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User's Manual for

844USB





844USB programmer is driven by an **easy-to-use** 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), and some **special functions** (autoincrement).

All known data formats are supported. Automatic file format detection and conversion during load of file.

The rich-featured **autoincrement 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.

The software also provides a many informations about programmed device. As a special, the drawings of all available packages are provided. The software provides also explanation of chip labeling (the meaning of prefixes and suffixes at the chips) for each supported chip.

Various **socket converters** are available to handle device in PLCC, SOIC, SSOP, TSOP, TSSOP, TQFP, QFN (MLF) and other packages.

Advanced design, including protection circuits, original brand components and careful manufacturing allows us to provide a **three-year warranty** on parts and labor for the 844USB (limited 25,000-cycle warranty on ZIF socket).

844USB elements

- ① 40 pin ZIF socket
- ② LED power/sleep
- ③ LED, which indicate work result
- ④ YES! button



- ⑤ USB connector for PC ↔ 844USB communication cable
- ⑥ Power supply connector



- ⑦ Connector for ISP



Power supply connector





Note: Due to low power consumption of 844USB in inactive state, it doesn't require power switch. When the power LED indicator glows with a low intensity the 844USB is in inactive mode.

Connecting 844USB to PC

For 844USB order of connecting USB cable and power supply to programmer is irrelevant.

Problems related to the 844USB ↔ PC interconnection, and their removing

If you have any problems with 844USB ↔ PC interconnection, see section **Common notes** please.

Manipulation with the programmed device

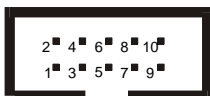
After selection of desired device for your work, you can insert into the open ZIF socket (the lever is up) and close socket (the lever is down). The correct orientation of the programmed device in ZIF socket is shown on the picture near ZIF socket on the programmer's cover. The programmed device is necessary to insert into the socket also to remove from the socket when LED BUSY light off.

Warning: 844USB programmer hasn't protection devices, which protect the content of programmed device against critical situations, for example power failures and PC failure (interrupted cable...). Moreover, a device is usually destroyed in the programming mode due to forced interruption of the control program run (Reset or switching the computer off) due to removing the connecting cable, or unplugging the programmed device from the ZIF socket. Incorrectly placed device in the ZIF socket can cause its damage or destruction.

In-system serial programming by 844USB

For general definition, recommendation and direction about ISP see section **Common notes / ISP** please.

Description of 844USB ISP connector

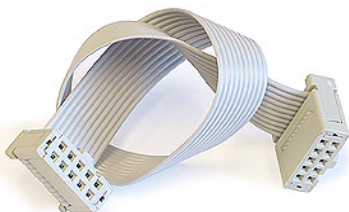


Front view at ISP connector of programmer.

Specification of ISP connector pins depends on the device, which you want to program. You can find it in the control SW for programmer (PG4UW), menu **Device / Device Info (Ctrl+F1)**. Be aware, the ISP programming way of respective device must be selected. It is indicated by (ISP) suffix after name of selected device.

These specifications correspond with application notes published of device manufacturers. Used application notes you may find on www.bkprecision.com, section application notes.

Note: Pin no. 1 is signed by triangle scratch on ISP cable connectors.

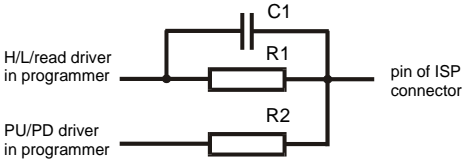


844USB ISP cable

Warnings:

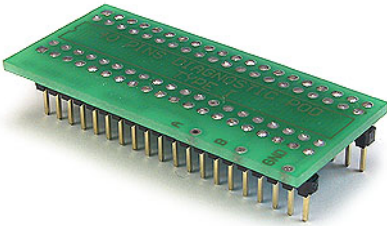
- **When you use 844USB as ISP programmer, don't insert device to ZIF socket.**
- **When you program devices in ZIF socket, don't insert ISP cable to ISP connector.**
- Use only **attached ISP cable**. When you use other ISP cable (other material, length...), programming may occur unreliable.
- **844USB can supply programmed device only, but target system cannot supply 844USB.**
- 844USB apply programming voltage to target device and checks his value (target system can modify programming voltage). If the programming voltage is different as expected, no action with target device will be executed.

