

23 October 1964

OSCILLOSCOPE AN/USM-140A

Cog Service: USN FSN: 2F6625-987-6603

Functional Class:

USA

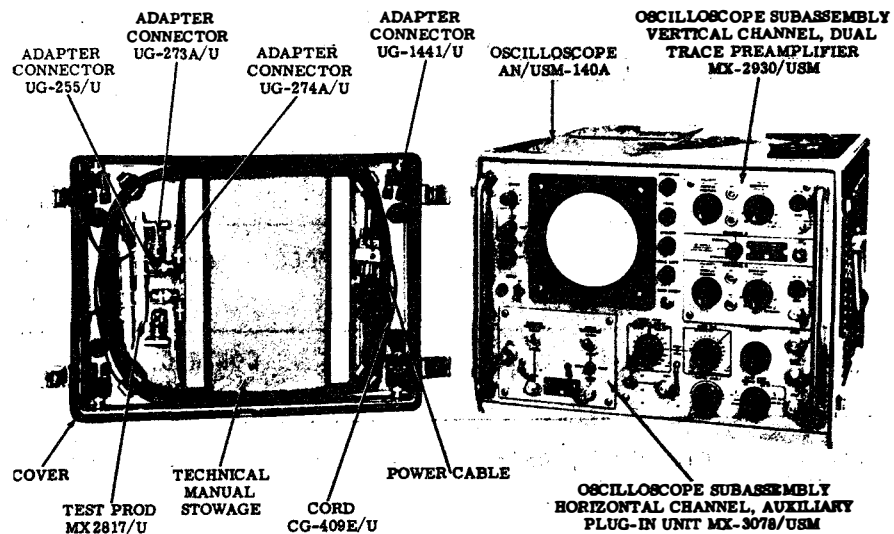
USN

USAF

TYPE CLASS:

Used by

MANUFACTURER'S NAME/CODE NUMBER: The Hickok Electrical Instrument Co., (28596).



OSCILLOSCOPE AN/USM-140A

FUNCTIONAL DESCRIPTION:

Oscilloscope AN/USM-140A is a precision instrument intended for laboratory use to visually display electrical impulses. The vertical deflection amplifier bandpass is designed for operation from dc to 30 megacycles. The Oscilloscope incorporates high linearity sweep generators for triggered or free running sweeps. Calibrated dials provide easy adjustment for a wide range of sensitivities and normal or expanded sweeps. A beam finder push button simplifies the problem of finding and centering an off screen trace. A voltage calibrator is built in to provide standardizing voltages in the millivolt or volt ranges.

No field changes in effect at time of preparation (19 October 1964).

RELATION TO OTHER EQUIPMENT:

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AN/USM-140A OSCILLOSCOPE

EQUIPMENT REQUIRED BUT NOT SUPPLIED:

- (1) AM-3567/USM High Gain Amplifier; (1) AM-3568/USM High Gain Wide Band Amplifier;
- (1) MX-2962/USM Delay Generator.

TECHNICAL CHARACTERISTICS:

TEMPERATURE AND HUMIDITY

TEMPERATURE RANGE: -28°C to $+50^{\circ}\text{C}$ with a relative humidity of 99%.

RANGE 1: $+15^{\circ}\text{C}$ to $+35^{\circ}\text{C}$ with a relative humidity not greater than 75%.

RANGE 2: 0°C to $+50^{\circ}\text{C}$ w/a relative humidity of not greater than 90%.

RANGE 3: -28°C to $+50^{\circ}\text{C}$ w/a relative humidity of not greater than 99%.

VERTICAL AMPLIFIER

ACCURACY: $\pm 3\%$ over all accuracy over temp and humidity range 1 of paragraph 1 - 3a;
 $\pm 5\%$ over temp and humidity range 3.

PASS BAND

DC COUPLED: DC to 30 mc (3 db), 12 usec rise time.

HORIZONTAL AMPLIFIER

PASS BAND

DC COUPLED: DC to 1 mc (3 db).

AC COUPLED: 2 cps to 1 mc (3 db points).

INPUT IMPEDANCE: Nom 1 megohm, shunted by 30 pf.

SENSITIVITY: 0.1 volt/cm to 10 volts/cm vernier extends min sensitivity to 25 volts/cm seven ranges.

