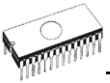
User's Manual for

JetProg multiprogramming system

ELNEC s.r.o.
Presov, Slovakia
February 2003



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How to use this manual

> ***Dear customer,***
>
> *thank you for purchasing one of the* ***ELNEC*** *product.*

This manual explains how to use your JetProg multiprogramming system and how to install the control program. This manual is complete only with manual for JetProg programmer and family&socket submodule. It is assumed that the user has some experience with PCs and installation of software. Once you have installed the control program we recommend you consult the context sensitive HELP within the control program rather than the printed User's Manual. Revisions are implemented in the context sensitive help before the printed Users Manual.

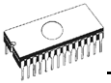
General notes

Before installing and using your JetProg multiprogramming system, please carefully check that your package includes all, that is said in part **Common technical specification**. If you find any discrepancy with respective parts list and/or if any of these items are damaged, please contact your distributor immediately.

Please avoid removing/inserting family&socket submodules if not necessary. The operation live of module/submodule contact is limited. Damaging of contacts may cause unreliable works with programmed devices.
Insert same family&socket submodules to appropriate multiprogramming module connectors very carefully, to avoid bad insertion of them.

For following text term multiprogramming module means Common multiprogramming module no.1 or EPROM/Flash 8-socket module.

Download please actual version of manual from ELNEC WEB site (www.elnec.com) if current one will be out of date.



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Introduction

JetProg multiprogramming system is high throughput manual operated multiprogramming solution convenient for medium volume production application.

JetProg multiprogramming system consists of JetProg, multiprogramming module and family&socket submodules.

JetProg multiprogramming system performs programming **verification** at the marginal level of supply voltage (it's depend of programming devices), which, obviously, improves programming yield, and guarantees long data retention.

JetProg multiprogramming system is driven by an easy-to-use WIN-95/98/ME/NT/2000/XP compatible control program with pull-down menu, 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 boosted by some test functions (insertion test, signature-byte check). All known data formats are supported. Automatic file format detection and conversion during load of file.

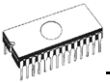
The rich-featured **auto-increment function** enables to assign individual serial numbers to each programmed device - or simply increments a serial number, or the function enables to read serial numbers or any programmed device identification signatures from a file. This function is not allowed for all type of programmed devices.

Advanced design, original brand components and careful manufacturing allow us to provide a **two-year warranty** on parts and labor for the multiprogramming modules and family&socket submodules (limited cycle warranty on ZIF socket – it is different for any type of ZIF).

JetProg multiprogramming system currently offers following multiprogramming solutions:

- EPROM/EEPROM/Flash EPROM multiprogramming
- MCS-51 series microcontrollers multiprogramming
- PICmicro microcontrollers multiprogramming

EPROM / EEPROM / Flash EPROM multiprogramming



Introduction

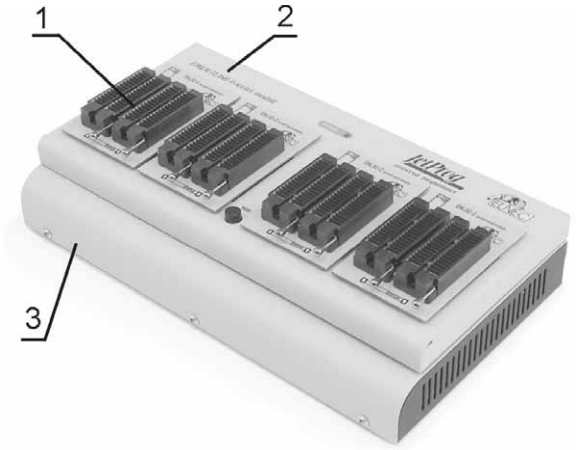
EPROM / EEPROM / Flash EPROM multiprogramming supports byte-wide EPROM, EEPROM and Flash EPROM up to 8Mbit size, up to 8 devices simultaneously. The replaceable family&socket submodule permits different package type support. There are available family&socket submodules for different packages.

