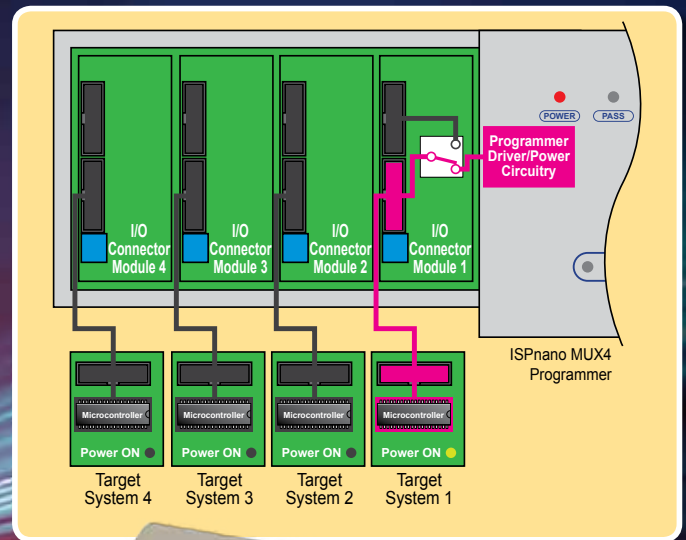


ISP nano mux4

4-channel Multiplexed ISP Programming System

Sequential programming of 4 x independent Target Boards



The 'ISPnano-MUX4' is a state-of-the-art production **In-System Programming (ISP)** system designed to sequentially program 4 x independent Target Boards. The programmer uses a single integrated '**ISPnano Series 3 programmer**' which is multiplexed between 4 x Target Boards or DUTs. The programmer can also be used in conjunction with external test equipment (**ATE / ICT**) as the programmer electronics are completely isolated from the target devices via relays when not in programming mode.

- High-speed In-System Programming (ISP) designed for production environments
- Supports sequential programming of 4 x independent Target Systems
- Each Target System is electrically isolated from both the programmer and the other Target System via relays
- All programmer I/O and Target Power signals can be isolated from each Target System via relays
- Wide ranging Device Support capability
- Supports programming via SPI, JTAG, SWD, I2C, UART, XMEGA PDI, ATtiny TPI, ams 1-wire, ams UART interfaces
- Supports automated routing of external test equipment e.g. ICT / ATE to each Target System when not in programming mode
- Standalone operation or PC controlled
- Ergonomic enclosure design - ideal for integration into ATE / ICT / programming fixtures directly under the bed-of-nails

PRODUCTION PROGRAMMING

IN-CIRCUIT TESTING (ICT)

RELAY SIGNAL ISOLATION

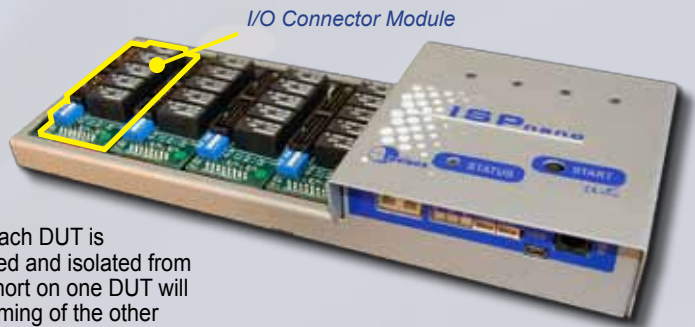
MULTI-DEVICE / PCB PROGRAMMING

FIRMWARE UPGRADEABLE



The Embedded Solutions Company

ISP nano mux4



Target Signal Routing:

- Each Target System / DUT connects to a separate user interchangeable **'I/O Connector Module'**
- All programming and power signals are multiplexed to each of the 4 x DUTs in turn via high-quality analogue switches and relays
- The DUTs can be electrically isolated from each other and the programmer via relays
- External test equipment e.g. **ICT / ATE** can be automatically routed to each DUT when not in programming mode
- Long relay contact life guaranteed as all power is off when relays are switched

Programming Interfaces:

- Supports most ISP hardware interfaces / protocols including JTAG, ARM SWD (Serial Wire Debug), SPI, I2C, XMEGA AVR PDI, ATtiny AVR TPI, ATtiny AVR HV mode, 8051 UART Bootloader, ams1-wire, ams UART
- Dedicated 2-wire I2C serial port
- Dedicated 2-wire XMEGA PDI / ATtiny TPI serial interface port
- Very fast programming speeds suitable for high-throughput production environments
- Individually configurable programmer I/O pins
- All programmer I/O lines are fully **ESD** and **over-voltage** protected
- Supports programming of target ICs between 1.8 and 5.0V

Control methods:

- PC control via RS232, RS485 or USB port
- Network up to 32 x ISPnano programmers to a PC via RS485 bus
- Limited Standalone operation possible
- **Remote System Control** e.g. PLC, ICT, ATE - using **ASCII (ATC)** protocol
- **TTL Control Port** for remote PLC control
- *** ConsoleEDS** - console application
- *** ISP-PRO** - Production ISP Monitoring application
- *** ActiveX** control library for direct integration into customer application

