

- Portable
- Compact
- One button operation
- USB loader
- Field or production use

# AVR<sup>®</sup>

## AVR Keyfob Field USB Programmer

A portable ISP in a Keyfob package

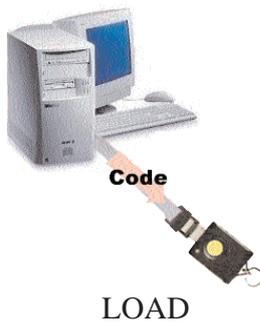


### The Keyfob

The ultimate programming tool for AVR microcontrollers, in the field or on the production line - so easy a child can use it! The smallest stand-alone programmer for AVR available, just load it once and then program target devices again and again and again.

### One Keyfob Starter Kit = Many Keyfobs

You require just one starter kit for your PC and you can load as many keyfobs as you need. Just connect the starter kit to your printer port and run the master software. Select your program and EEPROM data files, device type and Fuse settings and now you can load the keyfobs with your program or test code in seconds. As the Keyfob is battery powered during load, you don't need any power supplies or cabling, just plug a Keyfob into the simple adapter supplied. Once a Keyfob is loaded, it is completely portable and can be used where you need it, not where your PC is located.



### Field Updates

Think how often you need a simple upgrade to a vending machine, slot machine or other equipment such as lifts, security controls or medical equipment - simple, except it is hundreds of miles away.

The rugged design and simple operation of this unique programmer means that you can "let the Keyfob do the walking" by sending the Keyfob rather than an expensive engineer. The Keyfob includes a 12V battery so your target system does not have to be powered for occasional programming although you will need power from the target for multiple programming to save battery life.

For continuous use or for unpowered targets or low voltage targets, we recommend the Hand Held programmer. This uses a 9V PP3 battery with more life and has the facility to connect a 9V power supply. It is also available in 128 KB version for ATmega128 devices. The order code is HH0020 for 32KB version and HH0020M for 128KB version.

**Kanda.com**

### Device Support: 3.3V minimum

- ATtiny12/13/15/22
- ATtiny2313
- ATtiny24/25/26
- ATtiny261/461/861
- ATtiny44/84
- ATtiny45/85
- ATmega48
- ATmega8
- ATmega88
- ATmega8515
- ATmega8535
- ATmega16/161/162
- ATmega163/168/169
- ATmega323/644
- ATmega324/325
- ATmega3250/329
- ATmega3290
- ATmega32
- ATmega323

- AT90S2313/2323
- AT90S2343/2333
- AT90S4414/8515
- AT90S4433
- AT90S8535

### 64KB only

- ATmega64/645/6490
- ATmega1281/0
- ATmega2561/2560

All **P**, **V** and **L** variants are supported

For full 256KB see Hand-held Programmer - **HH0020U**

## Starter Kit Contents:

- ◆ One Keyfob programmer with battery included.
- ◆ One USB port Keyfob loader.
- ◆ An adapter for Keyfob loading.
- ◆ One spare battery.
- ◆ PC software for Keyfob loading

Compatible with Windows 200/XP/Vista

### Device Support:

- ATtiny12/13/15/22
- ATtiny2313
- ATtiny24/25/26
- ATtiny261/461/861
- ATtiny44/84
- ATtiny45/85
  
- ATmega48
- ATmega8
- ATmega88
- ATmega8515
- ATmega8535
- ATmega16/161/162
- ATmega163/168/169
- ATmega323/644
- ATmega324/325
- ATmega3250/329
- ATmega3290
- ATmega32
- ATmega323
  
- AT90S2313/2323
- AT90S2343/2333
- AT90S4414/8515
- AT90S4433
- AT90S8535

64KB only

- ATmega64/645/6490
- ATmega1281/0
- ATmega2561/2560

All **P**, **V** and **L** variants are supported

### Production line

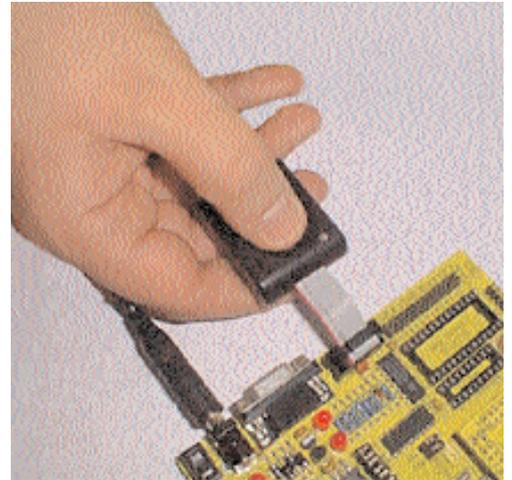
Wouldn't it be nice to have a simple to use, completely portable yet low cost programmer, which can be loaded with different program code or test vectors, available where required on the production floor? Not possible? It is now, with the Keyfob programmer - one button operation, auto sensing of target, auto verification and error indicator - that's really simple to use. Fits on a keyring and weighs less than one ounce - that's portable! Less than \$100 - that's low cost!

