



TATDC: Trainer and Tester for Digital Circuits

Technology Description

The Trainer and Tester for Digital Circuits (TATDC) is an innovative project that leverages advanced technology to provide a comprehensive solution for digital circuit experimentation. The technology behind TATDC represents an improvement over the existing state-of-the-art by addressing the limitations of current Digital Circuits Experimentation kits. Notably, no known kit performs all three tasks – digital circuit testing, IC testing, and voltage measurements – within the specified budget and space constraints. The improved form factor and convenience in lab experiments make TATDC a cutting-edge solution for digital circuit laboratories, offering quick and efficient debugging capabilities.

Theme

The track of the project is research in Electronics and Educational Technology. The project's theme is innovatively addressing the challenges associated with traditional digital circuit trainer kits, explicitly focusing on enhancing the educational experience in colleges, schools, and other learning institutions. The key themes include portability, customization, low maintenance, and multifunctionality, aiming to provide a comprehensive, user-friendly solution for teaching digital circuits

Applications


- **Digital Circuit Testing:** Its multifunctional capabilities allow students and professionals to perform various digital circuit tests efficiently in laboratories.
- **IC Testing:** The project's design enables it to function as a digital IC tester within electronic systems.
- **Voltage Measurements:** TATDC includes features for measuring voltage in circuits.
- **Portable Laboratory:** The compact form factor and portability make TATDC suitable for creating mobile digital circuit laboratories.

Market Opportunity

The Trainer and Tester for Digital Circuits (TATDC) presents a compelling market opportunity in educational institutes, primarily focusing on colleges and schools. TATDC's user-friendly interface facilitates efficient learning, making it an ideal choice for hands-on digital circuit education. The kit's portability and quick debugging capabilities further make it suitable for diverse educational settings, emphasizing a seamless integration into classrooms and laboratories.

Target Users

The primary target users for the TATDC are students, educators, and professionals in the field of electronics, with a specific focus on those involved in digital circuit education and experimentation. The project is designed to cater to users in educational institutions such as colleges and schools, providing a comprehensive solution for teaching digital circuits.



List of Features:

- Form factor, Cost effective, Portable, Easy to use, Low power requirement.
- A single kit serves the purpose of a lab instrument which can be used to perform the tasks of digital trainer kit, digital IC tester, and voltmeter. These features make the kit very convenient to use in an electronics laboratory.
- A robust multifunctional DC trainer kit which is cost and space effective.
- The inventors are not aware of any such kit which can perform all three tasks altogether within the developed budget frame and space. The form factor is improved. The convenience in using the kit in an lab experiment is much higher now as students don't need to switch over to instruments.
- There are a lot of applications when it comes to an electronics laboratory for the purpose of digital circuit testing, IC testing, and voltage measurements in the circuit, however extensive in the digital circuit laboratory and quick debugging of digital circuits.

Work Done Update [TRL: 07]

The project has reached into the final stage with the completion of the final prototype, showcasing its innovative features and multifunctional capabilities. Basic level feedback testing has been successfully conducted, incorporating valuable insights to refine and enhance the user experience. Currently, TATDC has entered the commercial testing phase, collaborating with various organizations, including colleges and laboratories.