



## DESCRIPTION

*The Curtis 2000 Series are elapsed time indicators and counters that deliver levels of reliability which are orders of magnitude greater than the parent equipment that they monitor.*

*MODEL 2001: Solid State Elapsed Time Indicator. Records the time that power has been applied up to 99,999.99 hours.*

*MODEL 2002: Solid State Event Counter. Records the number of times that power has been applied for at least five seconds up to 99,999 counts.*

*MODEL 2003: Solid State Pulse Counter. Records the number of pulses applied to the input up to 9,999,999 pulses.*

## WARRANTY

One-year replacement warranty.

## Applications

The Curtis 2000 Series devices can be used to gather use-data for warranty, design validation and logistics support for a wide variety of military applications, and other rugged environment application. Records time, engine starts, revolutions or in combination with transducers, overstress and overtemperature hours.

## Features

- Unprecedented reliability for elapsed time indicators and counters - MTBF of 500,000 hours (per MIL HDBK 217e, 50°C, A<sub>ir</sub> environment). This level of reliability is necessary to measure today's advanced electronic systems.
- EEPROM non-volatile memory ensures the integrity of critical use data.
- Military Qualification to MIL-M-7793 (Model 2001) assures performance and makes it easy to specify.
- Two configurations available: NT for traditional panel mounting and PC for printed circuit board mounting.
- NT unit allows direct readout through MIL-M-7793/12 hand-held reader. PC unit allows for remote reading via its serial output (as well as with hand-held reader).
- High resolution, long range, small size and low power permits the use of a 2000 Series device across the total spectrum of equipment and systems.
- Available for 5VDC, 28VDC/26VAC and 115VAC operation - satisfies the predominant military and industrial system operating voltages.
- Model 2003 accepts pulses of 1 millisecond on (min.), 1 millisecond off (min.) and rejects any pulses under 0.75 milliseconds as a transient or error.

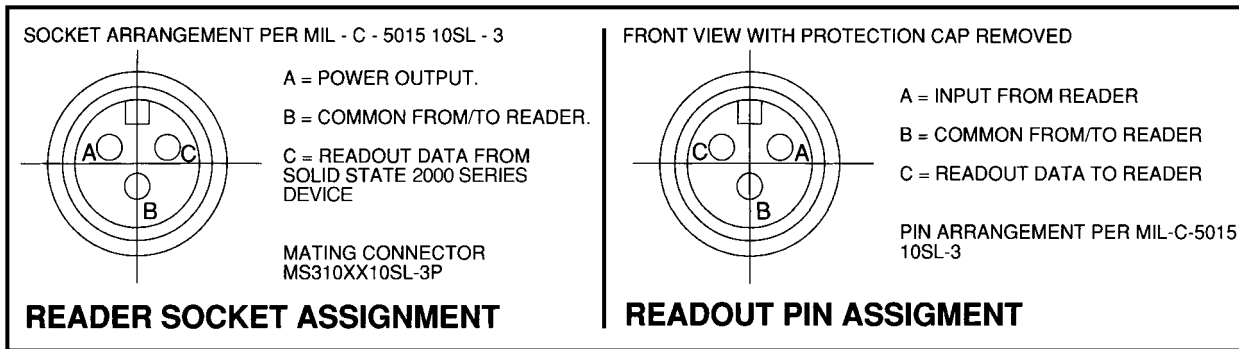
## 2000 Series Specifications

<b>OPERATING TEMPERATURE RANGE:</b>	-65°C to +125°C
<b>STORAGE TEMPERATURE RANGE:</b>	-80°C to +125°C
<b>ACCURACY:</b>	±0.1% (Model 2001) ±1 Count (Models 2002, 2003)
<b>MAXIMUM WEIGHT:</b>	1.0 oz. (NT Model - panel mount) 0.2 oz. (PC Model - printed circuit board mount)
<b>SHOCK:</b>	MIL-STD-202, Method 213, Condition I. 100g, 6 msec, sawtooth
<b>VIBRATION:</b>	MIL-STD-202, Method 204, Condition D. 20g, 10-2000 Hz
<b>ALTITUDE:</b>	MIL-STD-202, Method 105, 0 to 80,000 feet
<b>SALT SPRAY:</b>	MIL-STD-202, Method 101, Condition B.
<b>MOISTURE RESISTANCE:</b>	MIL-STD-202, Method 106, Figure 106-1
<b>ELECTROMAGNETIC COMPATIBILITY:</b>	MIL-STD-462, Methods REO2, CEO3
<b>TRANSIENT PROTECTION:</b>	5 VDC Models - No temporary or permanent degradation in meter when subjected to ± 25 Volt transients lasting 10 microseconds and occurring at 1 millisecond repetition rate. 28 VDC/26 VAC Models - No temporary or permanent degradation in meter for input voltage and time values shown in MIL-STD-704A, Figure 17 and Figure 9, Curve 1 (600 V and 80 V transients, respectively) 115 VAC Models - No temporary or permanent degradation in meter if input voltage increases to 180 Vrms at 50 to 2400 Hz for period of 150 milliseconds maximum.
<b>INPUT SIGNAL (MODEL 2003):</b>	Logical 0 = 0 to +0.5V, Logical 1 = +3.3 to +5.5V Pulse on = 1 msec. min., Pulse off = 1 msec. min.

