

## Technical Data and Instructions

### DataPlot Print Mechanism Model PM1416

**GENERAL DESCRIPTION** The DataPlot model PM 1416 Print Mechanism incorporates a thermal printhead with 416 heat element dots arrayed in a single line across the width of the paper. The mechanism holds a supply roll of 4.5" wide thermal paper and moves the paper past the printhead in steps of approximately .005 inch. When driven by a DataPlot CB 1416 or CB 1100 Control Board, the print mechanism steps the paper forward, pausing after each step to heat selected dots. In this manner, a dot matrix representation of alphanumeric and/or graphic data can be printed.

### MOUNTING

The DataPlot model PM 1416 print mechanism is designed to mount to the rear surface of a panel, using four 6-32 screws. The mounting and cutout dimensions are shown on the reverse side of this sheet. If you prefer to use mounting studs, we can eliminate the mating PEM nuts and you can use nuts to secure the print mechanism to the panel.

### CONTROL BOARD CONNECTION

This print mechanism is designed to operate reliably when driven by the B-G Instruments' DataPlot model CB 1416 or CB 1100 control board or another board specifically approved by B-G Instruments for that purpose. Attempting to operate it in any other way may cause permanent damage that would not be covered by warranty. With all system power off, attach the supplied ribbon cable between the 26-pin printhead connector and connector J3 on the control board, being sure to observe correct polarity by aligning the red dots on the connectors with those on the cable ends. Also connect the 8 pin stepper motor connector cable to connector J1 on the control board. This connector is keyed to facilitate correct polarity assembly. Refer to the control board data sheet for instructions on applying power and operating the printer. The standard length of these cables is 18 inches. Contact us if you need shorter or longer cables in your application.



**PM1416-PTVF  
Print Mechanism**

### RESOLUTION

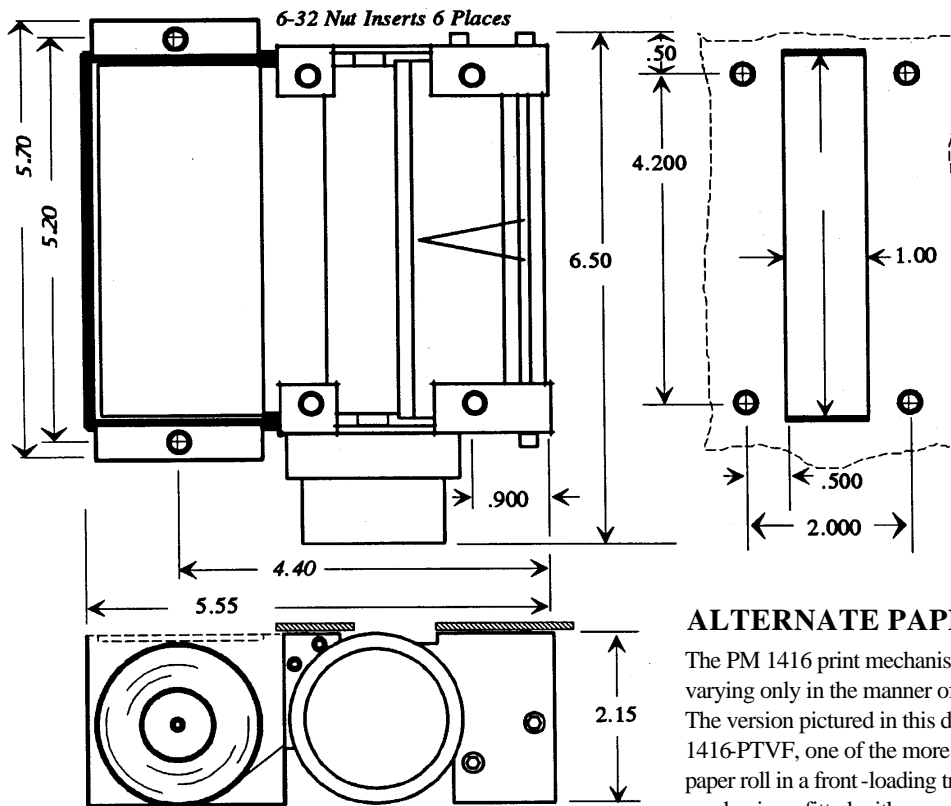
The 416 thermal dot elements are uniformly spaced at 100 dots per inch, with centers 0.010 inches apart. The mark made by each element is slightly larger than this spacing, so that the printer can print solid lines and solidly filled areas. The standard mechanism advances the paper approximately 0.005 inches between steps, providing a dot matrix pitch of .010" across the paper by .005" along its length. The CB 1416 and CB 1100 Control Boards and software use this dot matrix to produce printed characters and graphic images.

