

MIL-STD-1665
 NOTICE 3
 19 November 1980

MILITARY STANDARD
 TEST EQUIPMENT FOR THE
 STANDARD ELECTRONIC MODULES PROGRAM

TO ALL HOLDERS OF MIL-STD-1665:

1. THE FOLLOWING PAGES OF MIL-STD-1665 HAVE BEEN REVISED AND SUPERSEDE THE PAGES LISTED:

NEW PAGE	DATE	SUPERSEDED PAGE	DATE
5	19 November 1980	5	20 March 1980
6	20 March 1980	Reprinted without change	
M02-3	19 November 1980	M02-3	20 January 1978

2. The following pages are to be added:

NEW PAGE	DATE
G10-1	19 November 1980
G10-2	19 November 1980
M02-4	19 November 1980

3. RETAIN THIS NOTICE AND INSERT BEFORE TABLE OF CONTENTS.

4. Holders of MIL-STD-1665 will verify that additions indicated above have been entered. This notice page will be retained as a check sheet. This issuance, together with the appended pages is a separate publication. Each notice is to be retained by stocking points until the Military Standard is completely revised or canceled.

Custodians:
 Army - ER
 Navy - EC
 Air Force - 11

Preparing activity:
 Navy - EC

Review activities:
 Army - AT, MI, AR
 Navy - AS, MC, OS, SH
 Air Force - 13, 17, 19, 85
 DLA - ES

Agent:
 DLA - ES
 (Project 5963-0011)

User activities:
 Army -
 Navy - YD
 Air Force -

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ITEM G10
GENERATOR, FUNCTION

TYPE OF EQUIPMENT - - - - - Function generator.

FUNCTION PERFORMED- - - - - Provides variable frequency sine, square, triangle, positive, and negative pulses.

SPECIFICATIONS

Frequency

Range- - - - - 0.0005 Hz to 10 MHz.

Voltage controlled generator (VCG) - - - - - 5 V input for 1,000:1 frequency ratio.

VCG bandwidth- - - - - 100 kHz.

Accuracy (frequency)

Dial - - - - - 0.01 Hz to 1 MHz \pm (1% of setting \pm 1% of full scale).

VCG linearity- - - - - 10 Hz to 100 kHz: \pm 0.2% of full scale.
0.001 Hz to 1 MHz: \pm 0.5% of full scale.

Accuracy (amplitude)

As function of frequency - - - - - 0.1 dB: 0.0005 Hz to 100 kHz.
0.2 dB: 100 kHz to 1 MHz.
2.0 dB: 1 to 10 MHz.

Stability (frequency)

Short term - - - - - \pm 0.05% for 10 minutes.

Long term- - - - - \pm 0.25% for 24 hours (percentages apply to amplitude, frequency, and dc offset).

Output (main)

Maximum output - - - - - 30 Vp-p (15 Vp pulse) with calibrated 15 Vp-p into 50 Ω load.

Output impedance - - - - - 50 Ω .

Short circuit current- - - - - \pm 150 mA.

SYNC- - - - - Amplitude greater than 4 Vp-p into open circuits, 2 Vp-p into 50 Ω . Square waveform for symmetrical outputs; rectangular waveform for pulse and ramp outputs. Sync pulse polarity is opposite that of output square wave.

Step attenuator accuracy- - - - - \pm 0.25 dB/10 dB.

Symmetry

Amplitude- - - - - All waveforms (except pulse) are symmetrical referenced to ground within 1% of maximum peak-to-peak amplitude.

Time

With symmetry normal all waveforms- - - - - \pm 0.05% from 10 Hz to 100 kHz. \pm 1.0% from 0.01 Hz to 500 kHz. Symmetry of all outputs continuously adjustable from 1:19 to 19:1.

DC offset - - - - - Can be controlled manually by using the front panel control, or electronically by applying an external voltage. Adjustable range is \pm 10 Vdc into open circuit (\pm 5 Vdc into 50 Ω load) with peak output, at the output, limited to \pm 15 Vdc into open circuit (\pm 7.5 Vdc into 50 Ω load).

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Linearity-distortion

Sine wave distortion - - - - -	10 Hz to 100 kHz - less than 0.5%. 100 kHz to 1 MHz - less than 1.0%. 1 to 10 MHz - All harmonics at least 30 dB down.
Triangle linearity - - - - -	0.002 Hz to 100 kHz - greater than 99% by using the best straight line method.
Square wave rise and fall time - - - - (terminated into 50Ω load)	Less than 20 nanoseconds; Limited to 500 V/microsecond.
Total aberrations- - - - -	Less than 5%.
Temperature - - - - -	All specifications listed, except for stability, are for 25° ±5°C. For operation from 0° to 55°C, derate all specifications by a factor of 2.

