

# X DeviceClip

World's First Modular ISP Architecture for Test Fixture.

**LYNXAR**  
Everything programmable

## Abstract

Flash memory technology allowed ISP (In-System Programming) to become very popular. ISP allows devices to be programmed when already soldered on the PCB. ISP offers several advantages over older techniques:

- programming takes place at the end of the manufacturing line,
- no need to stock pre-programmed devices,
- no need to handle modern ultra-fine-pitch packages.

ISP operation is generally accomplished on test fixtures, controlled by ATE and placed at the end of the manufacturing line. Too often, low-cost development tools are used to perform ISP operation, but the apparent economical advantage usually turns to be an overall cost increase if integration engineering time is considered.

Furthermore, development tools are slow, affecting programming speed and reliability. Cost slashing and reliability improvement on modern PCBA manufacturing lines require professional tools, like Lynxar Technologies' disruptive DeviceClip architecture.

## DeviceClip Advantages

- Comprehensive device support
- Maximum programming speed
- Extremely high number of parallel ISP channels
- Higher reliability
- Lower manufacturing cost

Dual ARM® Cortex™ A9 (667MHz)

1GB (32-bit) DDR3

Up to 32GB MicroSDHC Card

Multiple, parallel and totally independent target channels

LynOS operating system

LynBus inter-module communication

LAN, RS232 and I/O interfaces

Galvanic isolation on target channels

## World's first ISP platform

DeviceClip architecture is based on LynOS™, first ISP-oriented operating system designed to execute IPS programming Apps. LynOS™ leads to quick development of programming Apps in a native multi-channel environment. Apps are off-the-shelf available from Lynxar. And, thanks to LynOS patent-pending open API, even users can effortlessly develop Apps covering specific ISP requirements. Supporting new devices has never been easier.

## Universal

DeviceClip supports any mix of devices (microcontrollers, PLDs, memories) from any semiconductor producer. Channels of a very same DeviceClip unit can be configured to support totally different targets, bringing a flexibility never seen so far.

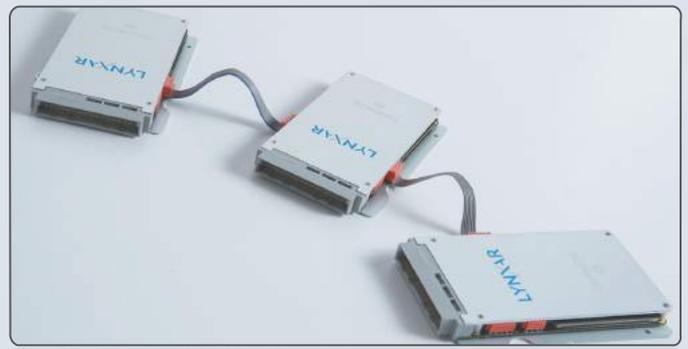
## Fast

DeviceClip is based on a high-performance microcomputer, faster than any device programming requirement. Speed is only limited by the target devices' specs. Furthermore, DeviceClip's very small size allows its placement as close as possible to the target device, so wiring length is minimum. This eliminates long and noisy cables, preserving signal integrity and improving the programming reliability.

