

# SmartProg2

Universal, ISP capable programmer

## Short description:

- **26437** supported devices from **205** manufacturers by 2.75 version of SW (21. Dec. 2010)
- small, fast and powerful universal programmer
- DIL40 ZIF socket, devices in DIL package up to 40 pins are supported without adapters
- connector for in-circuit programming (ISP)
- connection to PC: **USB port**
- USB 2.0 full speed and USB 1.1 compatible
- comfortable and easy to use control program, work with all versions of MS Windows from Windows 98 to Window 7 64-bit
- free SW update, [download](#) from Internet
- power supply, cable and software included
- approved by CE laboratory to meet [CE](#) requirements
- [made in Slovakia](#)
- **warranty - 3 years**



## Available accessories:

- **Programming Adapters** ([Socket Converters](#))
- [Diagnostic POD for ISP connector](#)

## Features

### GENERAL

- SmartProg2 is the next member of new generation MS Windows (from Windows 98 to Window 7 64-bit) based ELNEC **universal programmers**. Programmer is built to meet the demands of development labs and field engineers for universal, but portable programmer.
- **SmartProg2** is a small, fast and powerful programmer of all kinds of programmable devices. Using build-in in-circuit serial programming (**ISP**) connector the programmer is able to program ISP capable chips in-circuit. SmartProg2 isn't only a programmer, but also a static RAMs **tester**.
- Provides **very competitive price** with excellent hardware design for reliable programming. Nice "**value for money**" in this class.
- **Very fast programming** due to high-speed FPGA driven hardware and USB 2.0 full speed port.
- SmartProg2 interfaces with the IBM compatible PC, portable or desktop personal computers through **USB port**, what is important for new, LPT-port-less computers (notebooks for example).

### HARDWARE

- 40 **powerful TTL pindrivers** provide H/L/pull\_up/pull\_down and read capability for each pin of socket. Advanced pindrivers incorporate **high-quality high-speed** circuitry to deliver signals without overshoot or ground bounce for all supported devices. Pin drivers operate down to 1.8V so you'll be ready to program the full range of today's advanced low-voltage devices.
- The programmer performs device **insertion test** (wrong device position in socket) and **contact check** (poor contact pin-to-socket) before it programs each device. These capabilities, supported by **signature-byte check** help prevent chip damage due to operator error.
- SmartProg2 programmer performs programming **verification** at the **marginal level** of supply voltage, which, obviously, improves programming yield, and guarantees long data retention.
- Various **programming adapters** are available to handle device in PLCC, SOIC, SSOP, TSOP, TSSOP, TQFP, QFN (MLF) and other packages.

### SOFTWARE

- Programmer is driven by an **easy-to-use** control program with pull-down menus, hot keys and on-line help. Selecting of device is performed by its class, by manufacturer or simply by typing a fragment of vendor name

and/or part number.

- **Standard** device-related commands (read, blank check, program, verify, erase) are enhanced by some **test functions** (insertion test, signature-byte check), and some **special functions** (autoincrement).
- All known data formats are supported. Automatic file format detection and conversion during loading of file.
- The rich-featured **autoincrement function** enables one to assign individual serial numbers to each programmed device - or simply increments a serial number, or the function enables one to read serial numbers or any programmed device identification signatures from a file.
- The software also provide a many information about programmed device. As a special, the **drawing of all available packages** are provided. The software provide also **explanation of chip labelling** (the meaning of prefixes and suffixes at the chips) for each supported chip.
- The software provide a full information for ISP implementation: Description of ISP connector pins for currently selected chip, recommended target design around in-circuit programmed chip and other necessary information.

