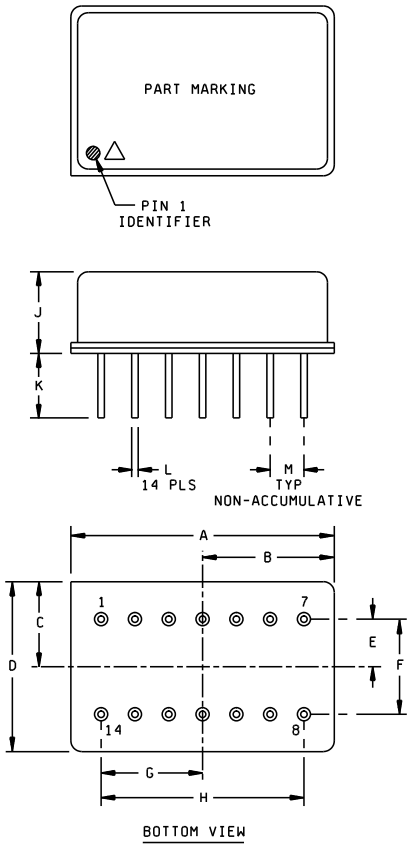
INCH-POUND
MIL-PRF-55310/14H
w/AMENDMENT 1
12 March 2020
SUPERSEDING
MIL-PRF-55310/14H
11 June 2009

PERFORMANCE SPECIFICATION SHEET

OSCILLATOR, CRYSTAL CONTROLLED, TYPE 1 (CRYSTAL OSCILLATOR (XO)), 0.1 Hz THROUGH 25 MHz, HERMETIC SEAL, SQUARE WAVE, TTL

This specification is approved for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and MIL-PRF-55310.



Pin number	Function
1	NC
2	NC
3	NC
4	B+
5	OUTPUT
6	NC
7	B- (GND/CASE)
8	NC
9	NC
10	NC
11	NC
12	NC
13	NC
14	NC

FIGURE 1. Dimensions and configuration.

Ltr	Inches		mm	
	Min	Max	Min	Max
A	---	.887	---	22.53
B	---	.44	---	11.2
C	---	.27	---	6.8
D	---	.54	---	13.7
E	.145	.155	3.68	3.94
F	.295	.305	7.49	7.75
G	.295	.305	7.49	7.75
H	.595	.605	15.11	15.37
J	---	.20	---	5.1
K	.20	---	5.1	---
L	.016	.020	0.41	0.51
M	.095	.105	2.41	2.67

NOTES:
1. Dimensions are in inches.
2. Metric equivalents are given for general information only.
3. Unless otherwise specified, tolerances are ±.005 (0.13 mm) for three place decimals and ±.02 (0.5 mm) for two place decimals.
4. All pins with NC function may be connected internally and are not to be used as external tie points or connections.
5. Color dot or square corner shall be used to indicate pin number 1.
6. ESD indicator, open triangle, shall be marked anywhere on the top of the oscillator.

FIGURE 1. Dimensions and configuration - Continued.

REQUIREMENTS:

Interface and physical dimensions: See figure 1.

Mounting: See figure 1.

Terminals: See figure 1.

Seal: Hermetic in accordance with MIL-PRF-55310, maximum leakage rate 5 x 10^{-8} atm cc/s.

Weight: 0.5 ounce, maximum.

Oscillator: Class 2 or any class 1 or class 3 oscillator meeting all class 2 requirements and verification tests specified herein and in MIL-PRF-55310.

Calibration: Manufacturer calibrated.

Screening: In accordance with MIL-PRF-55310, product level B or S, as applicable.

Temperature:

Operating: See table I.

Storage: -62°C to +125°C.

Oscillator load: 1 to 10 standard TTL loads. A TTL unit load is defined as: 1.6 mA sink, 0.04 mA source and 2 pF capacitance.

Output waveform: Symmetrical square wave.

Supply voltage: See table I.

Input current: At designated supply voltage (see table I).

Output frequency: Frequency as designated at time of acquisition (see table I).

Output voltage: At designated TTL load (see table I).

Logic 1:

Logic 0: See table I.

Rise and fall times: See table I.

Duty cycle: See table I.

Initial accuracy at +23°C ±1°C (up to 30 days after shipment): ±15 ppm.

Initial frequency-temperature accuracy (one-half temperature cycle): Verification applicable. 1/

Frequency-temperature tolerance (one-half temperature cycle, referenced to frequency measured at +23°C ±1°C, immediately prior to starting of the test): See table I. Measurements taken at ten equally spaced increments over the specified operating temperature range. 1/

1/ For the purpose of transitioning this device to MIL-PRF-55310, 'Frequency stability versus temperature' has been renamed 'Frequency-temperature tolerance'. The verification requirements of 'initial frequency-temperature accuracy (one-half temperature cycle)' shall apply except that frequency measurements shall be referenced to the frequency measured at +23°C ±1°C (f_{ref}) instead of to the nominal frequency (f_{nom}).