SWEEP GENERATOR

CALIBRATIONS: 24 sweep ranges, from 0.1 usec/cm to 5 sec/cm w/ $\pm 3\%$ accuracy. Vernier extends slowest sweep range to 15 sec/cm.

MAGNIFICATION: 7 calibrated ranges, X1, X2, X5, X10, X20, X50 and X100. Increases fastest sweep speed to 0.02 usec/cm X1, X2, and X5 ranges retain accuracy of original sweep except 0.02 usec/cm rate which is 5%.

TRIGGERING: Internal, external or power line. External trigger requires 1/2 volt or more, pos or neg going adjustable to ± 30 volts.

TRIGGER POINT

POSITIVE OR NEGATIVE GOING VOLTAGE: Triggering level of external trigger signal adjustable from -30 to $+30$ volts.

SWEEP OUTPUT

FROM PANEL JACK: -50 to $+50$ volts.

POWER REQUIREMENTS: 115 or 230 v ac $\pm 10\%$, 50 to 440 cps, 480 W.

GATE OUTPUT

FROM PANEL JACK: $+50$ v for sweep duration.

CALIBRATOR

WAVE FORM: 1000 cps square wave, 1 usec rise and decay.

OUTPUT: 0.2 mv to 100 volts peak to peak in nine calibrated ranges. Current output jacks provides 5 ma peak to peak. Voltage and current accuray on all ranges is $\pm 3\%$.

CATHODE-RAY TUBE: 5BHP2 normally supplied, flat face, 10000 volt accelerating potential. Pin type terminals for deflection plates.

DEFLECTION SENSITIVITY

VERTICAL: Approx 7.5 volts/cm.

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HORIZONTAL: Approx 30 volts/cm.

INTENSITY MODULATION: + 20 v pulse to blank a trace of normal intensity.

GRATICULE: 10 cm long x 4 cm high in centimeter square; 2 mn. Subdivisions on horizontal and vertical axis controlled edge lighting.

MAJOR COMPONENTS

QTY	ITEM	STOCK NUMBERS	DIMENSIONS (INCHES)	WEIGHT (LBS)
1	Oscilloscope AN/USM-140A includes:	2F6625-987-6603	14-3/4 x 19-3/4 x 24	96
1	Oscilloscope OS-121/USM-140		12-1/4 x 18 x 22-7/8	68
1	Dual Trace Preamplifier MX-2930A/USM		6 x 7 x 11-1/4	6
1	Auxiliary Plug-in MX-3078/USM		4-5/8 x 6 x 10-7/8	1.9
2	Prod, Test MX-2817/U			
2	Connector, Adapter UG-255/U			
2	Connector, Adapter UG-273/U			
4	Connector, Adapter UG-1441/U			
1	Cable Assembly CX-4704/U power, electrical		96	
2	Cord CG-409E/U		96	
2	Connector, Adapter UG-274A/U			
2	Technical Manual NAVSHIPS 94507A			

REFERENCE DATA AND LITERATURE:

NAVSHIPS 94507A: Technical Manual for Oscilloscope AN/USM-140A.

TUBE, CRYSTAL AND/OR SEMI-CONDUCTOR DATA

TUBES: (1) 5BHP2A-1 (4) 6CL6 (28) 6922 (1) 6005/6AQ5W (1) 5726/6ALSW (5) 5642
(1) 5651WA (4) 7308 (1) DS-402

CRYSTALS: Not required.

SEMI-CONDUCTORS: (2) 1N276 (6) 1N277 (1) 1N540 (3) 1N754A (1) 1N979B (2) 1N1202
(12) 1N1566A (3) 1N3064 (1) 2N174 (8) 2N457 (10) 2N650 (6) 2N2084

SHIPPING DATA

PKGS	VOLUME (CU FT)	WEIGHT (LBS)
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AN/USM-140A OSCILLOSCOPE

PROCUREMENT DATA

PROCURING SERVICE: USN

DESIGN COG: USN, BuShips

SPEC &/OR DWG: MIL-0-22237A(Ships)

CONTRACTOR	LOCATION	CONTRACT OR ORDER NO.	APPROX. UNIT COST
The Hickok Electrical Instrument Co., Model 1807	Cleveland, Ohio	Nobsr-87629 Nobsr-87708	

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