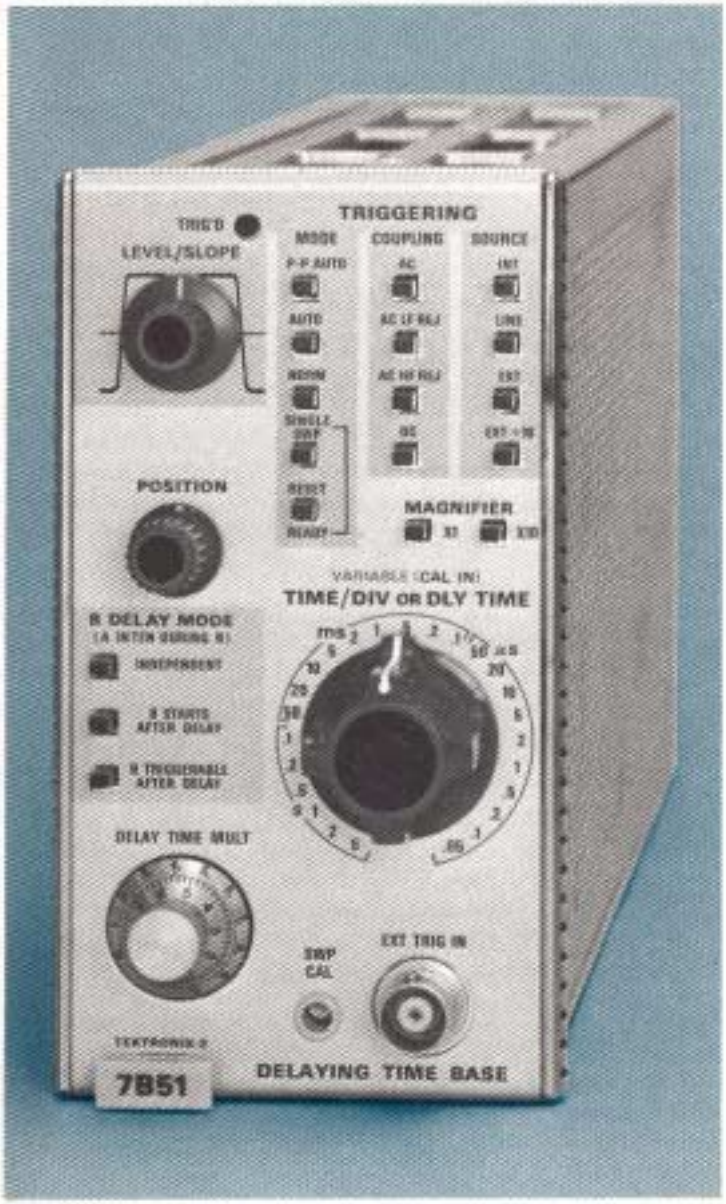
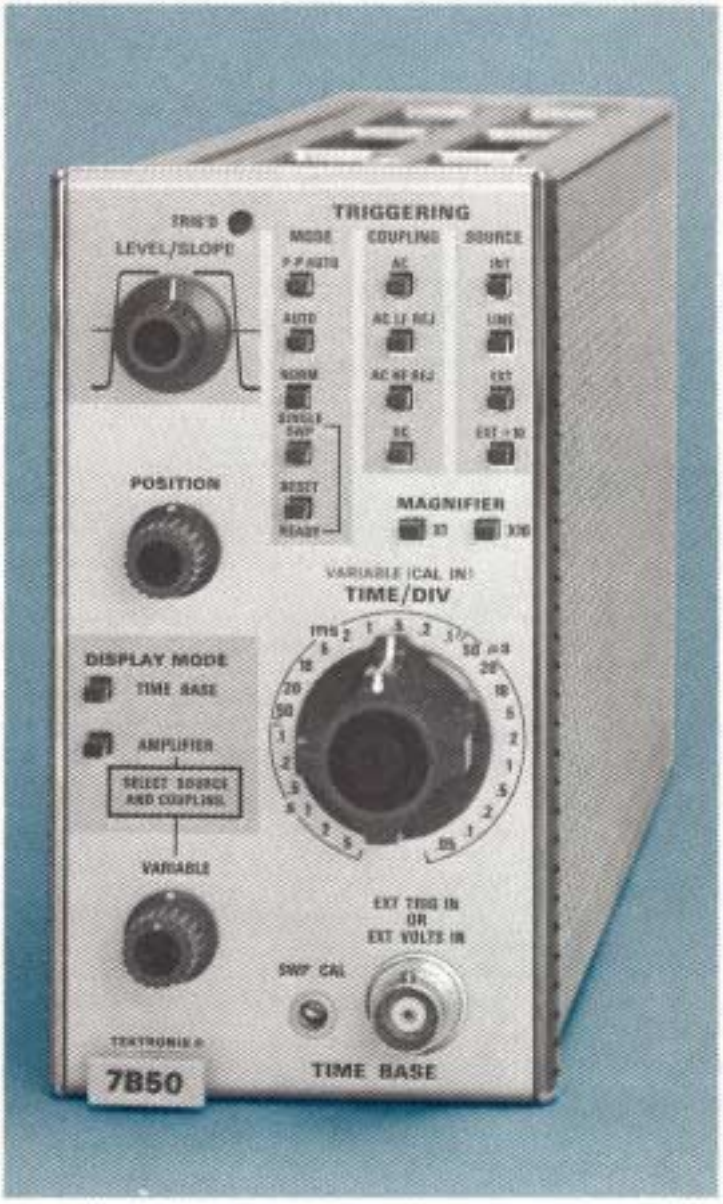
7B51 Time Base 7B50