### PAPER LOADING

A paper sensor in the PM 1416 provides signals that are used by the control board to stop printing when paper runs out and to "autoload" a new paper roll. To load the printer, be sure the power is on and insert the paper end into the slot behind the rubber platen with the sensitive side (outside on the roll) away from the platen. When the paper is inserted, the platen will run, pulling about 2 inches of paper through. On print mechanisms with a head lift tab, you may also install paper by lifting the printhead and inserting the paper manually.

### MAXIMUM PRINT SPEED

When driven by a CB 1416 or CB 1100 Control Board, the PM 1416 Print Mechanism can print approximately 125 dot rows per second (somewhat slower for rows containing more than 64 printing dots). At .005" per step, the maximum paper speed is about .6 inches per second. Rows of 5x7 characters can be printed at a rate of about 5 lines/second.



Locations and dimensions for panel mounting holes and paper exit cutout are shown at the left. We recommend inserting a transparent tear-off bar in this cutout. Contact B-G Instruments for further information.

The paper supply roll compartment is usually covered by a removable door set flush in the front panel and secured by captive screws to the two leftmost nut inserts shown.

Brackets are also available from B-G Instruments for attaching the printer control board to the rear of the print mechanism.

### ALTERNATE PAPER SUPPLY HOLDERS

The PM 1416 print mechanism is available in several versions, varying only in the manner of holding the paper supply roll. The version pictured in this data sheet is model PM 1416-PTVF, one of the more popular versions, that holds the paper roll in a front-loading tray. We also offer these mechanisms fitted with a rear-loading tray, an axle paper roll mount or a spring holder. Upon your request, drawings of the other standard configurations will be sent to you by phone or fax. Other paper supply holding fixtures have been designed for other customers with special mounting requirements. Let us know what works best in your application.

### WARRANTY

B-G Instruments will repair or replace, at its option, any model PM 1416 Print Mechanism that malfunctions because of faulty manufacture within one year after its original date of sale, provided that the mechanism has been used exclusively with a properly functioning CB 1416 or CB 1100 Control Board (or other control board specifically authorized by B-G Instruments) and B-G Instruments' type TP-4 thermal Paper, and:

1. neither the print mechanism nor its control board have been modified in any way not specifically authorized by B-G Instruments, Inc., and
2. electrical power applied to the control board has always been within specifications for that board, and
3. the mechanism shows no evidence of electrical, thermal or mechanical damage, and
4. the mechanism has printed fewer than 100 million dot rows and less than 100,000 feet of paper.

### THERMAL PAPER

We recommend using B-G Instruments' type TP-4 thermal paper in the DataPlot model PM 1416 Print Mechanism. This paper produces a stable black on white image. Unlike some waxy coated papers, it does not stick to or cause material to build-up on the printhead. TP-4 is a 4.5 inch wide, high quality facsimile grade paper that can produce high resolution permanent copy in the PM 1416 printer. It is available from B-G Instruments in cartons of 24 rolls, or larger quantities.

### CAUTION --- PRINTHEAD DAMAGE

The DataPlot CB 1416 and CB 1100 Control Boards apply power to the selected thermal dots for a period of time sufficient to exceed the thermal paper activation temperature, or about 2 milliseconds. If electrical power is applied to these elements for a significantly longer period, or for too high a duty cycle, or in any other improperly controlled manner, irreversible printhead damage may occur. Such damage can be readily detected, as the affected dots will print only lightly, if at all, and is **not covered by warranty**. For this reason, it is important that the print mechanism be operated only by the DataPlot model CB 1416 or CB 1100 Control Board and that the applied power be as specified in the control board's Technical Data and Instructions Sheet.

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