \$40-50  
16Kb \$80-100  
32Kb \$160-200  
64Kb \$320-400

The factory can provide the "burning" of the EEPROM at an extra charge or it can be done in the field with an EPROM burner.

Extra RAM, 8Kb at \$20 up to 32Kb at \$80.

The EEPROM and extra RAM will be programmable via the battery terminals of the Pioneer.

If CROM needs to be changed buy a new Pioneer.

SOFTWARE DEVELOPMENT SYSTEM: An MSDOS compatible unit, same as being developed for the HP 41 and 71 now. Program development will be in BASIC but the code will be cross assembled into Assembler which will run on Pioneer.

DISPLAY: LCD, 138 by 16 dots or 2 lines by 24 characters. The second line is programmable to act as soft key labels for the six soft keys on the keyboard. However, between labels the second line can be used for answers to questions in line one.

No background lighting is planned, but should it be?

KEYBOARD: Alpha/Numeric with 30 keys plus 6 soft keys under the display. Most keys will be without functions but definable. They are more rugged looking than the keys on present models. There will also be a custom overlay.

The present ALPHA INPUT is using the 6 soft keys. To enter a letter, two soft keys would have to be depressed. However, it is expected that this industrial Pioneer would be preprogrammed using CROM, EEPROM or RAM and the keyboard could then be defined as desired including full alpha.

CLOCK and CALENDER can be included at a small cost. Opinion?

POWERED by replacable batteries, no AC adaptor. What is an acceptable battery life?

PHYSICAL SIZE: 5.6x3.2x0.45 inches (it could end up a little thinner)

PHYSICAL SHAPE: Vertical format.

WEIGHT: Light. Does too light a weight give the impression of limited quality?

I/O Ports: None. IR output located on top of calculator.

TIMING: Introduction planned for summer 1987.

What I think has been described is an inexpensive and customizable unit that would typically be used for stand-alone computation. However, it will have the mentioned Infrared light output and a 24 character thermal printer to match it. No other peripheral is planned at this time.

The next future unit will be a step up from Pioneer. It will probably have four lines. Help us design that too. What would you like it to be? CPU, size, format, CROM and/or EEPROM, should CROM be in replacable modules etc. Give us your dream customizable computer. Now is the time to influence the fundamental design of future customizable products!

In your feedback on Pioneer, please give us a picture of what you wish your role to be. Do you see yourself as selling throw-away custom computers in addition to the ICC functions? With Pioneer your role will obviously change a little bit, but customers are still going to need consultants to help them be successfull, i.e. write code, QA code, total solutions involving other than HP gear etc.

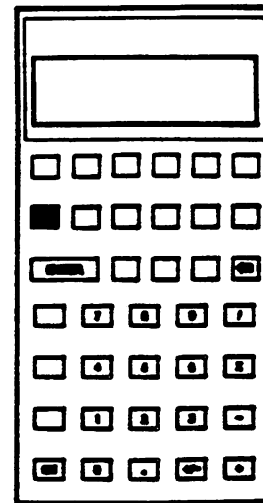
# Pioneer

## Objective:

Provide a family of premium quality, easy-to-use, business and technical, shirt-pocket, \$40 to \$150 calculators to expand Hewlett-Packard's presence in mass marketed advanced professional and student calculators. Also, to provide a low cost, customizable product for third party vertical solutions.

## Hardware features:

- \*Shirt pocket size
- \*138 X 16 dot display (2 lines by 24 characters)
- \*Primary lithium cells
- \*Single chip system for low cost
  - 32K ROM OR BIGGER
  - 1K RAM OR BIGGER
  - Saturn 4 bit CPU
  - Display and keyboard drivers
- \*Multi-chip versions with more capability
- \*Hardware support for time and alarm
- \*Infrared printer interface



## CPU

1. WHAT KIND?  $\swarrow$  BASIC, FORTH, ASSEMBLY
2. PROGRAMMING BUILT-IN? MATH FUNCTIONS, FILE HANDLING, etc.

OP SYST.  
ROM  
OUTPUT  
RAM (14KB)

## CUSTOM CHIP

CUST. ROM  
OR  
EEPROM  
OR  
RAM

SIZES?

ACTUAL SIZE.

Keys layer  
Over lay layer  
Case layer 20  
Lens layer 30  
Display layer