DESCRIPTION

The 7B51 and 7B50 are horizontal TIME-BASE units designed primarily for use with the 7504 mainframe to provide bandwidth/sweep speed compatibility. However, the 7B51 and 7B50 may be used in any 7000-Series mainframe. They are identical units except in two particulars. In combination, they provide a delaying-sweep mode of operation; the 7B51 being the DELAYING SWEEP and the 7B50 the DELAYED SWEEP. The 7B50 also has a horizontal amplifier input for uncalibrated X-axis deflection from an external source.

The calibrated TIME/DIV range is from 5 ns/div to 5 s /div. The 5 ns/div rate, obtained with the X10 MAGNIFIER, complements the 3.9-ns risetime capability of the 7504 and 7503 vertical systems.

Triggering control is very flexible with 12 push-button positions to program MODE, method of COUPLING, and SOURCE. For routine applications, hands-off triggering is accomplished by actuating the three upper-most push-button switches: INT SOURCE, AC COUPLING, and P-P AUTO MODE—the most commonly used combination. The new P-P AUTO MODE provides a baseline trace in the absence of a signal and a triggered trace at any position of the LEVEL/SLOPE control when a signal of 0.5 div or greater is present. Except for the selection of + or — SLOPE this mode is completely automatic. The other triggering positions are useful for specific applications.

The triggering frequency range is from DC to 100 MHz, selectable within that range by the method of COUPLING. AC LF REJ attenuates undesirable trigger components below 30 kHz (60 Hz would be almost totally rejected); AC HF REJ attenuates high-frequency components (above 50 kHz) which can cause triggering problems during low-frequency applications. SINGLE-SWEEP functions with lighted READY indicators and manual reset are associated with the trigger MODE controls.

For delaying-sweep operation, the 7B51 (occupying the A horizontal channel) contains the DELAY TIME MULTIPLIER and control circuitry to release the 7B50 DELAYED SWEEP (B horizontal channel) at a predetermined point during the delaying sweep. After release, the delayed sweep can be programmed to begin immediately or wait for the next trigger event.

Both units can be used singly in the 7504, or in combination to add the delaying-sweep function and independent dual-sweep operation possible in the horizontal amplifier CHOPPED or ALT modes.

