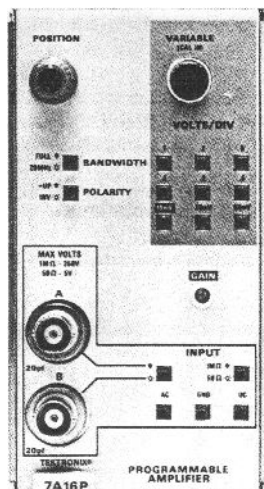


7A16P



Programmable—Dc to 225 MHz Amplifier

7A16P

Fully Programmable Plug-in for 7912AD or 7612D Digitizers only

10 mV/div to 5 V/div Calibrated Deflection Factors

200 MHz Bandwidth (7900 Family)

50 Ω or 1 MΩ Input Selectable

The 7A16P is designed for use only in Tektronix 7000 Series Programmable Digitizers. All of the normal operational features of a high-quality, wide-band 7000 Series plug-in amplifier are provided in the 7A16P. These are available at the front panel for manual selection, or they can be set under program control via a programmable mainframe and the IEEE-488 bus. Whether operated manually or under program control, the front-panel push buttons light to indicate plug-in status. Plug-in status can also be read over the IEEE-488 bus by an external controller for input to instrument set-up and control routines.

Two switch selected input connectors are also provided for selecting input signal source.

CHARACTERISTICS

Bandwidth — 225 MHz, plug-in only, 200 MHz in the 7912AD. Bandwidth may be limited to 20 MHz \pm 3 MHz by bandwidth limit switch.

Ac Coupled Lower Bandwidth — 10 Hz or less.

Step Response — 50 Ω input plug-in only, 1.8 ns rise time.

Deflection Factor — 10 mV/div to 5 V/div, 9 steps in a 1-2-5 sequence. Accuracy is \pm 2% of indicated deflection factor with GAIN adjusted at 10 mV/div.

Uncalibrated VARIABLE is continuous between steps and extends selected deflection factor to at least 2.5 times the calibrated value.

Input R and C — Selectable: 1 M Ω within 2% and \approx 20 pF or 50 Ω \pm 1 Ω with VSWR \leq 1.5:1 at 200 MHz or less.

Inputs — Selectable A or B signal input connectors.

Max Input Voltage — 1 M Ω , dc coupled: 250 V (dc + peak ac), ac component 500 V p-p max, 1 kHz or less. M Ω , ac coupled: 500 V (dc + peak ac), ac component 500 V p-p max, 1 kHz or less. 50 Ω : 0.5 watts max.

Programmable Functions — All functions except VARIABLE, GAIN, and IDENTIFY are programmable.

Order 7A16P Programmable Amplifier

7A18



Dc to 75 MHz Dual Trace Amplifier

7A18

Dc to 75 MHz Bandwidth

5 mV/div to 5 V/div Calibrated Deflection Factors

1 M Ω Input

The 7A18, the basic building block of 3- and 4-trace operation, is a dual-trace plug-in amplifier. The 7A18 features constant bandwidth for all deflection factors, 5 operating modes (Ch 1, Ch 2, ALT, CHOP, ADD), trigger source selectivity and color-keyed control grouping. The 7A18 has a trace identify function. Polarity of channel 2 is selectable.

Deflection Factor — 5 mV/div to 5 V/div in 10 calibrated steps (1-2-5 sequence). Accuracy is within 2% with gain adjusted to 10 mV/div. Uncalibrated VARIABLE is continuous between steps to at least 12.5 V/div.

Input R and C — 1 M Ω within 2%; \approx 20 pF.

Max Input Voltage — Dc-coupled: 250 V (dc + peak ac); ac component 500 V p-p max, 1 kHz or less. Ac-coupled: 500 V (dc + peak ac); ac component 500 V p-p max, 1 kHz or less.

Dc Stability — Drift with ambient temperature (constant line voltage) is 0.01 div/ $^{\circ}$ C. Drift with time (ambient temperature and line voltage constant) is 0.02 div in any one minute after 1 hour warm-up.

Common-Mode Rejection Ratio (ADD, Ch 2 Invert) — At least 10:1, dc to 50 MHz.

Order 7A18 Amplifier

DC OFFSET OPTION

Dc Offset is for the user who needs to analyze small signals that are riding on larger signals, such as power supply ripple.