TABLE I. Dash numbers and operating characteristics.

Dash number	Output frequency range	Supply voltage	Input current (max) 1/	Output voltage		Rise and fall times (max)	Duty cycle at 1.4 V	Frequency-temperature tolerance (ppm)		
				Logic: 1 (min)	Logic: 0 (max)			-55°C to +125°C	-55°C to +105°C	-20°C to +70°C
								A	B	C
		V dc	mA			ns	percent			
01	0.1 Hz to 1 kHz	+5 ±0.5	158	2.4 V dc at 400 µA source	0.5 V dc at 16 mA sink	15	45 to 55	±50	±40	±30
02	1 kHz to 150 kHz	+5 ±0.5	158			15	45 to 55	±50	±40	±30
03	150 kHz to 300 kHz	+5 ±0.5	94			15	45 to 55	±50	±40	±30
04	300 kHz to 600 kHz	+5 ±0.5	94			15	45 to 55	±50	±40	±30
05	600 kHz to 2.5 MHz	+5 ±0.5	50			15	45 to 55	±50	±40	±30
06	2.5 MHz to 5 MHz	+5 ±0.5	40			15	45 to 55	±50	±40	±30
07	5 MHz to 10 MHz	+5 ±0.5	30			15	45 to 55	±50	±40	±30
08	10 MHz to 15 MHz	+5 ±0.5	20			15	40 to 60	±50	±40	±30
09	15 MHz to 25 MHz	+5 ±0.5	20			5	40 to 60	±50	±40	±30

1/ Maximum input current for no load condition. Actual configuration of TTL loads must be added to determine power supply requirements.

Frequency-voltage tolerance: ±2 ppm maximum for a ±10 percent change in supply voltage. Measurements taken at reference temperature and operating temperature range end points.

Frequency aging: Measurements shall be taken at +70°C ±0.2°C at intervals of not more than every 72 hours for 30 days minimum.

±5 ppm per year, maximum
±0.7 ppm per 30 days
±1.5 ppm per 90 days

Terminal strength: MIL-STD-202-211, test condition C. Applied force: 2 pounds each terminal for 10 seconds.

Bends: Five at 45 degrees each.

Frequency-environmental tolerance: Not applicable.

Vibration, sinusoidal: In accordance with MIL-PRF-55310 and MIL-STD-202-204. Nonoperating:

Test condition D.

Operating: Not required.

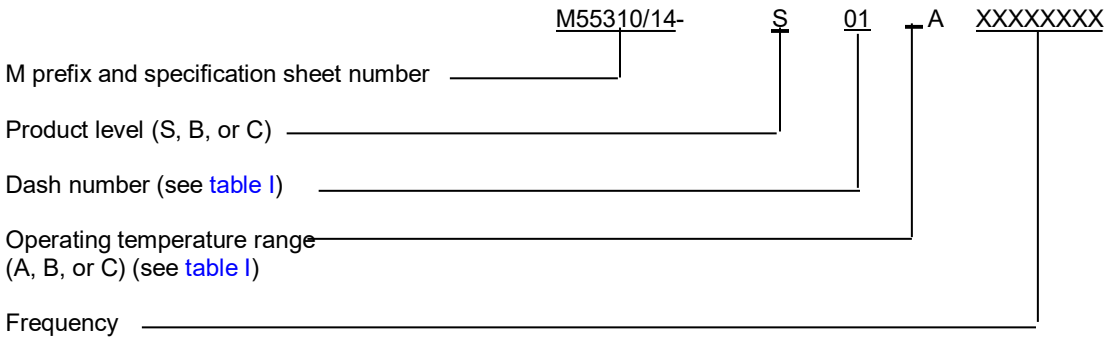
Ambient pressure:

Nonoperating: In accordance with MIL-PRF-55310.

Operating: MIL-STD-202-105, test condition C.

Part or Identifying Number (PIN): Consists of "M" prefix followed by specification sheet number, a dash and coded alphas, and numeric number. See example:

EXAMPLE



Reference documents. In addition to MIL-PRF-55310, this document references the following:
MIL-STD-202-105
MIL-STD-202-204
MIL-STD-202-211

Amendment notations. The margins of this specification sheet are marked with vertical lines to indicate modifications generated by this amendment. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations.

Custodians:
Army - CR
Navy - EC
Air Force -85
DLA - CC

Review activities:
Army - AR, MI, SM
Navy - AS, CG, MC
Air Force - 19, 84
NASA – NA

Preparing activity:
Army - CR

Agent:
DLA - CC

(Project 5955-2020-019)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at https://assist.dla.mil.