TM 11-6625-700-10

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

OPERATOR'S MANUAL

DIGITAL READOUT, ELECTRONIC COUNTER AN/USM-207

This reprint includes all changes in effect at the time of publication - Change 2.

HEADQUARTERS, DEPARTMENT OF THE ARMY

OCTOBER 1966

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SECTION A. GENERAL

A-1. Index of Publications

Refer to the latest issue of DA Pam 310-4 to determine whether there are new editions, changes, or additional publications pertaining to the equipment. Department of the Army Pamphlet No. 310-4 is a current index of technical manuals, technical bulletins, supply manuals, (types 7, 8, and 9), supply bulletins, lubrication orders, and modification work orders available through publication supply channels. The index lists the individual parts (-10, -20, -35P, etc) and the latest changes to and revisions of each equipment publication.

A-2. Forms and Records

a. Reports of Maintenance and Unsatisfactory Equipment. Use equipment forms and records in accordance with instructions in TM 38-750.

b. Report of Damaged or Improper Shipment. Fill out and forward DD Form 6 (Report of Damaged or Improper Shipment) as prescribed in AR 700-58 (Army), NAVSANDA Publication 378 (Navy), and AFR 71-4 (Air Force).

c. Reporting of Equipment Manual Improvements. The direct reporting of errors, omissions, and recommendations for improving this equipment manual by the individual user is authorized and encouraged. DA Form 2028 will be used for reporting these improvements. This form may be completed by using pencil, pen, or typewriter. DA Form 2028 will be completed by the individual using the manual and forwarded direct to Commanding Officer, U. S. Army Electronics Command, ATTN: AMSEL-MR-NMP-AD, Fort Monmouth, New Jersey 07703.

SECTION

OPERATION

1. FUNCTIONAL OPERATION.

Digital Readout Electronic Counter AN/USM-207 is a portable electronic counter providing direct-reading indication of frequency and period of a cyclic electrical signal, the frequency ratio between two signals, and the time interval between two points on two signals or on the same signal, and the total number of electrical impulses. The counter also provides various standard frequency outputs and signals having frequencies equal to an input frequency divided (or scaled) by known factors.

The counter consists primarily of circuits which generate accurate timing signals of various durations, a series of electronic counting units, a gate for controlling the counting time, and frequency multiplying circuits and mixer for heterodyne frequency measurement. The controlling signals for the gate, timing, and counting circuits can be derived from various external sources, and the circuits are interconnected in various ways to permit the instrument to make a wide variety of time, frequency, and ratio measurements.

The counter also contains amplifiers to increase the magnitude and to shape the incoming count and control signals, an oscillator and multiplier to generate the timing signals, a chain of dividers to permit variations in count and control signal rates, display circuits for controlling the readout indications, and necessary power supplies.

1-2. PREPARATION FOR USE.

Before attempting to operate the counter, familiarize yourself with the function of all the front and rear panel controls and connectors, as referenced in paragraph 1-3 read the operating precaut ions given in paragraph 1-4 and the operating su estions in paragraph 1-5 Then refer to table 1-3 for the initial turn-on and operating procedure.

1-3. DESCRIPTION OF CONTROLS, CONNECTORS, AND INDICATORS.

The controls, connectors, and indicator of the counter which are normally used by the operator are shown in figures 3-1 and 3-2 and are described in table 3-2. The numbers on the figure relate each item to the descriptive text in table 3-2 and do not indicate a preferred order of operation.

1-4. OPERATING PRECAUTIONS.

To prevent damage when connecting signals to the BNC connectors on the counter be sure that the amplitudes of the voltages do not exceed the values listed in the last column of table 1-1. To obtain rated accuracy listed in TM 11-6625-700-25, the minimum input voltage must be as specified in that t w