EPROM / EEPROM / Flash EPROM multiprogramming has optimized EPROM, EEPROM and Flash EPROM pindriver that deliver programming performance without overshoot or ground bounce for all memory technologies. Pin drivers operate down to 1.8V so you'll be ready to program the full range of today's advanced low-voltage devices.

EPROM / EEPROM / Flash EPROM multiprogramming provides very competitive price but excellent hardware design for reliable programming.

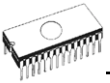
EPROM / EEPROM / Flash EPROM multiprogramming elements

① submodule for EPROM / EEPROM / Flash EPROM with two ZIF (**Z**ero **I**nsertion **F**orce)
② Common multiprogramming module no.1 (or EPROM/Flash 8-socket module)
③ JetProg, base unit



Problems related to the JetProg ⇔ multiprogramming module ⇔ family&socket submodule interconnection

If you have any problems with JetProg ⇔ multiprogramming module ⇔ family&socket submodule interconnection see section ***Common notes.***



Technical specification

- EPROM/EEPROM/Flash compatible pindriver (8x)
- pindrivers are independent, therefore defective chip haven't influence to another programmed chips
- perfect ground and necessary supply/programming voltage can be applied independently to each socket of module
- TTL pindriver meet EPROM/EEPROM/Flash requirements
- current limitation for each socket, overcurrent shutdown, power failure shutdown
- banana hole for ESD wrist straps
- insertion test

Accepted family&socket submodules

For list and short descriptions of accepted family&socket submodules see at ***Appendix.***

DEVICE SUPPORT

- EPROM: NMOS/CMOS 27xxx and 27Cxxx series, with 8 bit data width, full support for LV series
- EEPROM: NMOS/CMOS, 28xxx, 28Cxxx, 27EExxx series, with 8 bit data width
- Flash EPROM: 28Fxxx, 29Cxxx, 29Fxxx, 29BVxxx, 29LVxxx, 29Wxxx, 49Fxxx series, with 8 bit data width, full support for LV series

Check please the list of all supported devices for details.

Programming speed

Note:

- *given values are measured under all 8 devices together condition*
- *these times strongly depend on PC speed, LPT port type and operating system free resources. Therefore values of two different PC configuration are given for comparison*

Device	Operation	Time A	Time B
27C010	programming and verify	43 sec	28 sec
AT29C040A	programming and verify	55 sec	40 sec
AM29F040	programming and verify	98 sec	86 sec

Time A conditions: *Pentium MMX, 250 MHz, ECP/EPP, WIN98.*

Time B conditions: *Athlon, 750 MHz, ECP/EPP on PCI bus, WIN98.*

For other specification see on ***Common notes / Common technical specification***

MCS-51 series microcontrollers multiprogramming

Introduction

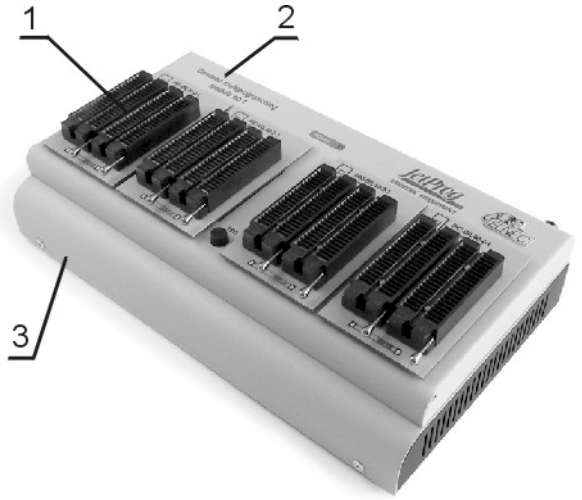
MCS-51 series microcontrollers multiprogramming supports MCS51 compatible microcontrollers of various manufacturers, based on both EPROM and Flash technology, up to 8 devices simultaneously. The replaceable family&socket submodule permits different package type support. There are available family&socket submodules for DIL40 and other packages.