EQUIPMENT MEETING ALL SPECIFICATIONS

Manufacturer - - - - - Wavetek, Model 142.

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	(d)	AC ratio (200 Hz to 5 kHz) ±(0.002 percent of reading +0.0001 percent of ratio range) per °C.
	(e)	Ohms ratio ±(0.0009 percent of reading +0.0003 percent of ratio range) per °C.
Input impedance - - - - -	(a)	>1010 Ω for 100 mV, 1 and 10 Vdc ranges; 10 M Ω ±0.1 percent for 100 and 1,000 Vdc ranges.
	(b)	2 M Ω shunted by 90 ±10 pF in series with 0.1 μ F (ac).
Maximum peak input voltage - - - - -	(a)	±1,500 v peak between any two of the 4 input terminals of X and Y, except b and c below.
	(b)	±200 v peak between two Y input terminals.
	(c)	±200 v peak between the two low terminals and between either to guard.
	(d)	±500 v peak between chassis and guard terminal.
Sample periods - - - - -		1/10 to 1/60 s variable.
Spurious signal rejection Common mode - - - - -	(a)	Minimum of 145 dB to 1/10 s integration period.
	(b)	Minimum of 130 dB to 1/60 s integration period.
Current thru R _x - - - - -	(a)	1 mA; 100 Ω - 10 k Ω range
	(b)	10 μ A; 100 k Ω , 1,000 k Ω range.
	(c)	1 μ A; 10,000 k Ω range.

EQUIPMENT MEETING ALL SPECIFICATIONS

Manufacturer - - - - - Hewlett-Packard Model 3450A with
options 001 and 002.

EQUIPMENT MEETING SPECIFICATIONS
WITH EXCEPTIONS AS NOTED

Manufacturer - - - - - Hewlett-Packard Model 3455A.

- Exceptions - - - - - 1. Does not have dc, ac, or ohms ratio
capability.
2. AC Vrms accuracy, 90 days (23°±5°C):
- | | |
|-----|----------------------------------------------------------|
| (a) | 30 Hz to 20 kHz ± (0.05% of
reading +0.05% of range). |
| (b) | 20 to 100 kHz ± (0.5% of reading
+0.1% of range). |
| (c) | 100 to 250 kHz ± (2% of reading
+0.25% of range). |
| (d) | 250 to 500 kHz ± (5% of reading +
0.5% of range). |
| (e) | 500 kHz to 1 MHz ± (6% of reading
+ 2% of range). |

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3. Current through Rx.

- (a) 0.7 mA; 100 Ω - 100 k Ω ranges.
- (b) 0.7 μ A; 1,000 and 10,000 k Ω ranges.

Manufacturer- - - - - Fluke Model 8400A with options 02, 05, 06, and 09.

Exceptions

1. Does not have ohms ratio capability.
2. The dc ratio does not have X1000 range and accommodates reference voltages from 1 to 10.5 V.
3. AC Vrms accuracy, 90 days (23° \pm 5°C):
 - (a) 20 to 50 Hz \pm (0.5% of reading + 0.012% of range).
 - (b) 50 Hz to 10 kHz \pm (0.1% of reading + 0.012% of range).
 - (c) 10 to 30 kHz \pm (0.2% of reading + 0.04% of range).
 - (d) 30 to 50 kHz \pm (0.3% of reading + 0.1% of range).
 - (e) 50 to 100 kHz \pm (1% of reading + 0.3% of range).
 - (f) 100 to 300 kHz \pm (2% of reading + 0.5% of range).
4. AC ratio accuracy, 90 days (23° \pm 5°C):
50 Hz to 10 kHz \pm (0.05% of ratio + 0.005 X ref range/V_{ref} of range)
5. Input impedance:
 - (a) 100 M Ω for 100 mV, 1,000 M Ω for 1 V, 10,000 M Ω for 10 V and 10 M Ω for 100 V and 1,000 Vdc ranges.
 - (b) 1 M Ω shunted by less than 150 pF for ac ranges.
6. Current through Rx.
 - (a) 10 mA; 100 Ω range.
 - (b) 1 mA; 1 k Ω range.
 - (c) 100 μ A; 10 k Ω , 100 k Ω ranges.
 - (d) 10 μ A; 1,000 k Ω range.
 - (e) 1 μ A; 10,000 k Ω range.

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