### Device Support

You need flexibility when it comes to choosing a device so we have made sure that the Keyfob supports as many devices as possible. All AVR devices are supported except the Tiny range, although there is a maximum code size limitation of 64 Kbytes. Of course, just the programming code is not enough, so the Keyfob automatically loads and verifies the data EEPROM and device Fuses (on devices which support Serial Fuse Programming). Last but not least, the lockbits are programmed as part of the sequence.

### Programmer details

Small, light and completely portable, the Keyfob is the most flexible programming tool around. It measures just 4.5 by 3 by 1.3 cm - which is 1.8 by 1.3 by 0.5 inches for you non-metric types! It weighs just 27g (one ounce) so it is great value and easy to post or carry on your keyring. To give you really long life, the Keyfob can be loaded with new code thousands of times as it uses serial E2 technology. The 12V alkaline battery fitted in the Keyfob, mostly used for loading the Keyfob from the PC, can power more than 50 reloads. This battery is a standard car remote control type so it is easy to source and we even include a spare in the starter kit.



### Order Numbers

To help you get just what you need for your application, we can offer you a range of options.

Product	Order Number	Parallel Version
USB Keyfob Starter kit	KF0010U	KF0010M
USB Individual Keyfob Only	KF0020U	KF0020M
USB Multipack (pack of 5 keyfobs)	KF0030U	KF0030M
USB Field Service Pack (Starter kit plus 5 keyfobs)	KF0040U	KF0040M

### YOU MUST HAVE A KEYFOB STARTER KIT TO LOAD THE INDIVIDUAL KEYFOBS

For full 256KB flash support and EEPROM, see our Hand-held programmer - **HH0010U**. This programmer has additional benefits including 9V PP3 battery, power supply socket, better low voltage support (down to 1.8V) and increased programming speeds.

# Kanda.com

**Embedded Results Ltd**  
**P.O. Box 200**  
**Aberystwyth,**  
**SY23 2WD UK**

**Tel: +44 (0)1974 261 273**  
**Fax: +44 (0)1974 261 273**  
**Email: sales@kanda.com**  
**Web: www.kanda.com**

- Portable
- Compact
- One button operation
- Comprehensive device support
- Field or production use

## Battery

### Battery Specification

SIZE: 23A - 26mm x 10mm Diameter (1 inch x 0.4 inches)  
 TYPE: ALKALINE  
 VOLTAGE: 12V  
 CAPACITY: 38mAH (current drawn not specified).  
 AVAILABILITY: Auto warehouses/motor factors (standard car keyfob battery)

### Current Consumption

#### 1) Loading Keyfob from PC

KEYFOB during firmware download : 12mA  
 KEYFOB in idle mode (connected to PC) : 6mA  
 KEYFOB during EEPROM programming : 15mA

#### 2) Target Programming

Target Vcc greater than 4V : 280uA  
 Target Vcc 4V or less TARGET Dependent

One battery should be able to power 50 Keyfob loads from PC. If target board voltage is greater than 4V, 100 hours of device programming should be possible.

## Connector

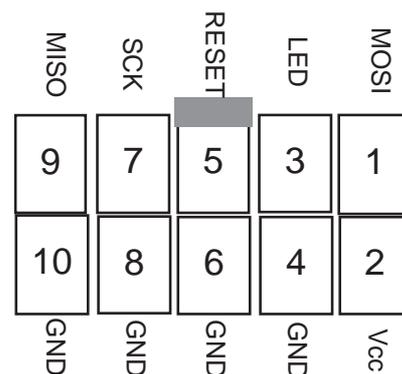
ALL ground pins must be connected as different lines are needed by the keyfob power supply circuit.

This behavior is different from standard ISP where only one line must be connected.

LED is an indicator line and can be omitted if not required.

Do NOT have pullup resistors of more than 1K on Reset or programming lines.

If you require an adapter to a 6-way connector, connect all ground pins to a single pin and omit LED, which is an indicator line.



# Kanda.com

Embedded Results Ltd  
 P.O. Box 200  
 Aberystwyth,  
 SY23 2WD UK

Tel: +44 (0) 1974 261 273  
 Fax: +44 (0) 1974 261 273  
 Email: sales@kanda.com  
 Web: www.kanda.com

### Device Support: 3.3V minimum

- ATtiny12/13/15/22
- ATtiny2313
- ATtiny24/25/26
- ATtiny261/461/861
- ATtiny44/84
- ATtiny45/85
- ATmega48
- ATmega8
- ATmega88
- ATmega8515
- ATmega8535
- ATmega16/161/162
- ATmega163/168/169
- ATmega323/644
- ATmega324/325
- ATmega3250/329
- ATmega3290
- ATmega32
- ATmega323
- AT90S2313/2323
- AT90S2343/2333
- AT90S4414/8515
- AT90S4433
- AT90S8535

### 64KB only

- ATmega64/645/6490
- ATmega1281/0
- ATmega2561/2560

All P, V and L variants are supported