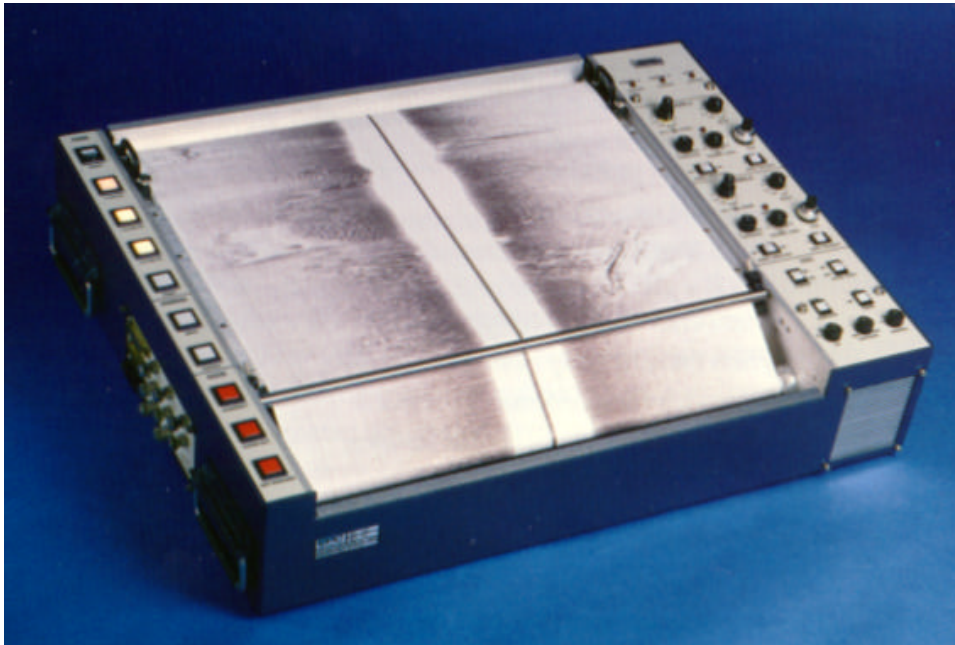




# MODEL 9802 DUAL CHANNEL THERMAL GRAPHIC RECORDER

With over 30 years of dedication to the manufacture of Graphic Recorders, EPC is proud to present the most advanced thermal recording system available today, the Model 9802. In order to satisfy a technically demanding industry, the 9802 was designed with extreme versatility and speed in mind. Utilizing the analog interfaces, real-time data can be displayed at up to 32 scans per second, while any combination of the digital interfaces facilitates post processing and all remote control functions. Whether the application calls for side-scan sonar, sub-bottom profiling, or seismic data processing, this recorder will excel with unrivaled flexibility.



The 9802 features thermal printhead technology that utilizes heat sensitive paper or film. With resolution of 203 dots per inch, as many as 64 shades of gray can be printed across the 20 inch display. This microprocessor based recorder also provides a versatile array of interfaces. Through the RS-232 interface, the recorder may be remotely controlled. All setup functions can be programmed into battery backed RAM that will, if desired, override the control panel.

Additional remote capabilities are possible through RS-232 and Parallel Printer port inputs. An additional GPIB I/O is optional. For analog signal processing, two completely independent channels operate on separate time bases, each with independent delays and key rates. Couple all this with EPC's rugged mechanical design, and the results are crisp, clean, high quality records.

## CONTROL ELEMENTS

|                              | <b>Panel Controls</b>  | <b>Remote</b>                       |
|------------------------------|--|-------------------------------------|
| <b>Scan:</b>                 | Selects scan time base for each channel:<br>1/32-8 sec/scan, STBY. | Variable.<br>12.5 ms to 10 sec.     |
| <b>Key:</b>                  | Selects key out rate for each channel;<br>1/32-8 seconds.          | Variable.<br>31.25 ms to 10 sec.    |
| <b>Delay:</b>                | Selects delay for each channel; 1/64-4 seconds, OFF.               | Variable. 1ms to 10 sec.            |
| <b>Trigger Level:</b>        | Sets trigger level from -10V to +10V. 50 $\mu$ s min.              | Level control variable.             |
| <b>Int/Ext Trigger:</b>      | Selects internal or external triggering for each channel.          | Yes                                 |
| <b>Threshold:</b>            | Sets the threshold to eliminate background noise on each channel.  | Yes                                 |
| <b>Gain:</b>                 | Sets amplification of incoming analog signal for each channel.     | Yes                                 |
| <b>Sweep Direction:</b>      | Selects left to right or right to left sweep for each channel.     | Yes                                 |
| <b>Print Polarity:</b>       | Sets polarity of signal to print; +,+/-,- for each channel.        | Yes                                 |
| <b>Take-up:</b>              | Sets chart take-up; on/off   | No                                  |
| <b>Scale Lines:</b>          | Prints 10 grid lines; on/off                                       | Yes, number and intensity           |
| <b>Event Marks:</b>          | Prints event lines.  | Yes                                 |
| <b>Annotate:</b>             | Prints time and setup messages.                                    | Print selected messages.            |
| <b>Int/Ext Chart Clock:</b>  | Selects internal or external chart clock.                          | Yes                                 |
| <b>Rapid Advance:</b>        | Enables momentary rapid chart advance; .30"/sec.                   | Yes                                 |
| <b>Chart Speeds:</b>         | Selects lines per inch; 75, 100, 150, 200.                         | Yes, selectable                     |
| <b>Presentation:</b>         | Channel A only. Channel B only. Channels A&B                       | Yes                                 |
| <b>Contrast:</b>             | Sets intensity of presentation, white to black.                    | Yes                                 |
| <b>Test Patterns:</b>        | Prints standard test pattern.                                      | Print selected test pattern.        |
| <b>System Configuration:</b> | Dip switch selectable RS-232 baud rates, IEEE address, paper type. | Yes                                 |
| <b>Key/Print Programmer</b>  | No   | Variable up to 10 steps.            |
| <b>Repeat:</b>               | No   | Repeat channel data up to 10 times. |
| <b>Real-Time Clock:</b>      | No   | Set real-time clock remotely.       |