Option 06, Dc Offset — Two separate Channel 1 and Channel 2 variable offset controls are concentric with the position controls replacing the identify push-buttons of the standard 7A18. The ac-dc-ground switch of each channel is expanded to accommodate a fourth position for dc offset.

Offset Range Display — \pm 200 div max, equivalent to \pm 1 V at 5 mV/div.

Accuracy — When in DC OFFSET the deflection accuracy is derated by 1%.

Order Option 06 Dc Offset

7A26



Dc to 200 MHz Dual Trace Amplifier

7A26

Dc to 200 MHz Bandwidth (7900 Family)

5 mV/div to 5 V/div Calibrated Deflection Factors

1 M Ω Input

The 7A26, a dual-trace plug-in amplifier, is a basic building block for 3- or 4-trace operation. It features constant bandwidth for all deflection factors, 5 operating modes (Ch 1, Ch 2, ALT, CHOP, ADD), trigger source selection (Ch 1, Ch 2, MODE), and color-keyed control groupings. Polarity of channel 2 is selectable. Bandwidth may be set at FULL or limited to 20 MHz for low-frequency applications.

Deflection Factor — 5 mV/div to 5 V/div in 10 calibrated steps (1-2-5 sequence). Accuracy is within 2% with gain adjusted at 10 mV/div. Uncalibrated VARIABLE is continuous between steps to at least 12.5 V/div.

Input R and C — 1 M Ω within 2%; \approx 20 pF.

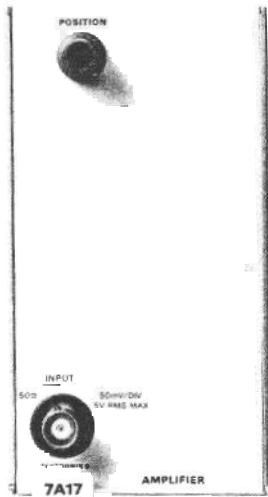
Max Input Voltage — Dc-coupled: 250 V (dc + peak ac); ac component 500 V p-p max, 1 kHz or less. Ac-coupled: 500 V (dc + peak ac); ac component 500 V p-p max, 1 kHz or less.

Common-Mode Rejection Ratio (ADD, Ch 1 Invert) — At least 10:1, dc to 50 MHz.

Dc Stability — Drift with ambient temperature (constant line voltage) is 0.02 div/ $^{\circ}$ C. Drift with time (ambient temperature and line voltage constant) is 0.02 div in any one minute after 1 hour warm-up.

Order 7A26 Amplifier

7A17



Dc to 150 MHz Bandwidth

7A17

Low Cost

Dc to 150 MHz Bandwidth (7900 Family)

50 mV/div Calibrated Deflection Factor

Easy to Customize

The 7A17 is a unique wideband, plug-in amplifier electrically and mechanically suitable for do-it-yourself design and modification.

The layout of the circuit board assembly provides a blank soldering pad matrix and ground plane surface totaling approximately 40 square inches. Circuits may be installed here. Mainframe power is identified and available on the circuit board. The front sub-panel is prepunched with holes of various sizes and shapes which allow for the mounting of connectors, switches, indicators, etc.

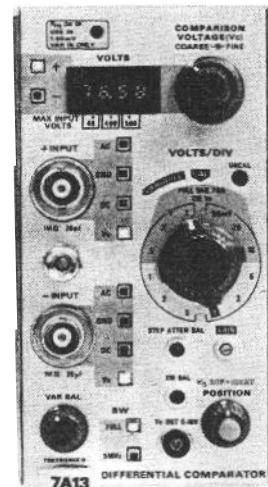
Deflection Factor — Adjustable to 50 mV/div. There is no step attenuation.

Input Z — 50 Ω

Max Input Voltage — 5 V RMS.

Order 7A17 Amplifier

7A13



Differential Comparator Amplifier

7A13

Dc to 105 MHz Bandwidth (7900 Family)

1 mV/div to 5 V/div
 Calibrated Deflection Factors

20,000: 1 Cmr

10,000 cm Effective Screen Height

1 MΩ Input

The 7A13 is a differential comparator amplifier. It incorporates a number of features which make it particularly versatile, especially in multitrace combination with other 7000 Series vertical plug-ins.

