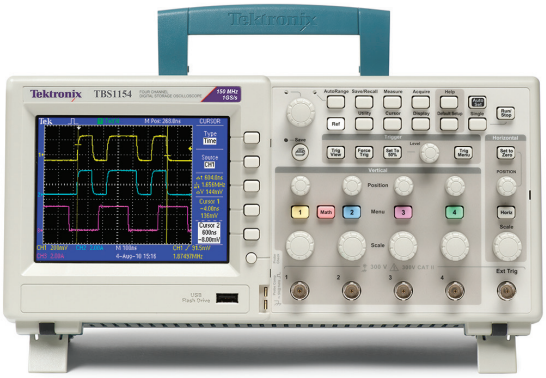

TBS1000, TBS1000B/B-EDU, and TDS2000C Series: Reliability By Design

Technical Brief

What You Will Learn

How the product design creates the unique combination of advanced performance and measurement accuracy. The outstanding reliability of these instruments is unmatched in its class. All this at an affordable price.

The Tektronix TBS1000 and TDS2000C Series are based on the dependable Tektronix TDS architecture, which has sold more than half a million units — this makes these products by far themost popular oscilloscopes in the world... read on to find out why.

- Custom Integrated Circuits
- No Cooling Fan
- Industrial-grade Display
- Industry-leading Warranty
- Design and Manufactured by Tektronix
- Continuous Improvement
- World Class Service and Support Networks

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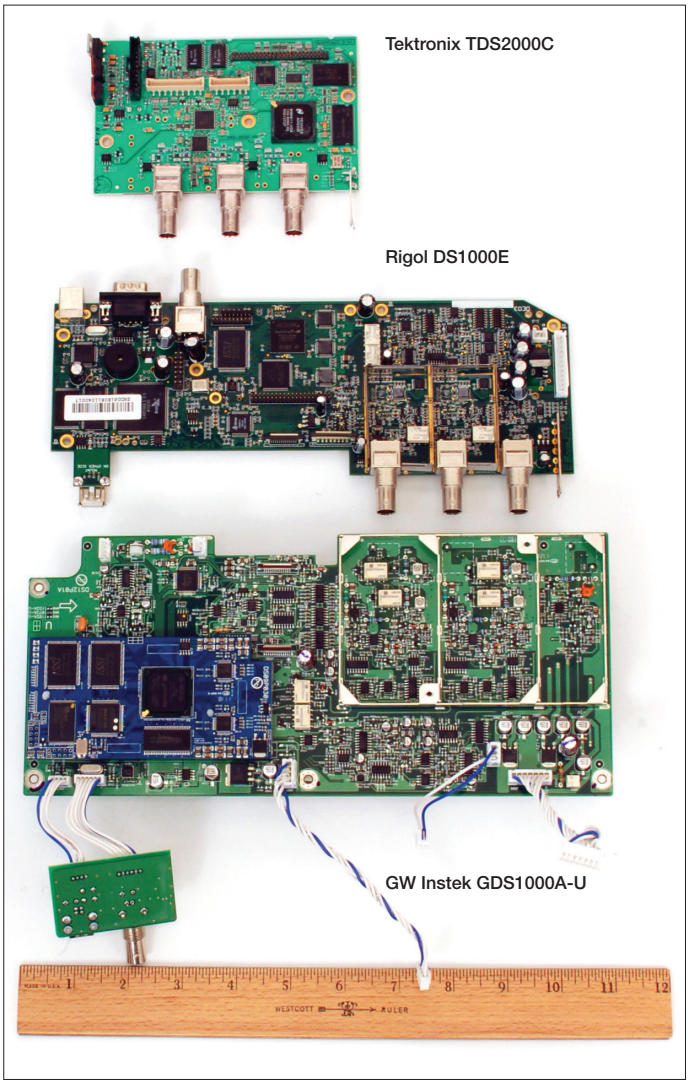

Figure 1. From top to bottom the Tektronix TDS2000C, the Rigol DS1000E, and the GW Instek GDS1000A-U.

Custom Integrated Circuits

The TBS/TDS Series platform is built around custom-designed integrated circuits (ASICs). This design choice has advantages in both performance and reliability of the oscilloscopes.

- The Tektronix custom ASICs are able to deliver best-in-class sampling rates of up to 2 GS/s on all channels simultaneously.
- At the same time use of these ASICs greatly simplifies the design and complexity of the electronic circuitry inside the oscilloscope:
  - Far fewer electronic components than most other oscilloscopes in their class, which often rely on commercial off-the-shelf components.
  - Fewer components reduces the potential points of failure and variability in performance.
- Another advantage that comes from using custom integrated circuits rather than commercial off-the-shelf components is improved thermal performance.
  - The high level of integration makes the power consumption low, less than 30W.

