



## DIGITAL PLOTTER 7210A

11 in. x 17 in. (27,9 cm x 43,2 cm)

MODEL  
**7210A**

TECHNICAL DATA OCTOBER 1972

# High Performance Plotting From Your Computer at a Low Price



## Low Price

OEM discounts available.

## High Performance

Numerical resolution of 1 part in 10,000.  
Plots up to 20 coordinate pairs per second.

## Easy Interface

Easy as conventional card or perforated tape readers.



## MODEL 7210A

The 7210A Digital Plotter is an output peripheral designed for use with computers and computer systems. The Plotter's performance surpasses even that found in the traditional high overhead, high priced incremental plotters. Yet, the exceptional speed, resolution, and accuracy of the 7210A are available at the low cost normally associated with analog plotters.

Additionally, the 7210A can be added easily to either your computer or intelligent terminal. Accepting either Binary or BCD codes under full program control, the pen can make up to 20 moves per second at any angle. The Plotter's internal micro-processor allows typical operation with less than 250 16-bit words of computer memory.

Any sheet type graph paper, up to 11 x 17 inches (27,9 x 43,2 cm) in size and with or without pre-printed grids, may be used. The AUTOGRIP paper holddown system, which is silent and trouble-free with no moving parts, solidly grips the paper. Four colors of ink are available in clean, disposable pens that can be changed quickly and easily. Additionally, the Plotter is . . .

- EASY TO INTERFACE — As easy as a conventional card or perforated tape reader.
- EASY TO CONTROL — The command and data word structure makes plotting as simple as printing.
- and its many features make it VERY EASY TO USE.

# THE POWERFUL PLOTTER

## HIGH SPEED GRAPHICS

Complete plots take seconds rather than minutes. The 7210A processes up to 20 coordinate pairs per second and draws symbols at speeds up to 5 per second. Any two points on the chart can be connected in one move with a pen speed of up to 12 inches/second (30,5 cm/sec) and a resolution up to 0.001 inches (0,025 mm).

## COMPLETE STATUS MONITORING

Status lines allow the computer to fully monitor the Plotter's status.

## TWO COORDINATE SYSTEMS

The two choices to define coordinate locations on the plotting area, selected under full program control, are:

**Absolute Coordinates** — All points on the chart are defined by absolute coordinate pairs, lines can be drawn any length and at any angle by specifying only the end coordinate. Each plotted point is independent of the accuracy of preceding points.

**Relative Coordinates** — Each new position is defined relative to the last. Ideal for relative position information in applications such as character generation and other repetitive operations.



### Basic Power Controls

**LINE** — When depressed allows power to be supplied to Plotter.

**CHART HOLD** — When depressed activates electrostatic paper holddown and enables Plotter. When released deactivates paper holddown and places unit in standby, a condition where mechanism is inactive.

### Operational Status

**LINE Indicator** — Lights when power is applied to Plotter.

**ERROR Indicator** — Lights when data coordinates outside range of Plotter are received, when the pen has traveled into one of the mechanical limits, or the Plotter recognizes a data transfer format error. The computer continues but the pen lifts and remains stationary until valid data is received.

## AUTOMATIC ERROR DETECTION

Error detection is employed to eliminate plotting of improperly formatted and off-scale data. When absolute coordinates are used, no data is lost beyond the point in error.

## ACCEPTS BINARY OR BCD CODE

Either Binary or BCD codes are accepted with code selection under full program control.

## EASY SCALING

Scaling the calculated data to match the Plotter's input range is a simple operation. The data is converted to numbers between 0000 and 9999 — accomplished under program control.

## MINIMUM SOFTWARE

The 7210A contains an internal micro-processor that interpolates between data points. As a result, the data is interpreted very efficiently and the burden placed on the computer is minimal. The Plotter will draw lines of any length and at any angle without computer interrupt during the move. A typical driver requires only 250 16-bit words of memory. Annotated graphs and title blocks can be provided by a driver of less than 1000 words.

## CONVENTIONAL INTERFACE

The computer/plotter interface employs a "hand shake" typical in computer systems. The Plotter can be driven with any computer or intelligent terminal that has an 8-, 12-, or 16-bit parallel word I/O channel.



### Plot Size Adjustments

These controls allow the plot size to be adjusted to fit the paper or preprinted grid.

**LOWER LEFT** — Enters (0,0) allowing the position of lower left limit to be set anywhere in a 5 x 10 inch (12,7 x 25,4 cm) area of the lower left plotting surface. Controls, as indicated by arrows, adjust the lower left graph limit after depressing of the LOWER LEFT pushbutton.