## Indicators

|                     |   |
|---------------------|---|
| <b>5 Volts:</b>     | Indicates power to the recorder's logic, control panel, indicators, take-up motor, and chart advance systems. |
| <b>+ 12 Volts:</b>  | Indicates analog supply voltage.  |
| <b>- 12 Volts:</b>  | Indicates analog supply voltage.  |
| <b>Print:</b>       | Indicates print voltage, 24V, to printhead and chart advance systems.   |
| <b>Input:</b>       | Indicates flow of digital data (serial or parallel) into the recorder.  |
| <b>Output:</b>      | Indicates flow of digital data (serial or parallel) out of recorder.  |
| <b>Overheat:</b>    | Indicates overheating of printhead. Recorder automatically resets after cooling down.                         |
| <b>Paper Out:</b>   | Indicates recorder out of paper. Recorder will not print until paper is properly loaded.                      |
| <b>Not Engaged:</b> | Indicates print roller not engaged with printhead. Recorder will not print until roller is properly seated.   |
| <b>Lock Out:</b>    | Indicates remote control of chart and/or channels.  |
| <b>Ready:</b>       | Indicates channel ready to accept data.   |

## Analog Interface

|                         |   |
|-------------------------|---|
| <b>Analog Signal:</b>   | .1-10V. Input impedance 2K ohms, frequency response - 3 db @ DC-250KHz @ E in=. 1V. Dual channel, A & B; BNC input. |
| <b>Key Out:</b>         | 1.0 millisecond pulse. Selectable as 5V TTL, + 12V, or contact closure. Pulse width variable remotely; BNC input.   |
| <b>Ext. Trigger In:</b> | - 10V to + 10V pulse, 50 microsecond, minimum pulse width; BNC input.   |
| <b>External Chart:</b>  | TTL input to provide external clocking of chart drive; BNC input.   |
| <b>External Mark:</b>   | 5V or contact closure to print event line, status, or annotations; BNC input.                                       |

## Remote Control Specifications

|                         |  |
|-------------------------|--|
| <b>General:</b>         | All Control Panel functions may be remotely executed (except paper take-up) through the RS-232, RS-422, IEEE-488, and Parallel Printer port digital interfaces. Remote set-up through MS-DOS compatible computer. Operating software provided by EPC Labs. |
| <b>Shades of Gray:</b>  | Selectable; 8, 16, 32, 64.   |
| <b>Repeat:</b>          | Repeat a scan of data for horizontal scale exaggeration; 1-10 sweeps.  |
| <b>10 Step Program:</b> | Key - Select scans per key; 1-10 sweeps.<br>Print - Select which scan to print; 1-10 sweeps.   |
| <b>Annotation:</b>      | Message - Select message to print.<br>Clock - Set time and date to print.<br>Interval - Select time frame to print annotations; 1-60 minutes.  |
| <b>Navigation:</b>      | Integrate with navigation systems via the RS-232 interface.  |

**General Specifications**

|                                    |                     |                                  |                   |
|------------------------------------|---------------------|----------------------------------|-------------------|
| <b>Power</b> .....                 | 115/230 VAC, 225W   | <b>Dimensions</b> .....          | 29"W x 22"D x 7"H |
| <b>Weight</b> .....                | .65 Lbs. with paper | <b>Shipping Weight</b> .....     | 125 Lbs.          |
| <b>Operating Temperature</b> ..... | .0°C - +65°C        | <b>Storage Temperature</b> ..... | -28°C - +65°C     |
| <b>Paper Length</b> .....          | 300'                | <b>Film Length</b> .....         | 230'              |
| <b>Paper/Film Width</b> .....      | 20.66'              | <b>Resolution</b> .....          | 203 DPI           |
| <b>Data Points</b> .....           | 4096                | <b>Tone Shades</b> .....         | Up to 64          |

**Warranty:** Limited one year warranty, parts and labor.

Specifications subject to change without notice.

The record shown on the cover photo depicts the wreck of the *Francis L. Taussig*. The schooner sank off the coast of Martha's Vineyard, Massachusetts, on April 29, 1929, after colliding with a steamship in heavy fog. Though the wooden hull has been submerged for over half a century, the side-scan sonar image is clearly depicted by the 9800. Courtesy of American Underwater Search and Survey Ltd., Cataumet, Mass.