## CARE FOR THE CUSTOMERS

- **New Device Request (AlgOR Service)**
  - You can ask for new devices support using our AlgOR service. Please see AlgOR (Algorithm On Request) service for details.
- **Free life-time software updates**
  - Most current version of Elnec programmers software with support of newly added devices is available for free here.
- **Free Technical support**
  - Elnec provide customers technical support (WebForm/e-mail based).
- **Keep-Current service**
  - Keep-Current service means, that ELNEC ships the latest version of programmer software and updated user documentation (Keep-Current package) to customer . The Keep-Current service is your hassle-free guarantee that you achieving the highest quality programming on ELNEC programmers, at minimal cost.
- **Prompt delivery**
  - Combination of extensive stock, flexible manufacturing and shipping of Elnec products by world class carriers (like DHL) warrants customers very fast and secure delivery of ordered Elnec products. Products ordered before 10 a.m. (CET) will be dispatched the same working day (if products are in stock and the payment is done by Online payment (CardPay, PayPal).
- **Warranty**
  - Advanced design of the **SmartProg2** programmer, careful manufacturing and burning-in allow us to provide a **three-year warranty** on parts and workmanship of the programmer (limited 25 000-cycle warranty on ZIF sockets).
  - Elnec provides **free shipping of programmer repaired under warranty back to customer world wide**. Warranty is valid from the date of purchase.
  - Preferential handling of repair requests ensures registration of the product that should be done within 60 days from the date of purchase here.

## Specifications

### HARDWARE

#### Programmer

- two D/A converters for VCCP and VPP, controllable rise and fall time
- VCCP range 2V..7V/350mA
- VPP range 2V..25V/200mA
- USB 2.0/1.1 compatible interface
- autocalibration
- selftest capability

#### ZIF socket, pindriver

- 40-pin DIL ZIF (Zero Insertion Force) socket accepts both 300/600 mil devices up to 40-pins
- pindriver: 40 TTL pindrivers, specialized GND/VCC/VPP pindriver
- FPGA based TTL driver provides H, L, CLK, pull-up, pull-down on all pindriver pins; level H selectable from 1.8V up to 5V
- continuity test: each pin is tested before every programming operation

#### ISP connector

- 10-pin male type with missinsertion lock
- 5 TTL pindrivers, provides H, L, CLK, pull-up, pull-down; level H selectable from 1.8V up to 5V to handle all (low-voltage including) devices.
- 1x VCCP voltage (range 2V..7V/100mA) (\*1) and 1x VPP voltage (range 2V..25V/50mA)
- programmed chip voltage (VCCP) with both source/sink capability and voltage sense
- (\*1) - the programmer is not capable to supply a target system from VCCP pin. If you have such demand, use please a BeeProg programmer

## DEVICE SUPPORT

### Programmer, in ZIF socket

- EPROM: NMOS/CMOS, 27xxx and 27Cxxx series, with 8/16 bit data width, full support of LV series (\*1\*2)
- EEPROM: NMOS/CMOS, 28xxx, 28Cxxx, 27EExxx series, with 8/16 bit data width, full support of LV series (\*1\*2)
- Flash EPROM: 28Fxxx, 29Cxxx, 29Fxxx, 29BVxxx, 29LVxxx, 29Wxxx, 49Fxxx series, with 8/16 bit data width, full support of LV series (\*1\*2)
- Serial E(E)PROM: 24Cxxx, 24Fxxx, 25Cxxx, 25Bxxx, 25Dxxx, 59Cxxx, 25Fxxx, 25Pxxx, 25Qxxx, 85xxx, 93Cxxx series, AT88SCxxx, full support for LV series (\*1)
- Configuration (EE)PROM: XCFxxx, 37LVxx, XC17xxxx, EPCxxx, AT17xxx, LV series including
- NV RAM: Dallas DSxxx, SGS/Inmos MKxxx, SIMTEK STKxxx, XICOR 2xxx, ZMD U63x series
- PLD: series: Atmel, AMD-Vantis, Cypress, ICT, Lattice, NS, ... (\*1)
- Microcontrollers 51 series: 87Cxxx, 87LVxx, 89Cxxx, 89Sxxx, 89LVxxx, 89LSxxx, 89LPxxx, LPC series from Atmel, Atmel W&M, Intel, Philips, SST, Winbond (\*1\*2)
- Microcontrollers Atmel AVR: rady AT90Sxxxx, AT90pwm, AT90can, AT90usb, ATtiny, ATmega, (\*1\*2)
- Microcontrollers Cypress: CY8Cxxxxx
- Microcontrollers ELAN: EM78Pxxx
- Microcontrollers EM Microelectronic: 4 and 8 bit series
- microcontrollers Microchip PICmicro: PIC10xxx, PIC12xxx, PIC16xxx, PIC17Cxxx, PIC18xxx, dsPIC series, 8-40 pins (\*1\*2)
- microcontrollers Scenix (Ubicom): SXxxx series
- Microcontrollers Silicon Laboratories(Cygnal): C8051 series
- Microcontrollers other: ASP, Macronix, Princeton, EXODUS Microelectronic, Goal, Ramtron, Topro, VersaChips, Winbond

