T51prog2

MCS51 series and Atmel AVR microcontrollers ISP capable fast programmer

Short description:

- **10692** supported devices from **149** manufacturers by 2.75 version of SW (21. Dec. 2010)
- small, very fast and powerful portable programmer of MCS51 series and Atmel AVR microcontrollers
- in-circuit serial programming (ISP) capability included
- program also serial EEPROMs
- DIL40 ZIF socket, all MCS51/AVR chips in DIL package up to 40 pins are supported without adapters
- connection to PC: **USB port**
- USB 2.0 full speed and USB 1.1 compatible
- upgradeable to SmartProg2 programmer.
- 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

Available accessories:

- **Programming Adapters** (Socket Converters)
- Diagnostic POD for ISP connector
- upgrade kit Xprog2 to SmartProg2

Features

GENERAL

- **T51prog2** is the next member of new generation MS Windows (from Windows 98 to Window 7 64-bit) based ELNEC **specialized programmers**. Programmer is capable to support all currently available microcontrollers of the MCS51 series (up to 40 pins) and the AVR microcontrollers (8-40 pins) using parallel and serial algorithms. T51prog2 has been developed in **close cooperation with Atmel W&M.**, therefore programmer's hardware is focused to support all current and future microcontrollers of Atmel W&M MCS51 family.
- **T51prog2** is a small, very fast and powerful portable programmer for MCS51 series and Atmel AVR microcontrollers. T51prog also programs serial EEPROM with IIC (24Cxx), Microwire (93Cxx) and SPI (25Cxx) interface types. Using build-in in-circuit serial programming (**ISP**) connector programmer is able to program MCS51 family microcontrollers and Atmel AVR microcontrollers using serial algorithms.
- 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 support of high-speed USB port. Surely faster than competitors in this category.
- T51prog interfaces with the IBM PC compatible or higher, portable or desktop personal computers through **USB port**.
- T51prog2 is easy upgradeable to SmartProg2 programmer using "upgrade kit Xprog2 to SmartProg2" (ord.no. 60-0048).

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.
- T51prog2 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, 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**
  - Warranty on parts and workmanship of the T51prog2 programmer is one-year from the date of purchase (limited 25 000-cycle warranty on ZIF sockets).
  - Elnec provides **free shipping of programmer repaired under warranty back to customer world wide**.
  - Preferential handling of repair requests ensures registration of the product that should be done within 60 days from the date of purchase here.

Specification

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 for MCS51 and AVR devices
- FPGA based TTL driver provides H, L, CLK, pull-up, pull-down on all pindriver pins, level H selectable from 1.8 V up to 5V
- continuity test: each pin is tested before every programming operation

ISP connector

- 10-pin male type with missinsertion lock
- 6 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

- microcontrollers MCS51 series: 87Cxxx, 87LVxx, 89Cxxx, 89Sxxx, 89LVxxx, LPC series from Atmel, Atmel W&M, Intel, Philips, SST, Winbond, ... 8-40 pins (*1)
- microcontrollers Atmel AVR: ATtiny, AT90Sxxx, ATmega series (parallel and serial mode), 8-40 pins (*1)
- Serial E(E)PROM: 24Cxxx, 24Fxxx, 25Cxxx, 59Cxxx, 85xxx, 93Cxxx series

Programmer, through ISP connector

- Microcontrollers Atmel: AT89Sxxx, AT90Sxxxx, ATtiny, ATmega series
- Microcontrollers Philips: LPC series

Notes:
- *(*1) - suitable adapters are available for non-DIL packages and devices with more than 40 pins.*
- *for all supported devices see actual DEVICE LIST*

Programming speed

Device	Operation	Time
AT89C52	programming and verify	15 sec.
T87C5111	programming and verify	14 sec.

Conditions: *P4, 2.4 GHz, USB high-speed, Windows XP.*

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 4 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

Operation

- operating voltage 15..20V DC, max. 0.5A
- power consumption max. 6W active, about 1.4W sleep
- dimensions: 160x95x35 mm (6.3 x 3.7 x 1.4 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

- T51prog2 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 (hot line)
- free life-time software update via Internet

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