

# Phillips Scientific

## 16 Channel Amp/Disc PCB Card

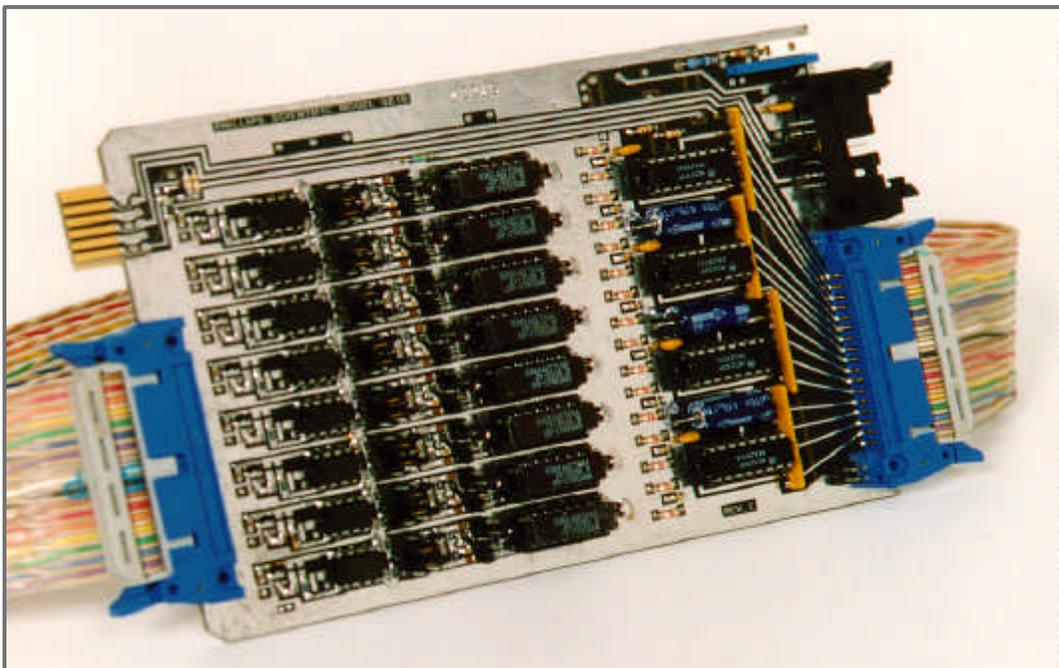
## MODEL 6816

### FEATURES

- \* Contains Amp, Filter, Discriminator, One-Shot and Cable Drivers
- \* High Density - Low Cost
- \* Customized For Optimal System Performance
- \* Positive or Negative Inputs
- \* Sensitivity of 200 $\mu$ Volt or 1 $\mu$ Amp
- \* 250 MHz Amplifier Bandwidth - 140 MHz Throughput Rate
- \* OEM Applications

### DESCRIPTION

The Model 6816 is a 16 channel amplifier/discriminator intended for Drift Chambers, Proportional Wire Chambers, Photomultiplier and MCP Multi-Anode arrays. Each channel consists of a preamplifier, a filter network, discriminator, output regeneration circuits, and ECL output drivers, on a 4 1/2" x 7" printed circuit board. Over 500 channels can be mounted in a 5 1/4" high rack mount enclosure. To achieve optimal performance, the Model 6816 is factory tailored for the specific detector. Many parameters such as amplifier gain, filter time constant, discriminator sensitivity, slewing time, and output duration can be specified to best satisfy overall system requirements.



**Phillips Scientific**

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## **INPUT CHARACTERISTICS**

- Input Impedance** : 50 ohms to 200 ohms available. (Specify when ordering)
- Input Coupling** : AC Coupled
- Input Protection** : Inputs protected from damage of  $\pm 2$ Amps; ( $\pm 100$  Volts) for 1 $\mu$ Sec duration.
- Input Recovery Time** : Less than 30nSec for 100 times threshold.
- Input Noise Voltage** : Spectral density of less than 2.5nVolt/ $\sqrt{\text{Hz}}$ .
- Threshold Range** : From 200 $\mu$ Volt, (1 $\mu$ A) to 10mVolt, (200 $\mu$ A); Sensitivity is determined by amplifier gain, filter characteristics, and threshold voltage control.
- Threshold Control** : A 15-turn potentiometer provides local control of thresholds. When set fully clockwise, thresholds may be adjusted remotely via an external connector pin.
- Threshold Programming** : Voltage Coefficient; 1mV/Volt; Control Impedance 1000 ohms.
- Gate Input** : Accepts a positive ECL input to inhibit output pulses.

## **AMPLIFIER OUTPUT CHARACTERISTICS**

- Monitor Output** : A test point provides an inverted, amplified and if desired, filtered output for viewing the discriminator input pulse. If necessary, the analog output can be used for additional signal processing. (e.g. Summed triggers).
- Voltage Gain** : Gains from 5 to 50 are available.
- Bandwidth** : 250 MHz, 3 db point, gain of 10.
- Output Voltage Swing** : +1.5 Volts across 50 ohms  
+3.0 Volts across 100 ohms.

## **OUTPUT CHARACTERISTICS**

- General** : One pair differential ECL outputs per channel; output risetimes and falltimes are typically 1.5nSec terminated into 100 ohms. (NIM level output option).
- Non-Updating Operation** : The output pulse width is fixed and will not vary if a new input occurs while the output is active.
- Time Over Threshold Operation** : The output duration will equal the monostable output width or the time the input exceeds threshold, whichever is greater. (Requires the filter stage to have a time constant equal to the longest input desired.)
- Output Width Control** : Single turn control adjustable from 4nSec to 25nSec; Additional capacitance of 1pf/nSec increases range to a recommended maximum of 10 $\mu$ Sec;
- Output Width Tempco** :  $\pm 0.1\%/^{\circ}\text{C}$  or  $\pm 50\text{pSec}/^{\circ}\text{C}$ , whichever is greater; from 0  $^{\circ}\text{C}$  to 70  $^{\circ}\text{C}$ .

## **GENERAL SPECIFICATIONS**

- Input to Output Delay** : 7nSec typically; 8nSec maximum.
- Maximum Rate** : 125 MHz minimum; 140 MHz typically.
- Time Slewing** : 750pSec; 2x to 20x threshold; for 1nSec input risetime.
- Isolation Between Adjacent Channels** : Greater than 48 db; 54 db typically for 3nSec input risetime.
- Voltage and Current Requirements** : +4.9V to +5.2V @ 450 mA  
-4.9V to -5.2V @ 950 mA
- Operating Temperature** : 0  $^{\circ}\text{C}$  to 70  $^{\circ}\text{C}$  ambient.
- Packaging** : 4.5" x 7" x .5" (11.4cm x 17.8cm x 1.25cm) printed circuit board.
- Connector Types** : **Inputs** : 34 position header or printed circuit edge connector;  
**Outputs** : 34 position header;  
**Power/Control** : Both 14 position header and 12 position PC edge connector.
- Quality Control** : Standard 36 hour, cycled burn-in with switched power cycles.