

# Galep-5D [ Ethernet / USB ]

PRODUCTION SPEED PROGRAMMER / WITH MASTER MODULES  
60 / 120 / 240 PINS. LAN & USB PORTED



- Master MODULE top end, for chips up to 240 universal pins. Just 1 module per pin package type!
- Supports all device packages from EPROM's to Microcontrollers.
- Industry-standard ethernet 10/100 port
- Fast USB 2.0 port
- Built-in slot for SD cards
- Blazing fast 200 MIPS ARM-9 CPU
- 128 MB of internal RAM
- Near theoretical min. programming times
- 3 programming voltages, up to 25V
- Supports low voltage devices, down to 1.3V
- Driven by an embedded Linux 2.6 kernel.

**GALEP-5D** is a high end device programmer for heavy-duty use in production and development. Its unique module concept has been designed to employ "master module" sockets ranging from regular 48 pin DIL sockets, right up to 240 pin sockets for every major pin package, with extremely high efficiency in socket requirements (see details on socket requirements below). Its LAN port and its stand-alone capability make it the ideal solution for almost all programming tasks, including high-performance gang-programming solutions.

**Device packages supported:** PROM, EPROM, EEPROM, FLASH memory, serial EEPROM, NV-RAM, LPC, FPGA, PLD, EPLD, GAL, PALCE, PIC, Micro-controllers (MCU) ranging up to 240 pins.

**Powerful, yet ultra-compact:** The GALEP-5D device programmer series has been designed into an extremely rigid, but lightweight single-block milled aluminium case. This wallet-sized unit weighs only 750g / 1.65 lbs, compared to the typical 3.4 lbs of competitor programmers, and appears extremely slim in profile.

**High-Speed Programming:** GALEP-5D has been uncompromisingly designed for speed. Communication and programming are handled by a 200 MIPS ARM-9 processor operating under Embedded Linux. Up to 4 FPGA (user-programmable logic) devices control the pin drivers and support hardware acceleration of programming algorithms by setting up internal state machines and UARTs. This way, even time-critical devices in a mass production environment can be programmed in a speed that could never be reached via software alone.

The hardware acceleration that is integral to the GALEP-5D design produces one of the fastest device programmers on the market today, designed expressly to work at high speeds either singly or in gang programmed arrays, as a substitute for bulky and cost-inefficient dedicated gang programming tools

For example, the MB90F947 microcontroller from Fujitsu (128KB) requires only 13 seconds for a program / verify cycle including data transfer – this is close to the theoretical minimum specified by the manufacturer. The Ethernet port allows data transfer at LAN speed of up to 100 MB/sec. The internal 128 MB RAM serves as data storage and allows the transfer of data only once for programming multiple devices.

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**Up to 240 universal pin drivers:** A custom-designed universal pin driver circuit guarantees an exacting, optimal signal quality at the output pins, and is also the design feature which permits the characteristic small size and low power consumption which is typical of all the GALEP series device programmers. Ranging right up through the 240 pin top-end programmer size, all of the pins generate the following signals:

- > Logical high, adjustable between 1.2V ... 5.0V
- > Logical input, threshold adjustable between 0.5V ... 5.0V
- > Three supply / programming voltages between 1.3V .. 25.0V
- > Ground
- > Three switchable resistors for pull-up and pull-down functions
- > Adjustable clock rate

The switching regulators for programming voltages are controlled by D/A converters in 100 mV steps. Further D/A converters are used to control the logic levels and input threshold. For maximum protection of the programmable device, all voltages are permanently monitored by an independent circuit.

A high quality universal pin driver uncompromisingly implemented to all pins in every model reduces the number of required adapters sharply, translating into notable economies in socket requirements (for single-programmer and gang programming applications). The XELTEK Super Pro 3000U for instance, employs 600+ sockets. GALEP-5D's entire output will require less than 150 sockets permanently in the future, due to the completely uncompromising design of it's master modules:

- > ONE GALEP-5 adapter 210911 - HANDLES ALL QFP DEVICES TO 44 PIN
- > ONE GALEP-5 adapter 210912 - HANDLES ALL PSOP DEVICES TO 44 PIN
- > ONE GALEP-5 adapter 210913 - HANDLES ALL TQFP-44 & QFP-44 DEV. TO 44 PIN
- > ONE GALEP-5 adapter 210914 - HANDLES ALL TSOP DEVICES TO 48 PIN

**Precise control of programming voltages:** Switching regulators for programming voltages are controlled by D/A converters in 100 mV steps. Further D/A converters are used to control the logic levels (1.3V ... 5.0V) and the input threshold (0.5V...5.0V). All voltages are permanently monitored by an independent coprocessor.

**Stand Alone and Network operation:** GALEP-5D's programming operation is totally transparent. It can be connected at any location within your LAN, and accessed from any other location within that network. This programmer has also been expressly designed for stand-alone mass production applications (running without a PC). When in full stand-alone mode (currently in development and due for release within 3-4 months) the programming data can be stored on an SD card or on a local server on the LAN.