* = Chargeable upgrade

Standalone Mode:

- Supports loading of up to 64 x **'Standalone Programming Projects'** into the programmer memory (16 Mbytes capacity)
- Single-button **auto-program** operation allows repetitive sequential execution of the selected project on channel 1 to 4
- Standalone project execution can be triggered by Start button, Fixture Lid Switch, Target Sensing Circuit, Remote Keypad or **ASCII Text Communications** protocol (for remote control)

Ordering information:

- | | |
|-------------------------|--|
| ISPnano-MUX4-KIT | - Full ISPnano-MUX4 programming kit including power supply, cables, documentation etc. |
| ISPnano-MUX4 | - ISPnano-MUX4 - Programming module only |
| IO-MOD-X | - A range of replacement I/O Connector Modules are available |
| ISPnano-UPG11 | - ConsoleEDS - Console control application (Development SDK and run-time license) |
| ISPnano-UPG28 | - ISP-PRO - Production ISP Monitoring Software (Development SDK and run-time license) |

Device Support Libraries

The 'Device Support Libraries' for this programmer must be purchased separately. Please contact Equinox for an up-to-date list of all available 'Device Support Libraries'.

Power control:

- The power supply to each DUT is independently controlled and isolated from the other DUTs so a short on one DUT will not affect the programming of the other DUTs
- Very accurate programmable Target Power Supply (**Target VCC**): 1.8V - 5.0V @ 480 mA +/-1% voltage accuracy with spot calibration
- Programmable **Target VPP** Supply: 6.5V - 13.5V @ 100mA
- Programmer controlled **'Target Discharge Circuit'**
- Target voltage and current monitored by programmer
- Target Board short-circuit monitoring
- Power supply input: 9 to 24V

Device support:

- Atmel AVR SPI, AVR JTAG, XMEGA PDI, ATtiny TPI, ATtiny HV microcontrollers
- ams - Magnetic Rotary Position Sensors
- ARM microcontrollers (via JTAG or SWD interface) - ARM7TDMI®, Cortex M0, Cortex M3, Cortex M4
- Selected 8051 FLASH microcontrollers
- Serial EEPROM memories (SPI and I2C)
- Serial FLASH memories (SPI)
- Atmel / Adesto Serial DataFLASH™
- Sigma - Z-Wave SOC's and modules

Software (as standard):

- **EQTools** - creates **'Standalone Programming Projects'**
- **EDS** - Development Mode for testing under PC control
- **Upload Wizard** - uploads projects to the programmer
- **ASCII Text Communications (ATC)** protocol (for remote control)

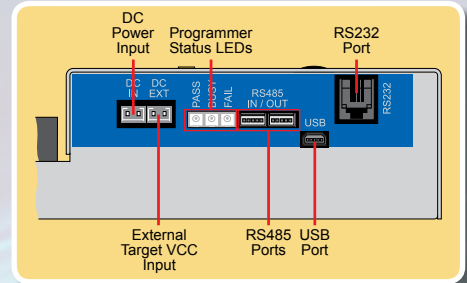
Typical programming time:

- As the ISPnano-MUX4 programmer programs 4 x DUTs sequentially, the total programming time is 4 times the programming time for a single DUT

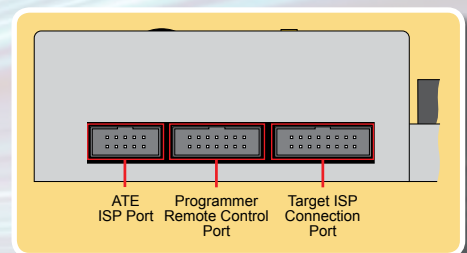
Typical applications:

- Medium to high volume **production programming**
- Cost-sensitive mass-programming applications where 4 x the programming time for a single DUT is acceptable
- Sequential programming of 4 x independent Target Boards or a panel of 4 x PCBs
- Programming of ams dual Magnetic Rotary Position Sensors
- Applications where the programmer must be isolated from the Target Board e.g. ICT or sensor testing

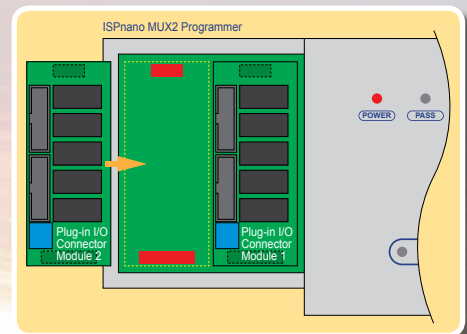
I/O Connector Module



Front Panel Layout



Rear Panel Layout



Attaching an I/O Connector Module



System Contents:

The picture shows the typical contents of the ISPnano-MUX4 programming kit.



The Embedded Solutions Company

Equinox Technologies reserves the right to change any information contained within this leaflet without prior notice. E&OE

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