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## *Common notes*

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## Software

PG4U/PG4UW is common control program for these B+K PRECISION programmers. Thus, during work with him its possible to find some items, those refer not to current selected programmer.

There is possible to attach to selected file "device associated file" too. This file may be automatically loaded into the buffer, if item **Device options/Associated file/Automatic load** is set to Yes. File can be associated manually or accepting last loaded file into the buffer. For this purpose is used item **Device options/Associated file/File name**.

There exist feature of control program, named **Automatic YES!**. In concrete, it mean there isn't necessary to press "YES!" labeled button to repeat last activity, because auto-sensing feature of programmer detect insertion of new chip into ZIF socket and start last executed automatically. This feature can be set in menu Options. If you use package converter with come pins coupled by capacitor, enter list of these pins. **Automatic YES!** feature is available for 865, 864, 844A programmer only.

Some special devices (e.g. Philips Coolrunner family) require external DAT files, that isn't present in standard PG4U/PG4UW SW delivery on CD. If you need to program these devices, look at [www.bkprecision.com](http://www.bkprecision.com), section Download.

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## **Hardware**

Due a large variety of parallel port types, a case may occur when the programmer cannot "get concerted" with the PC. This problem may be shown as none communication between the PC and the programmer, or by unreliable communication. If this behavior occur, try to connect your programmer to some other PCs or other parallel ports near you.

If you find none solution, please document the situation, i.e., provide us an accurate description of your PC configuration, including some other circumstances bearing on the problem in question, and advise the manufacturer of your problem. Don't forget please enter of PC type, manufacturer, speed, operation system, resident programs; your parallel port I/O manufacturer and type. Use please **Device problem report** form for this purpose (see **Appendix A**).



## ISP (In-System Programming)

### Definition

**In-system programming** allows programming and reprogramming of device positioned inside the end system. Using a simple interface, the ISP programmer communicates serially with the device, reprogramming nonvolatile memories on the chip. In-system programming eliminates the physical removal of chips from the system. This will save time, and money, both during development in the lab, and when updating the software or parameters in the field.

**Target device** is the device (Microcontroller, PLD, etc...), which is to be in-system programmed.

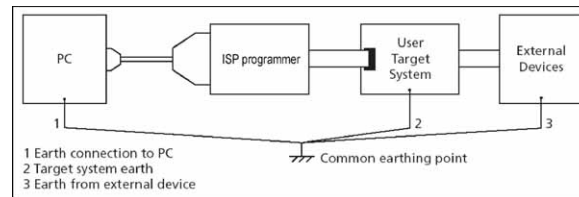
**Target system** is the physical Printed Circuit Board (PCB) which contains the device to be in-system programmed.

**ISP programmer** is programmer, which has in-system programming capability (for example 844A, 849...).

### General rules for in-system programming

We recommended respect following rules to avoid damage PC, ISP programmer, target device or target system:

- Ensure common earth point for target system, ISP programmer and PC.
- For laptop or other PC which is not connected to common earth point: make hard - wired connection from laptop to common earth point (for example use LPT or COM port D – connector).
- Any devices connected to target system must be connected to common earth point too.



### Direction of connect B+K PRECISION ISP programmer to target system:

During in-system programming you connect two electrical devices – ISP programmer and target system. Unqualified connection can damage these devices.

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**Note:** *When you don't keep below directions and you damage programmer during in-system programming, it is damage of programmer by unqualified manipulation and is out of warranty.*

1. Turn off both devices – ISP programmer and target device.
2. Assign same GND potential for all devices, e.g. connect GND of all devices by wire.
3. Insert one connector of ISP cable to ISP programmer, turn on programmer and control program.
4. In control program select target device and operation options.
5. Start action on target device (read, program).
6. After direction of control program, connect other ISP cable connector to target system and turn on it.
7. After direction of control program, disconnect other ISP cable connector from target system and turn off it.
8. If you need another action on target device, you continue with step 5.

**Note:**

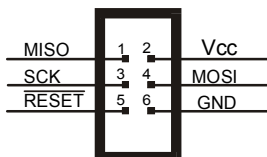
*If target system use signals needed for ISP programming, it's necessary separate then from target device by appropriate resistors.*

**The recommended ISP interface connector layout in target system**

For in-system programmable devices manufacturers publish applications notes. Allocations notes, which B+K PRECISION use in ISP programmers are published in [www.bkprecision.com](http://www.bkprecision.com), section download.

**Example of application note**

This application note is used in 849. This interface corresponds with Atmel application note AVR910: In-System Programming. This application note describes the recommended ISP interface connector layout in target system (top view).





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**Description of required pins for in-system programming by 849.**

Pin	Name	Comment
SCK	Serial Clock	Programming clock, generated by the In-System programmer (master).
MOSI	Master Out – Slave In	Communication line from In-System programmer (master) to target MCU being programmed (slave).
MISO	Master In – Slave Out	Communication line from target MCU (slave) to In-System programmer (master).
GND	Common Ground	The two systems must share the same common ground.
RESET	Target MCU Reset	To enable In-System programming, the target MCU Reset must be kept active. To simplify this, the In-System programmer should control the target MCU Reset
Vcc	Target Power	To allow simple programming of targets operating at any voltage, the In-System programmer can draw power from the target. Alternatively, the target can have power supplied through the In-System programming connector for the duration of the programming cycle

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## **Other**

Attention to multitasking OS's (WIN 3.11/95/98/Me/NT/2000/XP). There is needful for regular running of control program for these B+K PRECISION programmer that printer port, on which is programmer connected, must be reserved for this programmer only. Otherwise, any other program must not simultaneously to use (or any way to modify) this printer port.

PG4U/PG4UW SW can handle all modes of LPT port (full IEEE 1284 support), thus you don't need to configure LPT port for connection of B+K PRECISION programmers.

WIN98 have bug (or wittingly) in the MSDOS.SYS file. Initial setting of variable DoubleBuffer is 1, therefore DOS applications run slowly. Write please DoubleBuffer=0.

In case of WIN software, please don't move any window during BUSY LED is on - watching circuit can be activate to switch the programmer in safe status as in case communication PC-programmer error.