MCS-51 series microcontrollers multiprogramming has optimized advanced pindriver that deliver programming performance without overshoot or ground bounce for all memory technologies. Pin drivers operate down to 1.8V so you'll be ready to program the full range of today's advanced low-voltage devices.

MCS-51 series microcontrollers multiprogramming provides very competitive price but excellent hardware design for reliable programming.

MCS-51 series microcontrollers multiprogramming elements

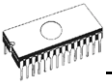
① submodule for MCS-51 series microcontrolllers with two ZIF (**Z**ero **I**nsertion **F**orce)
② Common multiprogramming module no.1
③ JetProg, base unit



Note: *please call for other family&socket submodules availability*

Problems related to the JetProg ⇔ multiprogramming module ⇔ family&socket submodule interconnection

If you have any problems with JetProg ⇔ multiprogramming module ⇔ family&socket submodule interconnection see section ***Common notes.***



Technical specification

- MCS-51series microcontroller compatible pindriver (8x)
- pindrivers are independent, therefore defective chip haven't influence to another programmed chips
- perfect ground and necessary supply/programming voltage can be applied independently to each socket of module
- TTL pindriver meet MCS-51series microcontroller requirements
- current limitation for each socket, overcurrent shutdown, power failure shutdown
- banana hole for ESD wrist straps
- insertion test

Accepted family&socket submodules

For list and short descriptions of accepted family&socket submodules see at ***Appendix.***

DEVICE SUPPORT

- EPROM based MCS51 chips: 87C5x series
- Flash based MCS51 chips: 89C5x series
- supported manufacturers: AMD, Atmel, Dallas, ICSI, Intel, ISSI, Philips, SST, Signetics, Winbond, ...

Check please the list of all supported devices for details.

Programming speed

Notes:

- *given values are measured under all 8 devices together condition*
- *this times strongly depend on PC speed, LPT port type and operating system free resources. Therefore values of two different PC configuration are given for comparison.*

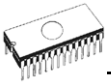
Device	Operation	Time A	Time B
Temic T89C51RD2-M	programming and verify	44 sec	42 sec
ICSI IS89LV52A	programming and verify	10 sec	9 sec

Time A conditions: *AMD Athlon 700MHz, 256MB RAM, ECP MB LPT, WinXP.*

Time B conditions: *Intel P4 2GHz, 256MB RAM, ECP MB LPT, WinXP.*

For other specification see on ***Common notes / Common technical specification.***

PICmicro microcontrollers multiprogramming



Introduction

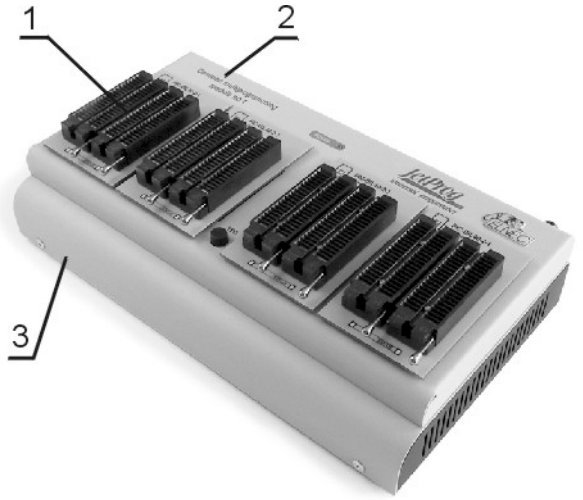
PICmicro microcontrollers multiprogramming supports Microchip PICmicro microcontrollers, based on both EPROM and Flash technology, up to 8 devices simultaneously. The replaceable family&socket submodule permits different package type support. There are available family&socket submodules for device in DIL package (up to 40 pins) and other packages.

PICmicro microcontrollers multiprogramming has optimized advanced pindriver that deliver programming performance without overshoot or ground bounce for all memory technologies. Pin drivers operate down to 1.8V so you'll be ready to program the full range of today's advanced low-voltage devices.