### Programmer, through ISP connector

- Serial E(E)PROM: IIC series, MW series, SPI series, KEELOQ series, serial data Flash
- Microcontrollers Atmel AVR: AT89Sxxx, AT90Sxxxx, AT90pwm, AT90can, AT90usb, ATtiny, ATmega, AT89LSxxx, AT89LPxxx
- Microcontrollers Cypress: CY8C2xxxx
- Microcontrollers Elan: EM78Pxxx
- Microcontrollers EM Microelectronic: 4 and 8 bit series
- Microcontrollers Microchip PICmicro: PIC10xxx, PIC12xxx, PIC16xxx, PIC17xxx, PIC18xxx, dsPIC series
- Microcontrollers Philips: LPC series
- Microcontrollers Silicon Laboratories(Cygnal): C8051 series

### Notes:

- (\*1) - suitable adapters are available for non-DIL packages
- (\*2) - there exist only a few adapters for devices with more than 40 pins. Therefore, please, consider a more powerful programmer (LabProg+, BeeProg, JetProg), if you need to program devices with more than 40 pins
- for all supported devices see [actual DEVICE LIST](#)

### I.C. Tester

- Static RAM: 6116 .. 624000

### Programming speed

Device	Operation	Mode	Time
27C010	programming and verify	in ZIF	28 sec.
AT29C040A	programming and verify	in ZIF	32 sec.
AM29F040	programming and verify	in ZIF	62 sec.
PIC16C67	programming and verify	in ZIF	10 sec.
PIC18F452	programming and verify	in ZIF	7 sec.
AT89C52	programming and verify	in ZIF	16 sec.
PIC16F876A	programming and verify	ISP	5 sec.
PIC12C508	programming and verify	ISP	3 sec.

**Conditions:** P4, 2.4 GHz, USB 2.0 high speed, Windows XP.  
**The programming times are valid for 2.11 version of software, the improvement is in progress.**

## SOFTWARE

**Algorithms:** only manufacturer approved or certified algorithms are used. Custom algorithms are available at additional cost.

**Algorithm updates:** software updates are available approx. every 2 weeks, free of charge.

**Main features:** revision history, session logging, on-line help, device and algorithm information.

## Device operations

- **standard:**
  - intelligent device selection by device type, manufacturer or typed fragment of part name
  - blank check, read, verify
  - program
  - erase
  - configuration and security bit program
  - illegal bit test
  - checksum
- **security**
  - insertion test
  - contact check
  - ID byte check
- **special**
  - auto device serial number increment
  - statistic
  - count-down mode

## Buffer operations

- view/edit, find/replace
- fill, copy, move, byte swap, word/dword split
- checksum (byte, word)
- print

## File load/save

- no download time because programmer is PC controlled
- automatic file type identification

### Supported file formats

- unformatted (raw) binary
- HEX: Intel, Intel EXT, Motorola S-record, MOS, Exormax, Tektronix, ASCII-SPACE-HEX

## GENERAL

### PC system requirements

- Common, software related requirements
- Programmer hardware related requirements:
  - one USB port, the 2.0 high speed recommended

### Operation

- operating voltage 15..20V DC, max. 0.5A
- power consumption max. 6W active, about 1.4W sleep
- dimensions 160x95x35 mm (6.3x3.7x1.4 inch)
- weight (without external power adapter) ca. 500g (17.65 oz)
- operating temperature 5°C ÷ 40°C (41°F ÷ 104°F)
- operating humidity 20%..80%, non condensing

### Base configuration package includes

- SmartProg2 programmer
- switch. power adapter, 15V DC/500mA, stabilized + power cord
- connection cable PC-programmer
- ISP cable
- diagnostic POD for selftest of the programmer
- anti-dust cover for ZIF socket
- user manual (on CD)
- software
- transport case (cardboard box)

**Additional services**

- Keep Current - ELNEC sends to user the latest version of programmer software and updated user documentation (Keep-Current package)
- AlgOR (Algorithms On Request) - add new supported devices on customer request

**Programmer price also includes**

- free technical support (WebForm/e-mail based)
- free life-time software update via Internet

*The information in this document is subject to change without notice.*