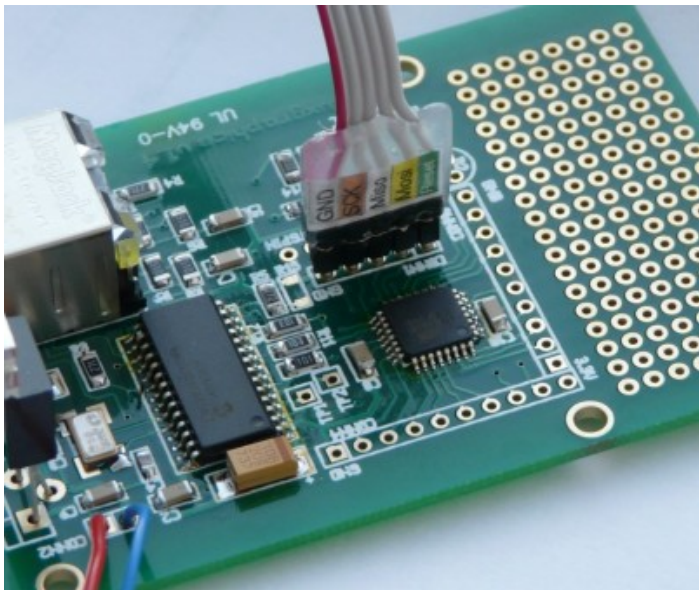# The Tuxgraphics ISP header

Abstract:

The tuxgraphics programmer connector is a small standard connector that does not take more space than needed. It does not have unnecessary pins. It is a durable and easy to use plug. It is ideal for a temporary connection. The pin order is the same as on the AVR chips. Connections between microcontroller and programmer socket can be routed straight without cross-over wires.

We find that this connector has really many advantages.

_____ _____ _____

The tuxgraphics connector

The tuxgraphics connector is a 5 pin header with one row of pins in standard 2.54mm (100mil) spacing. Because it is a male type of plug its contacts can not become weak or loose even after many years of use.
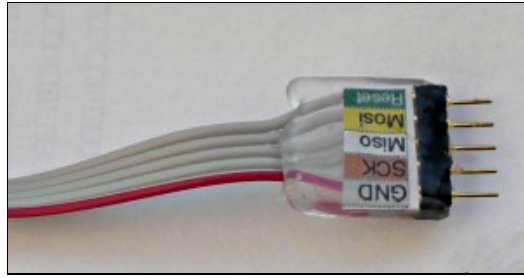
The pin order is: GND-SCK-Miso-Mosi-Reset. Most AVR microcontrollers have the exact same pin order. Cross-over connections are minimized.

AVR microcontrollers can even be used in a temporary breadboard setup as long as you use the internal oscillator only. The tuxgraphics connector fits into a breadboard without causing a short circuit on the pins. A nice setup for a small test circuit.
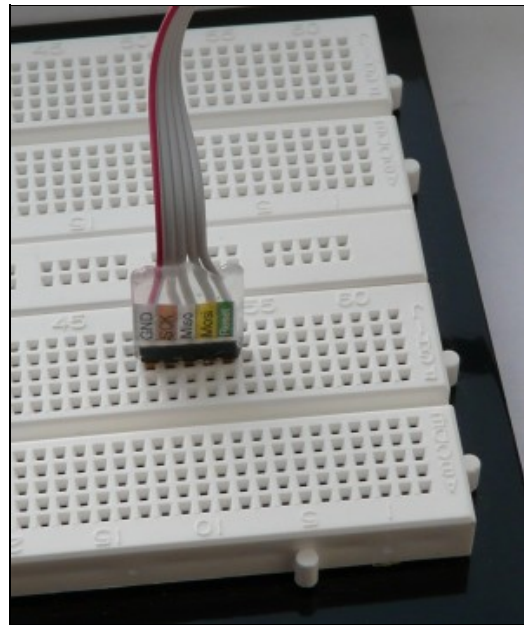
The socket for our connector is a standard SIL-socket. They are usually easy to get and if the electronics shop at corner does not have them take just a normal IC-socket and cut out a row of 5 pins.

