

DEPARTMENT OF THE ARMY TECHNICAL BULLETIN

**CALIBRATION PROCEDURE FOR
TDR/SAMPLER PLUG-IN TD-1160(P)/U
(TEKTRONIX TYPE 7S12)**

Headquarters, Department of the Army, Washington, DC
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SECTION I

IDENTIFICATION AND DESCRIPTION

1. Test Instrument Identification. This bulletin provides instructions for the calibration of TDR/Sampler Plug-In, TD-1160(P)/U (Tektronix Type 7S12). The manufacturer's instruction manual was used as the prime data source in compiling the instructions. The equipment being calibrated will be referred to as the TI (test instrument) throughout this bulletin.

a. Model Variations. None.

b. Time and Technique. The time required for this calibration is approximately 4 hours, using the d.c. and low frequency technique.

2. Calibration Data Card, (DA Form 2416). *a.* Forms, records, and reports required for calibration personnel at all levels are prescribed by TM 38-750. DA Form 2416 must be annotated in accordance with TM 38-750 for each calibration performed.

b. Adjustments to be reported on DA Form 2416 are designated (R) at the end of the sentence in which they appear. Report only those adjustments made and designated with (R).

3. Calibration Description. TI parameters and performance specifications which pertain to this calibration are listed in table 1.

Table 1. Calibration Description

TI identification	Performance specifications		
Deflection factor Range Accuracy	2 to 500 unit/div in 1, 2, 5 sequence. Variable provides 1 to 700 unit/div (mv or mp). ±3%		
ρ CAL range	Allows calibrated reflection coefficient (ρ) with pulse generators supplying from 200 mv to 1 v pulse amplitude.		
DC OFFSET range	+1 v to - 1 v		
OFFSET OUT: Range Accuracy	+ 10 v to -10 v. OFFSET OUT = 10X (DC OFFSET). ±2%		
VERTICAL SIGNAL OUT: Amplitude Accuracy	200 mv/div of signal display ±2%		
SWEEP OUT: Range Accuracy	0 to greater than 10 v ±2%		
TIME/DIV: Range Accuracy	20 ρs/div to 1 μs/div in 1, 2, 5 sequence. Variable provides to 8 ps/div. ±2%		
System performance with PL-1373/U (Tektronix Type S-6) and SG-1094/U (Tektronix Type S-52).			
Rise time	35 ρs or less for incident step, 45 ρs or less for displayed reflection from short-circuited 1 ηs test line.		
Pulse amplitude	At least +200 mv		
Jitter	Less than 10 ρs (without signal averaging)		
Aberrations	Not more than ±7%, total of 10% p-p within first 1.8 ns of step edge with reference level at 1.8 ns from step from step edge; not more than ±2%, total of 4% p-p after 2.5 ns from step edge with reference level at 0.3 μs from step edge.		
Time-distance scale: Accuracy	±1% fs TIME-DISTANCE Multiplier		
Time range	X.1	X1	X10
	.1μs	1μs	10μs
	Maximum of 150 ns one way cable delay		
Air dielectric distance range.	49 ft	490 ft	4900 ft
	15m	150 m	1500 m
	Max of 150 ft (46 m) cable length.		
Poly dielectric distance range.	32 ft	320 ft	3200 ft
	9.75 m	97.5 m	975 m.
	Max of 100 ft (30 m) cable length.		