GALEP-5D series programmers can be quickly converted into versatile gang programming arrays, with a flexibility of use which cannot be matched by any dedicated gang programmers on the market. The 5D models use many fewer adapters overall due to the very high-end specifications of their "master modules". As they already incorporate one of the fastest CPU's among any programmers on the market, in cluster configurations this design produces one of the most high-performance gang programming solutions available.

**In System Programming (ISP):** The signals for in-system programming (ISP) can be drawn from a separately available ISP adapter or directly via the 48-pin ZIF socket. A help system provides information about the wiring of the target system for all supported components.

**Software:** GALEP-5D program is compatible with Windows 95, 98, ME, NT4, 2000, XP, and Vista. A Linux version is in production as well. Besides basic functions such as read, program, compare and delete, the GALEP operating system features easy-to-use custom configuration options for any special functions..The editor supports binary, Intel-Hex, Motorola-S or JEDEC file format. Mass production is supported via statistics functions and serial number generation. **JTAG Support:** Delete, program and verify components with JTAG interface (joint test action group, IEEE Std. 1149.1 ).

The following formats are supported: SVF-Script in XSVF(Xilinx) format; JAM byte code player (ALTERA). **Batch mode:** Run GALEP-5D from the command line, or implement GALEP-5 commands in your own production software. The programmer can be fully controlled via powerful batch commands. **Updates:** Lifetime free software updates online. If you require a certain device not yet supported, use our free Device on Demand Service or ask in the Forums. Conitec not only provides lifetime free updates of the software, but routinely implements specific new devices for clients, free of charge.



**JTAG Debugger:** With GALEP-5D you can debug any micro-controller with a JTAG interface that is supported by the OpenOCD (On Chip Debugger) software ARM7, ARM9, XScale, and Cortex-M3 MCUs. Simply insert the chip to be debugged put into GALEP's programming socket or connect it to the GALEP through a cable or ISP adapter (details in the Open OCD documentation). Additionally you can easily define test algorithms for in-circuit testing of complete circuit boards (Boundary Scan) for small series production. GALEP-5D is a complete development, test and production system!



**Modules and adapters:** GALEP-5D ships in standard configuration, with a DIL-48 top end module, handling all components in DIL sockets up to 48 Pins, ranging from 300 to 600 MIL (i.e. ca. 7,5 up to 16 mm) wide. This 48 pin standard DIL setup requires absolutely no other adapters. (However, any client owning older GALEP-4 and GALEP-5 (48 pin) socket adapters can use them with the standard DIL-48 module top end of GALEP-5D).



One of the critical design features in the GALEP-5D is it's "master module concept" (the removable panel alongside). Only ONE master module is required to handle everything within each specific pin package type. Example: One QFP-120 GALEP module replaces about 30 specialized QFP-120 adapters typical of programmers without the master module design. When frequently programming high pin-count parts, the GALEP-5D-240 pin programmer soon earns back the equivalent of it's purchase price, in socket adapter sav-ings alone!

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**Adapters – (Cont.)** Programmers advertised as having the same functionality as the new GALEP-5D series, which employ any lower cost (non-universal I/O) drivers on their sockets to cap their development and manufacturing costs – by definition will require a good deal more socket adapters within each different component family. This translates to large total system cost differences. The cost difference between a 600 socket programmer design and a 150 socket programmer design is notable. Galep hardware is designed to double it's output range over time, without ever requiring more than 150 socket adapters. Clearly in such hardware specification comparisons, one system is compromising less at the client's expense.

### Technical Specifications

- Format: ca. 118x172x22mm (+7mm socket)
- Weight: ca. 750 g, single block aluminium case
- DIL Module with 48-pin ZIF socket included
- Programs low-voltage components down to 1.3V
- Mini USB 2.0 high-speed port, plus Ethernet 10/100 port
- SD memory card slot
- 200 MIPS ARM-9 RISC processor, 128 MB RAM, 8 MB Flash
- Hardware acceleration through FPGA (50K gates, 64Kb RAM)
- 3 linear voltage regulators for internal power supply
- 4 switching regulators for programming voltages
- 2 linear voltage regulators for logic levels and input threshold
- 2 Micro controllers for internal voltage monitoring
- 8-channel D/A converter, 16-channel A/D converter
- Embedded Linux 2.6 inside

**Size:** 118x172x22mm (+7mm socket)

**Weight:** ca.750g (1.65 Lbs.)

### Kit contains

- GALEP-5D device
- DIL-48 module
- Ethernet & Mini USB cables
- AC adaptor
- CD with manual and software

### System Requirements

Windows 32 Bit OS, 98SE / ME / NT4 / 2000 / XP / Vista \*\*  
(\* \*\* Linux & Mac Vers. Pending )

**Warranty:** 24 Months. Certification: CE, RoHS, UL.

### Price:

GALEP-5D-60 with 60 Pins : \$  
GALEP-5D-120 with 120 Pins : \$  
GALEP-5D-240 with 240 Pins : \$