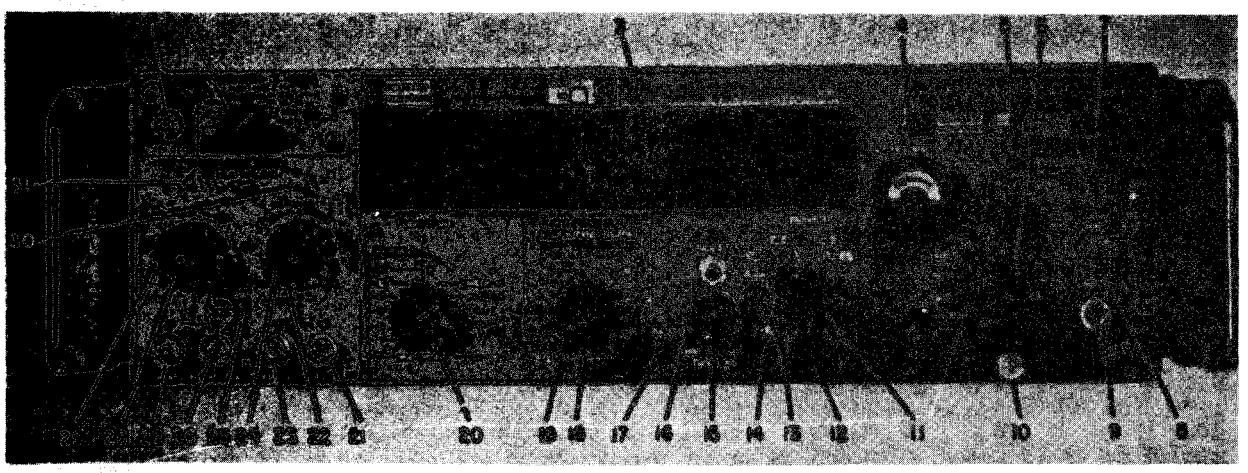

Figure 1-1. Counter Front Panel Controls, Connectors, and Indicators

TABLE 1. VOLTAGE INPUTS

CONNECTOR	FIGURE NO.	INDEX NO.	MINIMUM INPUT	MAXIMUM SAFE VOLTAGE
FREQ. A	1-1	1	0.1 volt rms	a. ±600 volts peak. b. 300 volts rms from 1.0 cps to 10 mc, except 150 volts rms when SENSITIVITY switch is set to the .1 position. c. 100 volts rms from 10 mc to 100 mc.
B, AC and C, AC	1-1	27 23	0.1 volt rms	a. ±600 volts peak. b. 425 volts rms, except 150 volts rms when MULTIPLIER switch is set to the .1 position.
B, DC and C, DC	1-1	26 21	0.1 volt rms	±600 volts peak, except ±210 volts peak when MULTIPLIER switch is set to the .1 position.
			Note When mode selector switch is set to COM, whichever position of the B or C MULTIPLIER switches is lower determines the maximum allowable voltage applied to either of the B connectors; i.e., if B MULTIPLIER switch is set to 1 and C MULTIPLIER switch is set to .1 the maximum allowable input to the B, AC connector is 150 volts rms and to the B, DC connector is 210 volts peak.	
Converter INPUT	1-1	9	0.01 volt rms	a. ±600 volts peak. b. 10 volts rms with both attenuator switches set to the right; 2 volts rms with one attenuator set to the right and one set to the left; 0.3 volt rms with both attenuator switches set to the left.
100 KC OR 1 MC INPUT	1-2	4	0.5 volt rms	a. ±600 volts peak. b. 10 volts rms.

TABLE 1-2. DESCRIPTION OF OPERATING CONTROLS, CONNECTORS, AND INDICATORS

FIGURE NO.	INDEX NO.	DESCRIPTION AND FUNCTION
1-1	1	FREQ. A input connector. Accepts an external signal for frequency and frequency-ratio measurements, for totalizing, and for obtaining scaled outputs at STD FREQ OR SCALE OUT connector when FUNCTION switch is set to SCALE A.
1-1	2	SENSITIVITY switch. Selects source of input signal in frequency, frequency ratio (numerator) and totalizing modes of operation. In positions .1 V through 100 V, the input signal connected to the FREQ. A input connector is attenuated in decade steps, and applied to the channel A. Maximum attenuation is obtained in the 100 V position; minimum rms voltage that triggers the counter is equal to the switch-position marking (.1 V, 1 V, 10 V, 100 V). In PLUG-IN position, the input signal connected to the converter INPUT connector is routed through the converter to channel A. In FREQ. C position, the input signal connected to either the C AC or C DC connector (separate mode) or B DC or B AC connector (common mode) is applied to channel C and counted. In TEST position, self-test of the counter is performed.