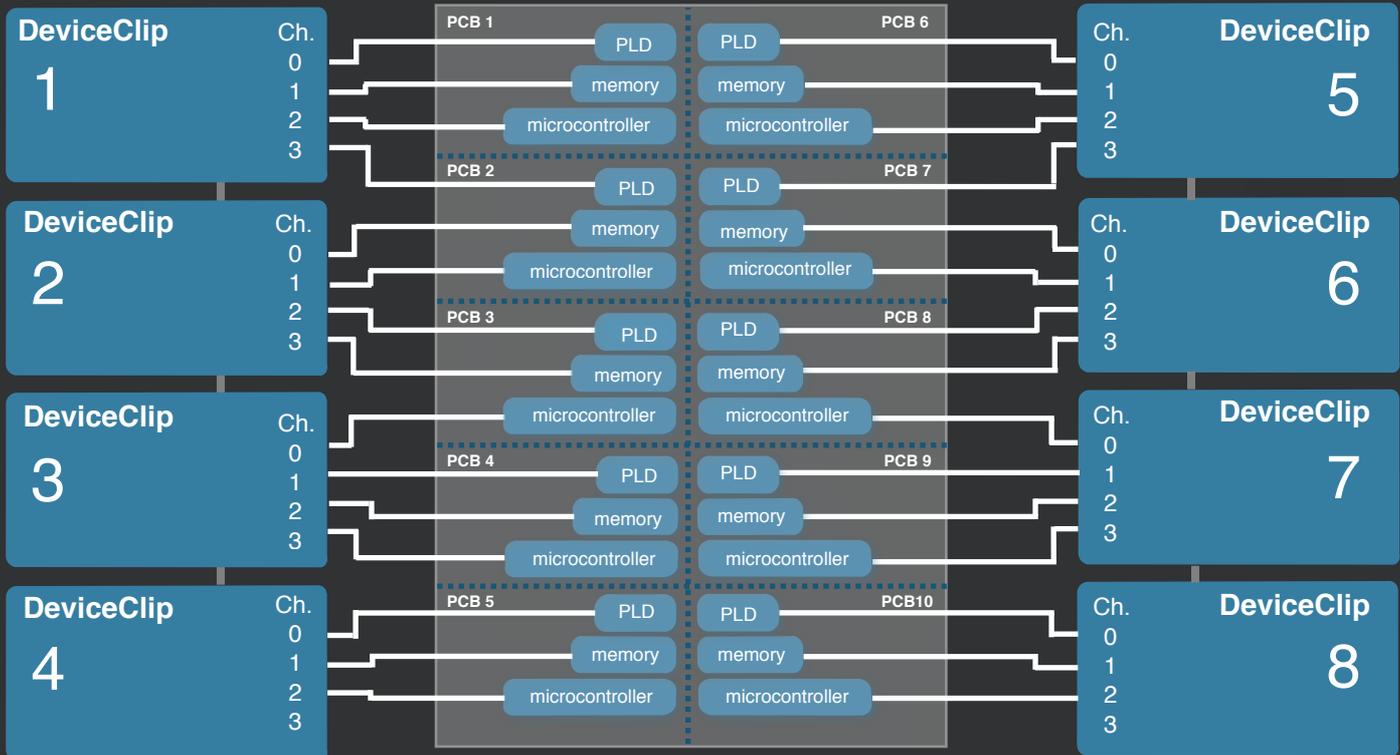


## High modularity

Several DeviceClip units can be cascaded to form wide arrays of truly-parallel multi-channel programming systems. LynBus, Lynxar high-speed inter-module interface was designed to make this process as simple as possible. User settings are not required: LynBus does it all.

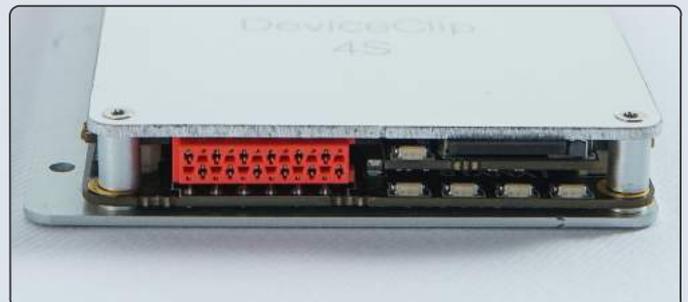


PCBA panel (10 figures)



## Compact

DeviceClip is very compact (only 100 x 60 x 10 mm), it was designed to be placed extremely close to the target (only a few millimeters away). This very compact size allows DeviceClip's integration inside any test fixture. DeviceClip is a perfect solution for complex test fixtures, where space constraints often prevent the placement of tools close to the target.



## Reliability

All DeviceClip signals are very robust and protected from over-voltages or shorts from the target PCB. Designed to work in very stressful environments (24/7), DeviceClip offers a wealth of functionality to help users satisfy the most demanding requirements.

Operations performed by DeviceClip are time-stamped and saved in log files on the SD Card, always available for traceability and analysis. Status of programming operations is constantly monitored for any faulty condition, immediately communicated to operators through a series of alarms.

Also, very short target wiring reduces signal noise while enhancing process reliability.

## Ease of use

Tool control panels are typically programs that have to be installed on the host computer. Installations are never hassle-free, different operating systems (Windows, Linux, Mac OS-X, etc.) require different Control Panels versions.



DeviceClip is provided with an HTML5 embedded control panel, thus no host software installation is required. Compatible with every operating system, all you need to fully control DeviceClip is just a browser.

Having only one tool to learn, use, stock and support dramatically simplifies the ISP system integrators' job. Interface, commands and behaviors are the very same for every programmable device, even the rarest one. Learn how-to once, use it forever.

DeviceClip modular architecture allows the building of ISP tools provided with a large number of channels with no need of routers or switches. Only one host interface is required for managing all channels. And, when used in stand-alone mode, the host computer is not necessary at all.

## Lower operation cost

Industrial ISP equipment has so far been implemented by using different, non universal tools from quite a few vendors. This leads to a high cost for ISP implementation on manufacturing lines. Different tools need more learning time (different interfaces, different commands, more spare parts, etc.).

**Cost of ISP integration in manufacturing lines is slashed by using just one type of tool. Re-inventing the wheel every day has a high cost. Lynxar Technologies DeviceClip allows a dramatic cost reduction while increasing overall reliability.**



## Target personalization

DeviceClip runs a powerful server for the management of target variables (serial numbers, MAC addresses, calibration values or any other user-defined customization data). The result is a very easy target PCBA personalization.

Target variables management can even be accomplished in stand-alone operating mode, when no host is connected. User's pre-defined CSV files containing target board personalization data can be loaded on the SD card for being automatically managed by LynOS.

## Support

A comprehensive set of DeviceClip literature is available from Lynxar Technologies, including:

- Reference guides
- Data-sheets
- Application notes
- White papers

Please visit our web site for the most updated and exhaustive documentation:  
[www.lynxartech.com](http://www.lynxartech.com)

## About

Lynxar Technologies is a global, independent, high-tech company, leader in semiconductor device in-system programming for the electronic boards manufacturing industry.

Lynxar is setting the new semiconductor device programming standard for the years ahead. It creates the programming systems that others think are impossible. Lynxar has ambitious goals and plans to make them happen.

Lynxar team joined with a clear vision: radically improve the device in-system programming/testing sector, where no breakthrough innovation has ever emerged.



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