

Introduction

Usage monitoring of systems is often required to facilitate equipment warranty, to establish equipment reliability, for use in maintenance scheduling or as hour meters in leased or power-by-the-hour products.

Discrete electronic elapsed time indicators (ETIs) are the simplest, most effective and most reliable solution. Utilising system independent EEPROM non-volatile memory, electronic ETIs guarantee data retention for ten years un-powered and are built to be rugged and durable for demanding applications, typically in defence and aerospace.

Oxley produced the first fully electronic ETI over 20 years ago to replace less reliable, less accurate electrochemical and electromechanical technologies. Since this time our expertise has been recognised in defence programmes such as the British Army Challenger II MBT, AS90 self-propelled Howitzer and the RAF Typhoon aircraft.

ETI configurations

Printed circuit board mounting styles are intended mainly for embedded applications typically interfacing to a system UART (universal asynchronous receiver transmitter) or wired to an external connector for hours/events interrogation by hand held readers. These ETIs are easily interfaced to RS232 controlling computers by incorporating RS232 transceiver circuits on the parent PCB.

Panel mounting styles have an integral LCD visual readout or are built into standard pattern 105 BS9522 military circular connectors for direct interrogation with a hand-held reader.

To install an ETI the parent equipment d.c. power supply is routed to the relevant ETI input. No other external timing or control circuitry is required to achieve rudimentary operation. Some I/O interface circuitry maybe required dependant upon the method of interrogation.

On parent equipment power-up the quartz crystal controlled timer circuits commence measuring hours until power-down when the hours total is stored securely into memory. On subsequent power-ups the latest hours reading is retrieved from memory and counting continues from that reading. Thus the parent equipment running hours is totalised in EEPROM and is available for interrogation at any time even when the parent equipment is un-powered.

Oxley ETIs take measures to ensure data is not corrupted due to power spikes and surges or unexpected power supply variations.

Occasionally individual bit failures may occur within the integrated circuit EEPROM chips so Oxley ETIs are able to compensate by duplicating data in different areas of memory. Crucially the ETI guards against data corruption in the event that power fails during an EEPROM write cycle.

ETI hand-held readers

A range of hand held readers are available for interrogation of Oxley ETIs by direct cable connection. Hand held readers can cold-read ETIs when parent equipment is un-powered by injecting power into the ETI. This feature is important for applications where readings are needed at any point in the supply chain and not just when equipment is operational.

Simple push-to-read versions with a single button and LCD display are for display-only applications where readings are not required to be stored.



Data logging versions allow complete paperless data capture systems to be easily implemented. Readings are collected in the field by storing them in Reader memory and later uploading to a PC. A PC Software Utility handles simple uploading of field captured readings to a PC and basic manipulation and export of readings to other software systems.

Company Approvals

- NATO AQAP-1
- MIL-Q-9858
- ISO 9000
- CECC
- BS 9000
- BS 5750 Pt. 1
- MIL-I-45208