No Cooling Fan

- The low power consumption means TBS/TDS Series oscilloscopes do not require a cooling fan.
- Cooling fans involve moving parts and often present weak links for the reliability of an oscilloscope:
  - Prone to ingesting dust and pollutants, which can possibly have detrimental effects on the performance and life-time of other electronic and mechanical components inside the oscilloscope.
  - An advantage of the fan-free design of the TBS/TDS oscilloscopes is the products' quiet operation, an attribute that engineers who spend much time using their oscilloscopes appreciate.

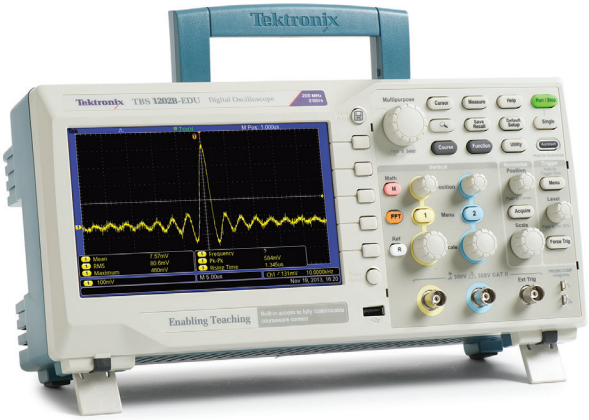

Figure 2. The Tektronix TBS1000, TBS1000B and TBS1000B-EDU are the latest oscilloscopes based on the TDS architecture.

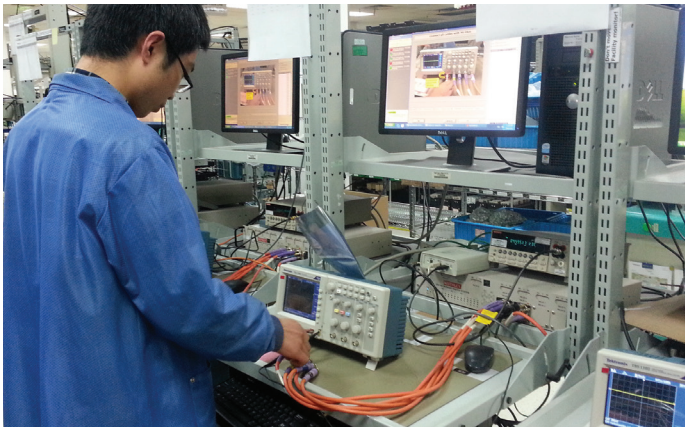

Figure 3.

Industrial-Grade Display

The TBS1000/TDS Series platforms use industrial-grade LCD displays.

- Better brightness and viewing characteristics.
- Longer lifetime than the consumer- grade displays used in most other entry-level oscilloscopes.
  - For example, the LED backlight component's lifespan in typical industrial displays is rated at twice the lifetime of those found in consumer grade displays.
  - The TBS1000B/B-EDU Series platform uses an industrial grade liquid crystal TFT color display that utilizes a 7 inch (180 mm) wide screen format and enables the viewing of intricate signal details.

Industry-Leading Warranty

In the unlikely event that one of the TDS/TBS oscilloscopes ever experiences failure throughout its lifetime, these products offer the most generous warranties found in their respective class:

- TBS1000: Tektronix 5-year warranty
- TBS1000B & TBS1000B-EDU: Tektronix 5-year warranty
- TDS2000C: Tektronix lifetime warranty

The Tektronix standard warranties cover display-related failures which are sometimes explicitly excluded by other entry-level scope vendors from their warranty terms.

Every Tektronix oscilloscope coming off the production line passes thorough testing and quality inspections.

Designed & Manufactured by Tektronix

Tektronix maintains full control of design and production to deliver the best quality entry-level oscilloscopes in the market. The TDS/TBS Series platform is designed and manufactured by Tektronix in-house.

- Tektronix USA-based oscilloscope design team.
- Tektronix world-class manufacturing facilities in Shanghai, China.
- No entry-level products purchased from 3rd party OEM vendors.

World-Class Service & Support Network

Tektronix', world-class service and support network minimizes customer downtime and frustration:

- Global service and support network.
- Technical support with a variety of service and repair plans to fit your needs.
- Calibration plans for your Tektronix and non-Tektronix equipment.
- On-line scheduling and tracking tool, 24/7.

Figure 4. Tektronix quality improvement teams continuously monitor progress towards lower field failure rates.

Continuous Improvement

While already yielding very low field failures rates on the TBS1000, TBS1000B/B-EDU and TDS2000C Seriesoscilloscopes, Tektronix continuously puts effort into further improving these products' quality.

- Tektronix manufacturing and engineering staff track quality metrics on a continuous basis and analyze the root causes of all reported failures.
- Countermeasures are applied to all problems in order to prevent the same failure from occurring again.

The Tektronix design, quality and manufacturing teams work hand in hand with suppliers to meet the challenging internal target of reducing field failures by 50% each year.

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Contact List Updated June 2013

For Further Information

Tektronix maintains a comprehensive, constantly expanding collection of application notes, technical briefs and other resources to help engineers working on the cutting edge of technology. Please visit **www.tektronix.com**

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