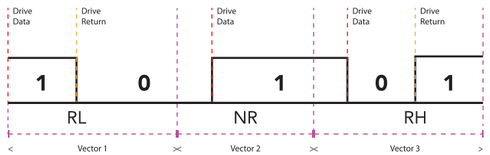
NICSLAB MINI ATE

A Complete Solution for Modern Mixed-Signal IC Testing

TIMING CONFIGURATION

Digital Signal

Our instrument executes test patterns as sequences of vectors. Each vector specifies a timing set, signal states for multiple channels, and additional commands. Time sets define the vector period, drive modes, and transition points, supporting Non-Return, Return-to-Low, and Return-to-High modes. Using different time sets per vector incurs no time penalty, ensuring accurate and reliable timing.



Digital and Analog Signal

In our system, the analog function is fully integrated into the vector itself. This allows analog edges to be defined and synchronized just like digital signals. A single vector can therefore coordinate digital and analog operations under strict timing requirements, enabling highly synchronized mixed-signal testing.

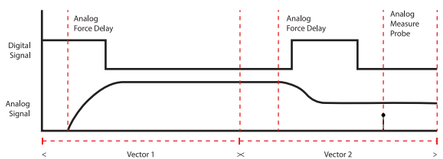


Figure 1
Analog Force and Measurement Timing

In different vectors (e.g., Vector 1 & 2), you can set the analog force delay and the analog measurement strobe relative to the timeset, ensure precise timing.

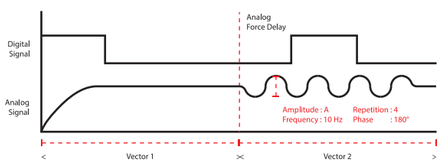


Figure 2
Configurable Analog Waveform Control

A Vector can generate analog waveforms such as sine waves with user-defined properties. The analog force delay can still be aligned relative to the vector.

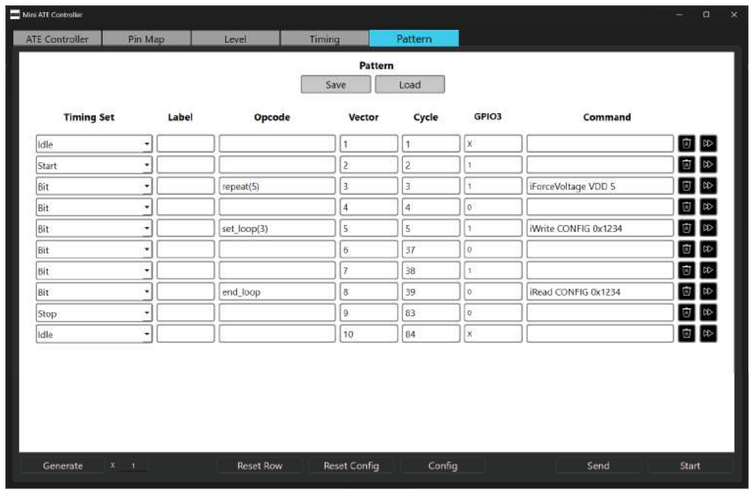
EXPLORING THE SOFTWARE BEHIND NICSLAB MINI ATE

The Mini ATE GUI (Graphical User Interface) is an intuitive platform for developing and managing test patterns. Users can easily import, edit, or create patterns, configure pin maps, define levels, and set timing for each digital pin. Pin states can then be manually assigned for each vector. All configurations can be saved in XML format for future use and reloaded at any time.

Pattern Development and Format

Pattern files are built from vectors that define time sets, labels, opcodes, pin states, and commands. After setting pin states, additional operations can be added through opcodes and commands, enabling flexible test development. Patterns can be saved in a custom format and easily reloaded for future use, making them reusable across projects and shareable within teams.

Supported Opcodes : Repeat, Loop
Supported Commands : Force Voltage, Force Current, Measure Voltage, Measure Current



Common Protocol

The Common Protocol feature streamlines pattern creation by allowing users populate vectors directly with bit values. Protocol names and settings can be configured to automatically assign pin maps, levels, and timing values for each pin. Commands such as *iWrite* and *iRead* enable automatic generation of digital patterns, while all settings remain fully editable. The user also retain the flexibility to create vectors manually when needed.

Supported Protocols: I²C, SPI, UART

KEY FEATURES

- Intuitive test pattern editor
- Pin map, level, and timing configuration
- Support for I²C, SPI, and UART protocols
- XML-based file saving and reloading
- Manual and automatic vector creation

A Complete Solution for Modern Mixed-Signal IC Testing

DEFAULT SPECIFICATIONS

INDICATOR	SPECIFICATION
Channels	8 Digital Channels, 2 Analog Channels
Digital Pin Electronic	-1.5 V to 5 V
Maximum Vector Rate	100 MHz (10 ns minimum vector period)
Pattern Timing	8 time set 10 ns edge placement resolution
Drive Formats	Non-return (NR), Return to Low (RL), Return to High (RH)
Vector Memory Depth	65K
Opcode Support	Repeat, for_loop, jump, jump_if
Analog Force Update Rate	Up to 1 MUPS
Analog Measurement Sampling Rate	Up to 1 MSPS
Voltage Range	±20 V
Current Range	±1 A
Analog Settling Time	< 5 µs
Analog Edge Placement resolution	10 ns

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NICSLAB MINI ATE

Automatic Test Equipment

Delivers a complete solution for modern mixed-signal IC testing by integrating analog force and measurement capabilities directly into digital test vectors. This approach minimizes setup time and ensures precise timing for accurate, reliable results.

- 8-Channel, 100 MHz Vector-Based Digital Pin
- 2-Channel, Analog Force and Measure Pin
- Digital Voltage -1.5 V to 5 V, with Active Load Capability
- Analog Force Voltage ±20 V and Force Current ±1 A

OCT-25