Note: H/L/read 844USB driver



Selftest and calibration

If you feel that your programmer does not react according to your expectation, please run the programmer selftest using Diagnostic POD, enclosed with the standard delivery package. For optimal results with programmer we recommend you undertake every 6 months, an extended test and to check the calibration. See instructions for selftest in the **Diagnostics** menu of PG4UW.



Technical specification

HARDWARE

Programmer

- two D/A converters for VCCP and VPP, controllable rise and fall time
- VCCP range 0..7V/350mA
- VPP range 0..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

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- pindriver: 40 TTL pindrivers, universal GND/VCC/VPP pindriver
 - FPGA based TTL driver provides H, L, CLK, pull-up, pull-down on all pindriver pins, level H selectable from 1.8 V up to 5V
 - in-circuit serial programming (ISP) capability included
 - 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) and 1x VPP voltage (range 2V..25V/50mA)
- programmed chip voltage (VCCP) with both source/sink capability and voltage sense

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, 45Dxxx, 59Cxxx, 25Fxxx, 25Pxxx, 85xxx, 93Cxxx, 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, LPC series from Atmel, Atmel W&M, Intel, Philips, SST, Winbond (*1*2)
 - microcontrollers Atmel AVR: ATtiny, AT90Sxxx, ATmega series (*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
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Programmer, through ISP connector

- Serial E(E)PROM: IIC series
- Microcontrollers Atmel: AT89Sxxx, AT90Sxxxx, ATtiny, ATmega series
- 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

Notes:

- (*1) - suitable adapters are available for non-DIL packages
- (*2) - There exist only few adapters for devices with more than 40 pins. Therefore think please about more powerful programmer (865, 866, 864), if you need to program devices with more than 40 pins
- For all supported devices see actual **Device list** on www.bkprecision.com.

I.C. Tester

- Static RAM: 6116 .. 624000

Programming speed

Device	Operation	Mode	Time
27C010	programming and verify	in ZIF	29 sec
AT29C040A	programming and verify	in ZIF	41 sec
AM29F040	programming and verify	in ZIF	95 sec
PIC16C67	programming and verify	in ZIF	10 sec
PIC18F452	programming and verify	in ZIF	7 sec
AT89C52	programming and verify	in ZIF	17 sec
PIC16F876A	programming and verify	ISP	5 sec
PIC12C508	programming and verify	ISP	3 sec

Conditions: P4, 2,4GHz, USB 2.0, 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 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

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- 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
- JEDEC (ver. 3.0.A), for example from ABEL, CUPL, PALASM, TANGO PLD, OrCAD PLD, PLD Designer ISDATA etc.

PC system requirements

See section *Introduction/ PC requirements*

GENERAL

- operating voltage 15..20V DC, max. 500mA
- power consumption max. 6W active, 1.4W inactive
- dimensions 160x97x35 mm (6.3x3.8x1.4 inch)
- weight (without external power adapter) ca. 500g (17.65 oz)
- temperature 5°C ÷ 40°C (41°F ÷ 104°F)
- humidity 20%..80%, non condensing

Package included

- 844USB programmer
 - connection cable PC-programmer
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- ISP cable
 - diagnostic POD for selftest
 - anti-dust cover for ZIF socket
 - wall plug adapter 15V DC/500mA, unstabilized
 - user manual
 - software
 - registration card
 - transport case

Additional services

- Keep Current
- AlgOR
- free technical support (hot line)
- free life-time software update via Internet