SPECIFICATIONS

Specifications are common to both units unless otherwise noted.

SWEEP RATE

0.05 μs/div to 5 s/div in 25 steps (1-2-5 sequence). 5 ns/div is the fastest calibrated sweep rate, obtained with the X10 MAGNIFIER. The uncalibrated VARIABLE is continuous between steps and to 12.5 s/div.

SWEEP ACCURACY

Measured over the center 8 div, with the 7500 mainframe calibrator.

TIME/DIV	unmagnified		magnified	
	+15°C to +35°C	0°C to +50°C	+15°C to +35°C	0°C to +50°C
5 s to 1 s/div	3%	4%	3.5%	5%
0.5 s to 0.05 μs/div	2%	3%	2.5%	4%

SWEEP LENGTH

10 div to 13 div.

SWEEP HOLD-OFF TIME

5 s to 5 μs/div—TIME/DIV setting or less
2 μs to 0.05 μs/div—2.5 μs or less

TRIGGERING

COUPLING	Triggering Frequency Range	Min Signal Required INT	Min Signal Required EXT
AC	30 Hz - 10 MHz 10 MHz - 100 MHz	0.3 div 1.5 div	150 mV 750 mV
AC LF REJ*	3 kHz-10 MHz 150 kHz-10 MHz 10 MHz-100 MHz	0.3 div ——— 1.5 div	——— 150 mV 750 mV
AC HF REJ	30 Hz - 50 kHz	0.3 div	150 mV
DC	DC - 10 MHz 10 MHz - 100 MHz	0.3 div 1.5 div	150 mV 750 mV

*Will not trigger on sinewaves of 3 div or less INT or 1.5 V EXT below 120 Hz.

P-P AUTO OPERATION
0.5 div INT, 250 mV EXT from 200 Hz to 10 MHz.
1.5 div INT, 750 mV EXT from 10 MHz to 100 MHz.

SINGLE SWEEP—Triggering requirements are the same as normal SWEEP. When triggered, sweep generator produces one sweep only until manually or remotely reset.

INTERNAL TRIGGER JITTER—1 ns or less at 75 MHz.

EXT TRIGGER INPUT

Max input voltage—500 V (DC + peak AC of 1 kHz or less).

Input R and C—1 MΩ within 2%, 20 pF within 2 pF.

Level range (excluding P-P AUTO)

EXT—at least +3.5 V to −3.5 V.

EXT ÷ 10—at least +35 V to −35 V.

EXT HORIZONTAL INPUT (7B50 ONLY)

DEFLECTION FACTOR—90 mV/div within 10 mV when in EXT source with variable fully CW; 900 mV/div within 110 mV/div when in EXT ÷ 10 source position. The VARIABLE range is at least 10:1.

FREQUENCY RESPONSE

COUPLING	Lower −3 dB	Upper −3 dB
AC	16 Hz	500 kHz
AC LF REJ	70 kHz	500 kHz
AC HF REJ	16 Hz	100 kHz
DC	DC	500 kHz

DELAYING SWEEP CHARACTERISTICS

(7B51 ONLY)

DELAY TIME MULTIPLIER RANGE—0 to 10 times the TIME/DIV setting.

ACCURACY—5 s/div to 1 s/div within 2%.
0.5 s/div to 1 μs/div within 1%.

MULTIPLIER INCREMENTAL LINEARITY—within 0.2%.

DIFFERENTIAL TIME MEASUREMENT ACCURACY
Within 1% and 2 minor div—1 μs to 0.5 s.
Within 2% and 2 minor div—1 s to 5 s.

JITTER—1 part or less in 50,000 of 10X the TIME/DIV setting.

INCLUDED STANDARD ACCESSORIES

Two instruction manuals 7B50, (070-0975-00).
Two instruction manuals 7B51, (070-0976-00).

Please refer to Terms and Shipment, General Information page.