

## GALEP-5D

### Heavy Duty Device Programmer

Up to 240 pin drivers, LAN and USB port

**GALEP-5D** is a high end universal device programmer for heavy-duty use in production and development. Its unique **module concept** for sockets with up to 240 pins, its dual **USB and LAN port** and its stand alone capability make it the ideal solution for almost all programming tasks.



- **Unique Features:**
- **Dual USB/LAN Port**
- **Module System**
- **Up to 240 Pins**
- **Pin driver ICs**
- **128MB Data RAM**
- **Script Controlled**
- **JTAG Debugger**
- **Self-opening sockets**
- **OpenSource Firmware**
- **Windows and Linux**
- **61,000 devices**

#### SUPPORTED DEVICES ↑

>GALEP-5D can program all devices (EPROM, Flash, PLD, EPLD, GAL, PALCE, PIC, MCU etc.) with up to 240 pins. More than **61,000 devices** are currently supported . Additionally, GALEP's **JTAG player** can program SVF/JAM data into all existing and future devices that have a JTAG port.

#### ULTRA-COMPACT DESIGN ↑

>GALEP-5D is packed into an extremely rigid, but lightweight single-block milled-aluminium case. The wallet-sized unit weighs only 750g / 1.65 lbs.

#### HIGH-SPEED PROGRAMMING ↑

>GALEP-5D is uncompromisingly **designed for speed**, offering the highest performance of all programmers on the market today. An internal 200 MIPS ARM-9 processor under Embedded Linux handles communication and programming. Up to 4 FPGA (user-programmable logic) devices control the 240 pin drivers and support **hardware acceleration** of the programming algorithms through state machines and UARTs.

>A MB91F467 Microcontroller by Fujitsu (8 MBit) needs only 19 seconds for a serial program/verify cycle; 256 MBit NOR Flash (28F256P30) is programmed and verified in 170 seconds. The internal 128 MByte RAM serves as data storage and allows to transfer the data only once for programming multiple devices.

#### 240 UNIVERSAL PIN DRIVERS ↑

>A universal pin driver concept with as many pins as possible reduces the number of required adapters and thus minimizes the overall costs of the programming system. GALEP's custom-designed **universal pin driver IC** guarantees optimal signal quality at the output pins, and allows the small size and low power consumption of all GALEP programmers. Each of the 240 pins can generate the following signals:



- \*Logical high between 1.2V .. 5.0V
- \*Logical input, threshold 0.5V ... 5.0V
- \*Three programming voltages between 1.3V .. 25.0V
- \*Three switchable resistors for pullup and pulldown
- \*Adjustable clock rate
- \*Ground

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



GALEP-5D Gang Programming Cascade

### STAND ALONE, GANG AND NETWORK OPERATION ↑

>Through its Ethernet connector, GALEP-5D can be accessed from any PC in the network. An arbitrary number of GALEPs can be combined to a **Gang programmer**. Four different modes of operation are supported:

>**Normal programming mode.** Connect GALEP through USB2 or Ethernet to your PC, and run the Galep5 or the new GalepX software.

>**Script remote control mode.** Control all GalepX operations - device selection, file loading, buffer operations, programming - completely from your production software or from batch files with script commands in a C-based language.

>**Server based stand alone mode.\*** In this mode, GALEP's setup and programming data is stored on a PC in the LAN. For programming just connect GALEP to the LAN, insert the device and press the start button.

>**SD card stand alone mode.\*** No PC required. Just insert a SD card with setup and programming data in GALEP's card slot, and start programming with the start button.

\* Available with a free update of the new GalepX software (currently in beta test).

### IN SYSTEM PROGRAMMING ↑

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

### SOFTWARE ↑

>The software runs under Windows 95, 98, ME, NT4, 2000, XP, Vista, Windows 7, and Linux. Besides basic functions such as erase, read, program and compare, split and shuffle, it features easy-to-use configuration options for any special functions required by the selected device. The software supports all common file formats, such as binary, Hex, JEDEC, and JTAG. Mass production is supported by providing statistics functions and serial number generation.

>The software is permanently improved for supporting new components .Free updates are available on our website in weekly intervals.

### JTAG SUPPORT ↑

>Delete, program and verify all devices with JTAG interface (Joint Test Action Group, IEEE Std. 1149.1), even when they are not yet included in the device list. GALEP's universal **JTAG player** supports files in SVF/XSVF (Xilinx) format or in JAM byte code player format (ALTERA).

>Debug all Microcontrollers with JTAG interface that are supported by the included **OpenOCD (On Chip Debugger)** software - ARM7, ARM9, XScale, and Cortex-M3 MCUs. The chip to debug is simply put into GALEP's programming socket or connected with GALEP through a cable or ISP adapter.

>Define test algorithms for in circuit testing of complete circuit boards (**Boundary Scan**) for small series production. This way your GALEP-5D becomes a complete development, test and production system!

### SECURITY ↑

>Prior to each function, GALEP checks the power consumption, correct positioning, and the contacts of all pins of the selected component. This prevents accidental damage to the component or the device.

## MODULES AND ADAPTERS ↑

> A main advantage of GALEP-5D is the innovative **module concept**. In seconds the DIL module can be replaced with a module for a different socket. Due to the high output pin count, only a single module or adapter is required for supporting all programmable devices with a certain socket. For instance, one QFP-120 GALEP module replaces about 30 specialized QFP-120 adapters required by competitor products. When frequently programming high pin components, a GALEP-5D-240 has quickly paid off.

> GALEP-5D comes with a DIL-48 module for all components in DIL sockets of up to 48 Pins. All existing GALEP-4 and GALEP-5 adapters can be used with the DIL-48 module of GALEP-5D. Universal modules and adapters for the following sockets up to 120 pins are available: SOIC, SOP, TSOP, SSOP, TSSOP, PLCC, QFP, TQFP, MLF.

> All socket modules are optionally available with a **self-opening mechanism** (see image). The socket automatically closes when the device is inserted, and opens it for removal. This makes mass programming a lot easier, either manually or as part of a production line.



## TECHNICAL SPECIFICATIONS ↑

- > Format: ca. 118x172x22mm (+7mm socket)
- > Weight: ca. 750 g, single block aluminium case
- > DIL Module with 48-pin ZIF socket included
- > Up to 240 universal pin drivers
- > Front start button for production mode
- > Programs low-voltage components down to 1.3V
- > Mini USB 2.0 high-speed port, plus Ethernet 10/100 port
- > SD memory card slot, 128 MB internal data RAM
- > 200 MIPS ARM-9 RISC processor, 8 MB Flash
- > Hardware acceleration through 4 FPGAs (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 Microcontrollers for internal voltage monitoring
- > 8-channel D/A converter, 16-channel A/D converter
- > Embedded Linux inside

## KIT CONTAINS ↑

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

## SYSTEM REQUIREMENTS ↑

- > Windows 32-bit or 64-bit OS, 98SE / ME / NT4 / 2000 / XP / Vista / 7
- > USB 1.0 or USB 2.0 port, or Ethernet port

## DISTRIBUTOR



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