The 7A13 has constant bandwidth over the 1 mV/div to 5 V/div deflection factor range. The bandwidth is selectable to FULL or 5 MHz for best displayed noise conditions for low-frequency applications.

As a differential amplifier the 7A13 provides a balanced (+ and -) input for applications requiring rejection of a common-mode signal. The cmrr is 20,000:1 from dc to 100 kHz, derating to 200:1 at 20 MHz. The unit can reject up to 10 V of common-mode signal at a deflection factor setting of 1 mV/div, increasing to 100 V rejection potential at 10 mV/div (X10 Vc pulled) and 500 V at 0.1 V/div.

As a comparator amplifier the 7A13 loses its differential capability, but provides an accurate (0.1%) positive or negative internal offsetting voltage covering the common-mode signal range of the unit. A signal of up to ±10 V may be applied to an input (+ or -) at a deflection factor setting of 1 mV/div and, with an opposing Vc (offset voltage), viewed in 10,000 segments of 1 mV. The offset voltage is also available as an output for external monitoring.

High Cmr Probes for Differential Amplifiers

We recommend the P6055 high cmrr adjustable 10X probes for use with Tektronix differential amplifiers.

When used in pairs, these probes increase the differential input impedance to 20 mΩ and allow adjustment for maximum common-mode rejection ratio (cmrr).

See page 336 for P6055 characteristics.

Input R and C — 1 MΩ within 0.15%; ≈20 pF. R in ∞, is available in the 1 mV to 50 mV/div range, selectable by an internal switch.

Deflection Factor — 1 mV/div to 5 V/div in 12 calibrated steps (1-2-5 sequence). Accuracy is within 1.5% with gain adjusted at 1 mV/div. Uncalibrated VARIABLE is continuous between steps to at least 12.5 V/div.

Single Range —

Deflection Factor Settings	1mV to 50mV/div	10 mV to 50 mV/div (X10 Vc out) and 0.1 V to 0.5 V/div	0.1 V to 0.5 V/div (X10 Vc out) and 1 V to 5 V/div
Common-mode Signal Range	±10 V	±100 V	±500 V
Max Dc-coupled Input (dc + Peak Ac at 1 kHz or less)	±40 V	±400 V	±500 V
Max Ac-coupled Input (dc voltage)		±500 V	

Max Input Gate Current — 0.2 nA or less from 0°C to +35°C; 2 nA or less at +85°C to +55°C.

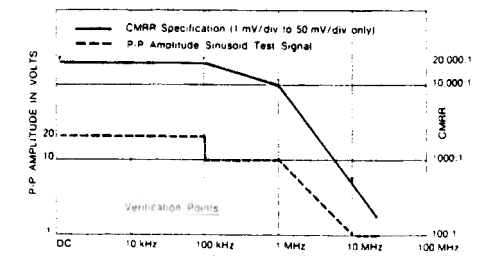
Dc Stability — Drift with time (constant ambient temperature and line voltage): short term, 1 mV p-p or 0.1 div, or less (whichever is greater) over any 1-minute interval after 20 minute warm-up. Long term, 1 mV p-p or 0.1 div or less (whichever is greater) during any 1 hour interval after 20 minute warm-up. Drift with ambient temperature (constant line voltage), 2 mV/10°C to 0.2 div/10°C or less, whichever is greater.

Displayed Noise (Tangentially measured) — With X10 Vc in, 400 μV (200 μV RMS) or less at 1 mV/div; 0.2 div or less at 2 mV/div to 5 mV/div; 0.05 div or less at 10 mV/div to 5 V/div. With X10 Vc out, 0.4 div or less at 10 mV/div to 0.5 V/div.

Overdrive Recovery — 1 μs to recover to within 2 mV and 0.1 ms to recover to within 1 mV after a pulse of ±10 V or less at 1 mV/div only regardless of pulse duration.

Internal Comparison Voltage — Range, 0 V to ±10 V; accuracy, ±(0.1% of setting + 3 mV); Vc output R, ≈15 kΩ.

Common-Mode Rejection Ratio —



At least 2000:1, 10 mV/div to 50 mV (X10 Vc out) and 0.1 V/div to 5 V/div. Ac-coupled input at least 500:1 at 60 Hz.

Order 7A13 Amplifier