PICmicro microcontrollers multiprogramming provides very competitive price but excellent hardware design for reliable programming.

PICmicro microcontrollers multiprogramming elements

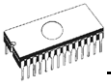
① submodule for PICmicro microcontrollers with two ZIF (**Z**ero **I**nsertion **F**orce)
② Common multiprogramming module no.1
③ JetProg, base unit



Note: *please call for other family&socket submodules availability*

Problems related to the JetProg ⇔ multiprogramming module ⇔ family&socket submodule interconnection

If you have any problems with JetProg ⇔ multiprogramming module ⇔ family&socket submodule interconnection see section ***Common notes.***



Technical specification

- PICmicro microcontroller compatible pindriver (8x)
- pindrivers are independent, therefore defective chip haven't influence to another programmed chips
- perfect ground and necessary supply/programming voltage can be applied independently to each socket of module
- TTL pindriver meet PICmicro microcontroller requirements
- current limitation for each socket, overcurrent shutdown, power failure shutdown
- banana hole for ESD wrist straps
- insertion test

Accepted family&socket submodules

For list and short descriptions of accepted family&socket submodules see at ***Appendix.***

DEVICE SUPPORT

- EPROM based Microchip PICmicro chips: PIC12Cxxx/ PIC16Cxxx/PIC18Cxxx series
- Flash based Microchip PICmicro chips: PIC12Fxxx/ PIC16Fxxx/PIC18Fxxx series

Check please the list of all supported devices for details.

Programming speed

Notes:

- *given values are measured under all 8 devices together condition*
- *this times strongly depend on PC speed, LPT port type and operating system free resources. Therefore values of two different PC configuration are given for comparison.*

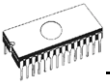
Device	Operation	Time A	Time B
PIC16C67	programming and verify	18 sec	15 sec
PIC16F877A	programming and verify	11 sec	8 sec
PIC18F452	programming and verify	17 sec	14 sec

Time A conditions: *Pentium MMX, 250 MHz, ECP/EPP, WIN98.*

Time B conditions: *Athlon, 750 MHz, ECP/EPP on PCI bus, WIN98*

For other specification see on ***Common notes / Common technical specification***

Software



The module package contains a CD with the Windows control program, useful utilities and additional information. This module is not supported by DOS control program. The permission to freely copy the content of the CD is granted in order to demonstrate how ELNEC's programmers work. Differences and modifications to this manual (if they exist) may be found in **www.elnec.com**.

Installing of JetProg multiprogramming system software

When you buy multiprogramming module together with JetProg programmer, installing programmer software by instruction in manual for JetProg. It is possible, that version of control program delivered with JetProg and with module is not same. Please, install the latter version of control program.

If you use JetProg programmer before, check used version of control program. If you have older version as delivered with module, install latter version too.

New versions of JetProg multiprogramming system software

In order to exploit all the capabilities of module (programmer) we recommend using the latest version of PG4UW (see Manual for programmer Appendix B - Keep-Current Service). You may download the latest version of programmer software (file PG4UWARC.EXE) from our Internet site **www.elnec.com**, part download. You may also obtain a CD with this file by snail-mail (a mailing charge will apply).

Upgrading the programmer software

Copy PG4UWARC.EXE to a temporary directory then launch it. You may delete all files from the temporary folder after the installation process is complete.

Using the programmer software

The control program delivered by ELNEC, included on the CD in your package, is granted to be free from any viruses at the moment of delivery. To increase their safety our programs include a special algorithm for detecting possible virus infections.

Run the control program

in Windows environment: double click to icon PG4UW.

