

**Intended use**

The Model 2340/2350 Amplifier is a two-channel, high voltage amplifier capable of both sourcing and sinking current for a variety of loads including resistive and reactive loads. It was specifically designed for applications that require the output voltage range of standard signal or function generators to be extended beyond their typical range to  $\pm 200\text{V}$ . The 2340/2350 amplifier is compatible with virtually all types of signal and function generators.

**Monitor Outputs**

Each main output is accompanied by a monitor output. The monitor output is designed to provide an accurate, low-voltage representation of the amplifier output at a scale of 100:1 when feeding into a  $1\text{M}\Omega$  input and of 200:1 when feeding into a  $50\Omega$  input. The basic 2340/2350 amplifier gain is set to +50 with no inversion.

**Voltage & Current Limitations**

It should be noted that the maximum input of the 2340/2350 amplifier should not exceed  $\pm 4\text{V}$ . This would cause the output signal to exceed  $\pm 200\text{V}$  causing the output signal to clip resulting in severe distortion. The amplifier is protected in all operating modes with current limiting in either positive or negative directions. The maximum operating current of each output is rated for 40mA.

**Frequency Characteristics**

The 2340/2350 is capable of amplifying small signals from DC to 2MHz. The bandwidth of any amplifier decreases as the output amplitude approaches the instrument's maximum limits. There are several figures in the specification section of this manual that illustrate the frequency response, amplitude, output power and distortion characteristics of the 2340/2350. Included in these figures is a distortion versus frequency curve where the instrument's output is set to 75% of maximum amplitude (300Vp-p). Notice the steep frequency roll off when the amplifier's signal approaches its slew limitations. The 2340/2350 has a full power bandwidth that exceeds 200kHz.

**Protection Circuits**

The 2340/2350 amplifier has a LINE POWER switch and a power indicator on the front panel. The power indicator will illuminate when the high voltage DC supply is connected to the output power amplifiers. Under normal operation, the power indicator will illuminate approximately 2 seconds after the LINE POWER switch is turned on. However, if a high voltage DC fault occurs, the power supply monitor will protect the power amplifiers by disconnecting the high voltage supply from the output amplifiers. This will cause the power indicator to shut off. The fault will latch and the power indicator will remain off until the AC power is cycled to reset the fault. The 2340/2350 also has a current limit function to protect the outputs against short circuits etc.

**Connections**

The amplifier's inputs require standard BNC connections and have an impedance of  $50\Omega$ . This makes it compatible with all TEGAM-Pragmatic or other conventional signal generators. The output is specified at less than  $.2\Omega$ . Two output cables are supplied with the 2340/2350. These are special cables, which have high-voltage BNC connectors on one end and standard BNC connectors on the other. The cables are designed for use with the high voltage output connectors on the front panel. There is a binding post available on the instrument's front panel to be used as a direct connection to the instrument's chassis. The monitor outputs may be connected using any standard type BNC to BNC cables to an oscilloscope, A/D card or other compatible monitoring device.

## Instrument Specifications

### Model 2340/2350 Specifications

<b>Electrical Specifications</b>	
Number of Channels	2
Input Impedance	50 $\Omega$ Direct Coupled
Output Voltage Range	0 to $\pm$ 200V Direct Coupled
Maximum Output Current	40mA per channel
Output Impedance	< 0.2 $\Omega$
Voltage Gain	+50 Fixed (Standard Unit)
Sine Wave Distortion (THD)	Refer to Figure 4
Small Signal Bandwidth	DC to 2MHz -Typical (-3dB) - Refer to Figure 1
Full Power	200kHz / 400 Vpp Sine - Typical (-0.1dB) ( $C_L$ < 200pF)
Slew Rate	> 250V/uSec
Square Wave Response	< 0.8 $\mu$ Sec for 200 Volt Step
Aberrations	< 2%
50 $\Omega$ Voltage Monitor Outputs (One for each Channel)	50 $\Omega$ Input Z (200:1 Ratio) > 1M $\Omega$ Input Z (100:1 Ratio)
<b>Safety</b>	
	Conforms with IEC 61010-1, CE Marked
<b>Environmental</b>	
Operating Temperature	0°C to +45°C, (32°F to 113°F) Ambient
Storage Temperature	-20°C to +50°C (-4°F to +122°F)
Humidity Range	< 80% RH Non-Condensing
<b>General</b>	
Input Supply Voltage	110/220 50/60 Hz – Rear Panel Selectable
Power Rating	100VA; 80W
Dimensions: (H x W x L)	4.51"x10.14"x11.81" (11.5 x 25.8x30.0 cm)
Weight (approximate)	10lbs (4.5kg)
Standard Accessories	User's Manual; 2- BNC to High-Voltage BNC Cables (3ft); Power Cable