### PEN DOWN

input pen information.

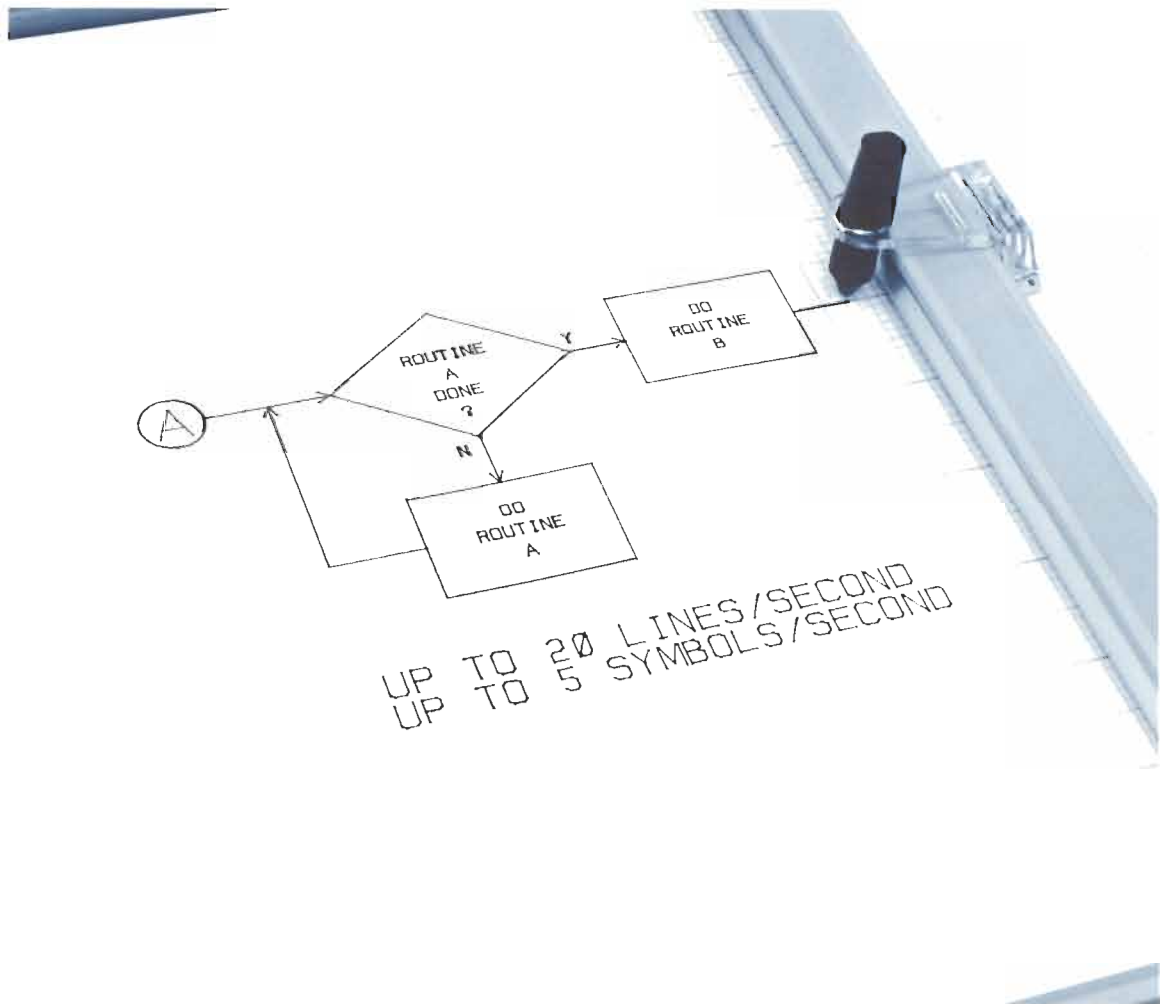
**UPPER RIGHT** — Enters full scale allowing the position of upper right limit to be set anywhere on the plotting surface to the right of and above lower left. Controls as indicated by arrow adjust the upper right graph limit after depressing of the UPPER RIGHT pushbutton.

**PEN UP** — Lifts the pen; overriding the source input pen information.



# THE "INTELLIGENT" PLOTTER

Only end coordinate information is required to draw a line. The 7210A automatically computes all the intermediate points that are required to draw a stepless straight line — at any angle and any length. No computer interrupt is required during the move. With a numerical resolution of one part in ten thousand and a plotting speed of up to 20 line segments per second, the resulting trace is smooth and swift.