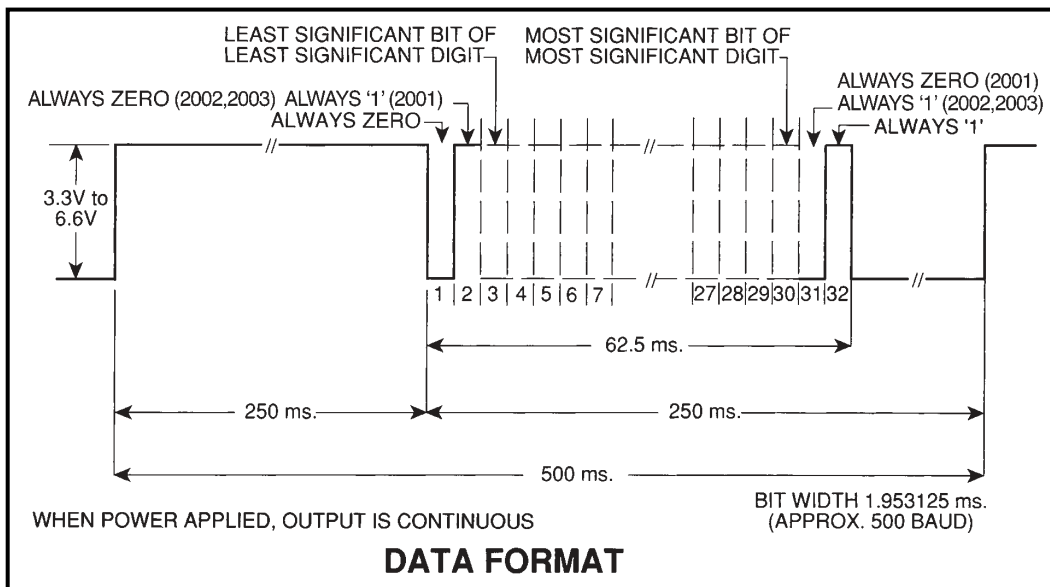
## Model 1170 Hand-Held Reader Specifications

<b>MAXIMUM WEIGHT:</b>	15 oz. (including battery)
<b>STORAGE TEMPERATURE RANGE:</b>	-55°C to +85°C
<b>OPERATING TEMPERATURE RANGE:</b>	-20°C to +55°C (Continuous Operation) -40°C to +71°C (Intermittent Operation)
<b>ACCURACY:</b>	± 0.05% (max. deviation for the display)
<b>SHOCK:</b>	MIL-STD-202E, Method 213B, Test Condition G 50g peak, 11 millisecond sawtooth.
<b>VIBRATION:</b>	MIL-STD-202E, Method 201A 10 to 55 Hz, 0.06 inch double amplitude
<b>POWER SOURCE:</b>	9 Volt alkaline manganese primary battery (NEDA 1604)
<b>BATTERY LIFE:</b>	1200 readings or 2 years (whichever comes first), at 25°C
<b>POWER CONSUMPTION:</b>	Discharge current shall not exceed 60 mA at any time during operational cycle; 2 uA when non-operational.





FOR MATING CONNECTOR TO OUTPUT PC MOUNT UNIT USE MS 3102A-10SL-3P



*2000 Series Table of Models*

MODEL NUMBER	MOUNTING	VOLTAGE RANGE	MAXIMUM POWER
2001PC 5VDC 001 2002PC 5VDC 001 2003PC 5VDC 001	PC	4.5 to 10 VDC	2 mW @ 5 VDC
2001NT 5VDC 001 2002NT 5VDC 001 2003NT 5VDC 001	Panel	4.5 to 10 VDC	2 mW @ 5 VDC
2001NT 28VDC/26VAC 001 2002NT 28VDC/26VAC 001 2003NT 28VDC/26VAC 001	Panel	10 to 34 VDC 20 to 30 VDC (@ 50 to 2400 Hz, sine or square wave)	50 mW @ 28 VDC 25 mW @ 26 VAC
2001NT 115VAC 001 2002NT 115VAC 001	Panel	75 to 150 VAC (@50 to 2400 Hz, sine or square wave)	50 mW @ 115 VAC