2000 SERIES ELAPSED TIME INDICATORS

CURTIS

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_{uf} 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.

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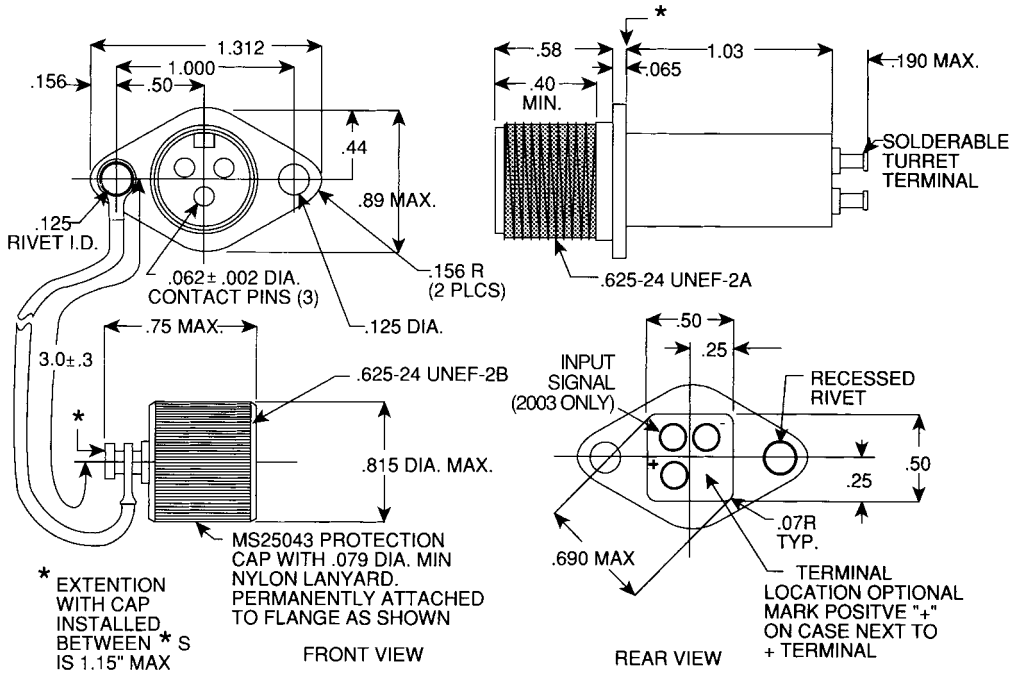
2000 Series Specifications

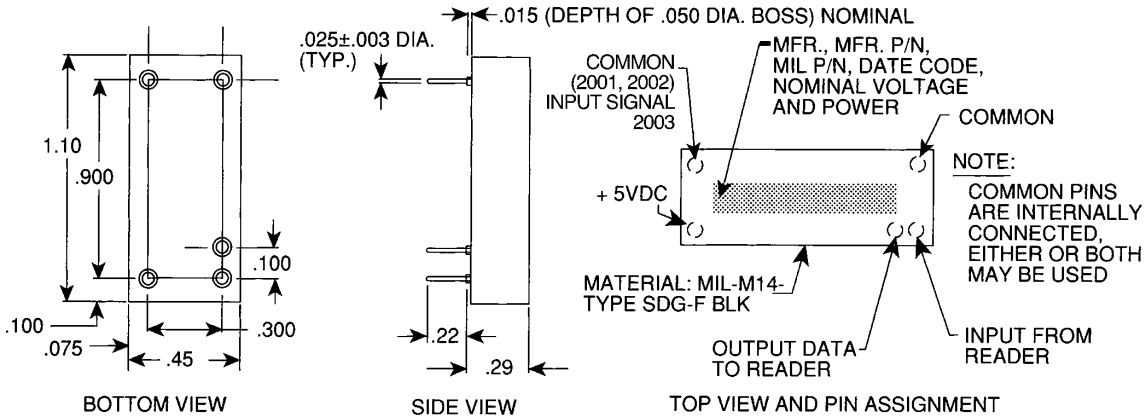
OPERATING TEMPERATURE RANGE:	-65˚C to +125˚C
STORAGE TEMPERATURE RANGE:	-80˚C to +125˚C
ACCURACY:	±0.1% (Model 2001) ±1 Count (Models 2002, 2003)
MAXIMUM WEIGHT:	1.0 oz. (NT Model - panel mount) 0.2 oz. (PC Model - printed circuit board mount)
SHOCK:	MIL-STD-202, Method 213, Condition I. 100g, 6 msec, sawtooth
VIBRATION:	MIL-STD-202, Method 204, Condition D. 20g, 10-2000 Hz
ALTITUDE:	MIL-STD-202, Method 105, 0 to 80,000 feet
SALT SPRAY:	MIL-STD-202, Method 101, Condition B.
MOISTURE RESISTANCE:	MIL-STD-202, Method 106, Figure 106-1
ELECTROMAGNETIC COMPATIBILITY:	MIL-STD-462, Methods REO2, CEO3
TRANSIENT PROTECTION:	5 VDC Models - No temporary or permanent degradation in meter when subjected to ± 25 Volt transients lasting 10 microseconds and occuring 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.
INPUT SIGNAL (MODEL 2003):	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