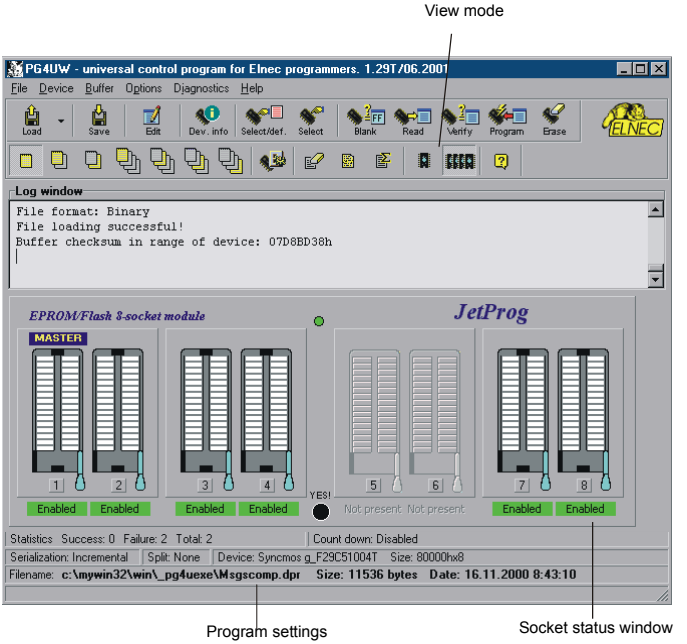
After start, control program PG4UW automatically scans all existing ports and searches for the connected any ELNEC's programmer. Program PG4UW is common for all the ELNEC's programmers, hence program try to find all supported (JetProg, LabProg+, SmartProg, PREPROM-02aLV, T51prog, 51&AVRprog, PIKprog+, PIKprog and SEEprog) programmers.

Notes: *When the PG4UW program is started, program is checked for its integrity. Than the program display a standard user menu and waits for your instructions.*

If the control program cannot communicate with the programmer, continue by Manual for programmer part The programmer software / Run the control program.

Description of the user screen

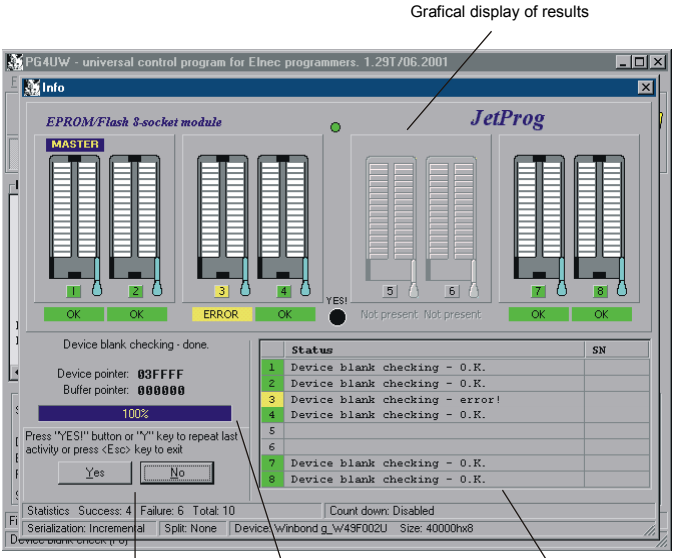
Windows program PG4UW



New items for multiprogramming mode

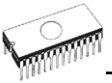
View mode	Change between graphical or text displaying of sockets status
Program settings	Display base program settings
Socket status window	Graphical displaying of sockets status

Info window



Graphical display of results	Display results of actions with devices in active sockets in graphical form.
Repeat last activity	Question for repeat last actions with devices.
Progress indication window	Display progress of actions with devices in numeric and graphical form.
Text display of results	Display results of actions with devices in active sockets in text form. Display serial number for device too.