# THE SWIFT PLOTTER

In the short time span of one second the 7210A can draw . . .

- a 10 inch smooth line,
- seven 1 inch smooth lines,
- five alpha/numeric characters, or
- twenty 0.1 inch lines.



## SPECIFICATIONS

**Plotting Surface:** 10 x 15 in. (25,4 x 38,1 cm).

**Plotting Area:** Front panel scaleable from 0 x 0 to 10 x 15 in. (25,4 x 38,1 cm).

**Plotting Maneuvers:** Pen or Position. Pen and Position maneuvers are independent commands.

**Vector Generation:** Automatic. A command to perform a position maneuver will cause the Plotter to traverse a straight line path to any specified point on the platen.

**Vector Length:** Limited only by the plotting surface.

**Vector Speed:** Up to 12 in./second (17 to 30,5 cm/sec). The speed is dependent upon the slope of the line. Plotter will process up to 20 vectors/second.

**Numerical Code:** Position data is received in BCD (8421) or Binary.

**Plotting Modes:** Absolute coordinates and relative coordinates.

**Numerical Resolutions:** 1/10,000 (0.01%).

**Plot Accuracy:** Better than 0.04 inch (0,10 cm) in 15 inches (38,1 cm).

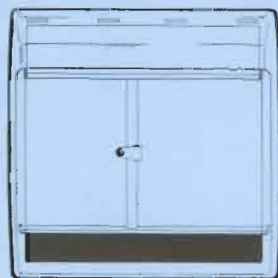
**Resettability:** 0.007 inch (0,13 mm) max.

**Writing Method:** Ink, disposable pens.

**Paper Size:** Any size up to 11 x 17 in. (27,9 x 43,2 cm).

**Power:** 100 V, 115 V, 200 V, or 230 V  $\pm$  10% (choice of 4 positions at rear panel), 48 to 66 Hz, 100 watts.

**Weight:** Net 40 lb (18,1 kg); Shipping 52 lb (23,6 kg).

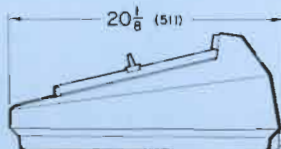


CABINET	OLIVE BEIGE CABINET
BASE	OLIVE GRAY CABINET
CONTROL PANEL	OLIVE BLACK PANEL
DIMENSIONS IN INCHES (MILLIMETERS)	

20 (508)



8 1/2  
(216)



20 1/8 (511)

## ACCESSORIES SUPPLIED

1. Accessory Kit	07210-80010
1 Pkg Disposable Pens, Red (3)	5081-1190
1 Pkg Disposable Pens, Blue (3)	5081-1191
1 Pkg Disposable Pens, Black (3)	5081-1193
1 Slidewire Cleaner	5080-3605
1 Slidewire Lubricant	5080-3635
1 Fuse (for 230 V operation)	2110-0080
2. Operating Manual	07210-90000
3. Interface Manual	07210-90002
4. Mating Connector	
1 50 Pin Connector	1251-2771
1 Hood	1251-2769
2 Jackscrews	1251-2770
5. Dust Cover	4040-0477
6. Graph Paper, 20 sheets (English)	9270-1004
7. Graph Paper, 20 sheets (Metric)	9270-1024
8. Power Cord (7.5 ft (2,3 m))	8120-1348

## SUPPLIES AVAILABLE

### DISPOSABLE PENS (package of 3)

Red	5081-1190
Blue	5081-1191
Green	5081-1192
Black	5081-1193

### GRAPH PAPER (box of 100 sheets)

	Plot Area	
Linear	10 in. x 15 in.	9270-1004
"	25 cm x 38 cm	9270-1024
"	7 in. x 10 in.	9270-1006
"	18 cm x 25 cm	9270-1023
Semi-Log	10 in. x 2 cycle	9280-0159
"	10 in. x 3 cycle	9280-0160
"	2 cycle x 15 in.	9280-0169
"	3 cycle x 15 in.	9280-0168
Log-Log	2 cycle x 3 cycle	9280-0167
"	3 cycle x 2 cycle	9280-0165
"	3 cycle x 4 cycle	9280-0171
Blank (with scaling points)	10 in. x 15 in.	9280-0180

### LUBRICANTS & CLEANERS

Slidewire Cleaner	5080-3605
Slidewire Lubricant	5080-3635



## ACCESSORIES AVAILABLE

1. Model 17260A Plotter Stand (includes mounting plate)
2. Model 17261A Mounting Plate
3. Carrying/Transit Case (P/N 9211-1377)