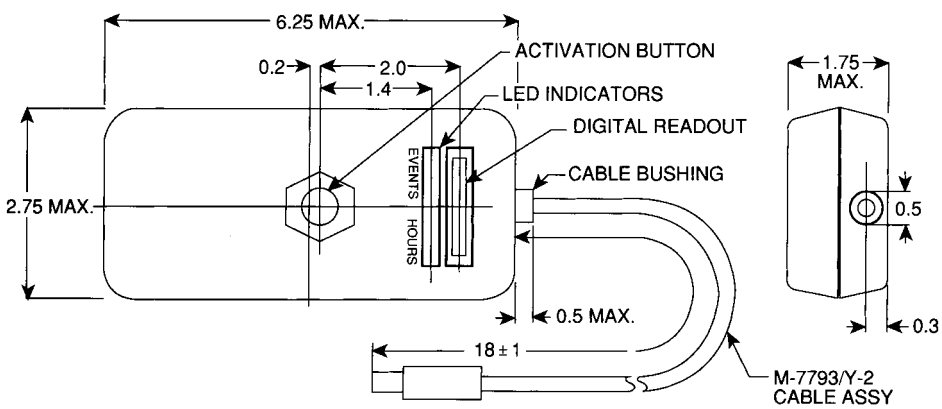
MAXIMUM WEIGHT:	15 oz. (including battery)
STORAGE TEMPERATURE RANGE:	-55˚C to +85˚C
OPERATING TEMPERATURE RANGE:	-20˚C to +55˚C (Continuous Operation) -40˚C to +71˚C (Intermittent Operation)
ACCURACY:	± 0.05% (max. deviation for the display)
SHOCK:	MIL-STD-202E, Method 213B, Test Condition G 50g peak,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



PANEL MOUNT UNIT



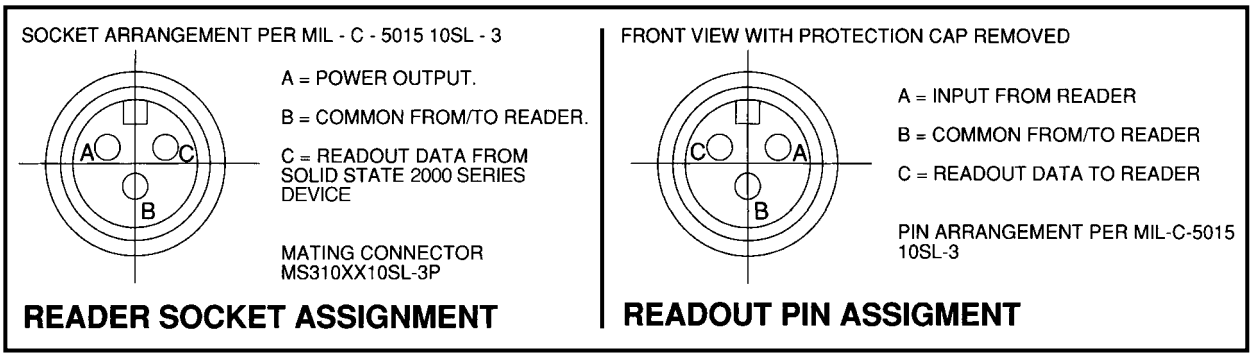
PC BOARD MOUNT UNIT



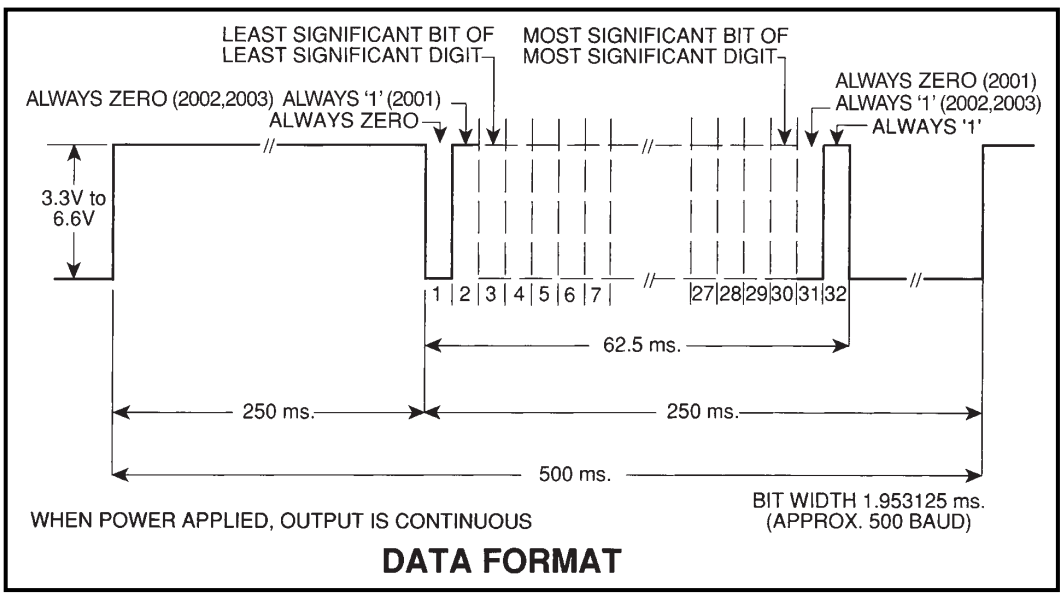
CAN READ WITH OR WITHOUT POWER APPLIED TO SSETI

SSETI READER

PART NO. 1170-001



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	Panel	10 to 34 VDC	50 mW @ 28 VDC
2002NT 28VDC/26VAC 001		20 to 30 VDC	25 mW @ 26 VAC
2003NT 28VDC/26VAC 001		(@ 50 to 2400 Hz, sine or square wave)	
2001NT 115VAC 001	Panel	75 to 150 VAC	50 mW @ 115 VAC
2002NT 115VAC 001		(@50 to 2400 Hz, sine or square wave)	