Common notes



Common technical specification

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
  - automatic ID-based selection of EPROM/Flash EPROM
  - blank check, read, verify
  - program
  - erase
  - checksum
- **security:**
  - insertion test, reverse insertion 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

Supported file formats

- binary
- HEX: Intel, Intel EXT, Motorola S, MOS, Exormax, Tektronix, ASCII-SPACE-HEX

GENERAL

Recommended PC system requirements

- Processor: Pentium 100 MHz, 32 MB RAM
- Hard disk with 10 MB free space
- Operating system: Windows 95
- Free parallel (printer) port on PCI bus, IEEE 1284 compatible (ECP/EPP)

Note: *For convenience, we suggest that you use a supplementary multi I/O card to provide an additional printer port (LPT2 for example), in order to avoid sharing the same LPT port between printer and programmer.*

Operation

- power supply: from JetProg programmer (use switching power supply adapter 100-240VAC/15VDC/1A)
- dimensions 275x135x20 mm (10.8"x5.3"x0.78") without submodules. The connectors haven't influence to programmer & module height.
- weight (without external adapter) 750g
- temperature 5°..40°C
- humidity 20%..80%, non condensing

Base configuration package for multiprogramming module includes

- Common multiprogramming module no.1 (or EPROM/Flash 8-socket module)
- ZIF family&socket submodules - according to order
- for some countries switching power supply adapter 100-240VAC/15VDC/1A
- user manual
- registration card
- software
- transport case

Additional services

- Keep Current.
- AlgOR
- free technical support (phone/fax/e-mail).
- free lifetime software update via Web site.

JetProg ⇔ multiprogramming module ⇔ family&socket submodule interconnection

- switch off JetProg programmer
- extract DIL48 socket module
- insert multiprogramming module to JetProg programmer
- very carefully insert same family&socket submodules to appropriate multiprogramming module connectors, to avoid bad insertion of them. You needn't insert family&socket submodule to all positions.
- switch on JetProg programmer, use. power adaptor delivered with multiprogramming module. This isn't necessary, if your JetProg programmer was delivered with switching power supply adapter 100-240VAC/15VDC/1A
- run control program or by command **Options / Find programmer**, program find programmer automatically and set him to multiprogramming mode

Insert / change socket submodule

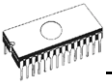
- switch off JetProg programmer
- remove family&socket submodule / insert other (all used family&socket submodules must be the same type). Very carefully insert family&socket submodules to appropriate multiprogramming module connectors, to avoid bad insertion of them.
- run control program or by **command Options / Find programmer,** program find programmer automatically and set him to multiprogramming mode

Connecting ESD wrist strap

On the rear side of multiprogramming module is banana hole for connecting ESD wrist strap. Reduction resistor protects this connection. ESD wrist strap you can connect to banana hole directly.

Note: *ESD wrist strap is not standard delivery*

Appendix



Accepted family&socket submodule

EPROM / EEPROM / Flash EPROM multiprogramming

EPROM/Flash-DIL32-2 submodule

- fits for EPROM/Flash in DIL28 and DIL32 packages
- 2x ZIF DIL32 sockets accepts both 300/600 mil devices
- operation life of ZIF sockets - 25.000 actuations
- ord. no.: 70-0105

EPROM/Flash PLCC32-2-DIL32 submodule

- fits for PLCC32 EPROM/Flash, features 32 pins in DIL (27C010 and above, 29C512 and above)
- 2x ZIF PLCC32 sockets
- operation life of ZIF sockets - 10.000 actuations
- ord. no.: 70-0106

EPROM/Flash PLCC32-2-DIL28 submodule

- fits for PLCC32 EPROM/Flash, features 28 pins in DIL (e.g. 27C256, 27C512, 29C256, etc.)
- 2x ZIF PLCC32 sockets
- operation life of ZIF sockets - 10.000 actuations
- ord. no.: 70-0107

MCS-51 series microcontrollers multiprogramming

MCS51-DIL40-2-1 submodule

- fits for standard-pinout MCS-51 in DIL40 package
- 2x ZIF DIL40 sockets
- operation life of ZIF sockets - 25.000 actuations
- ord. no.: 70-0148

PICmicro microcontrollers multiprogramming

PIC-DIL40-2-1 socket submodule

- fits for PICmicro controllers PIC12xxx, PIC16xxx and PIC18xxx up to DIL40 package
- 2x ZIF DIL40 sockets
- operation life of ZIF sockets - 25.000 actuations
- ord. no.: 70-0149