Using the tuxgraphics programmer with other board types

The tuxgraphics programmers can handle a wide range of target board voltages and they work with any type of AVR microcontroller. They are not limited to certain chips.

The tuxgraphics programmer is really easy to use. It has even a LED to confirm that the cable is connected correctly.

You can always use the tuxgraphics programmers not only with tuxgraphics boards but also with any other target board.

An adapter can be used in case the target board uses a different type of connector. Common connectors are the 6-pin and 10-pin headers. The connections for such adapters are then as follows. The VTG pin does not need to be connected to anything in this case.
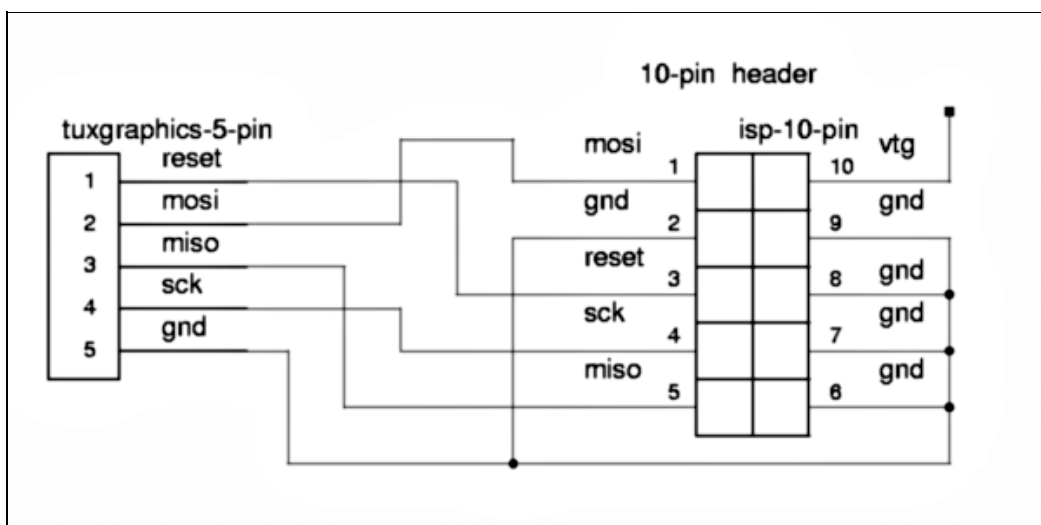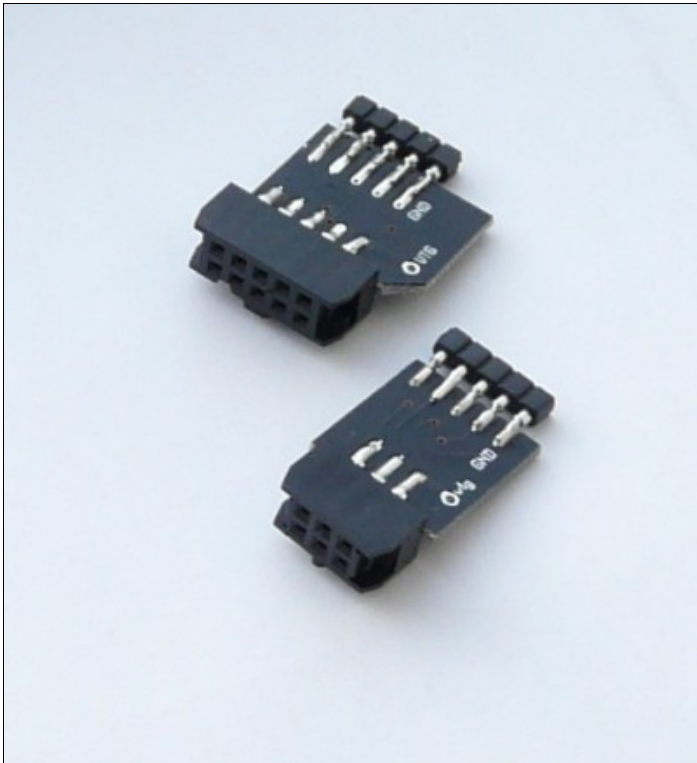
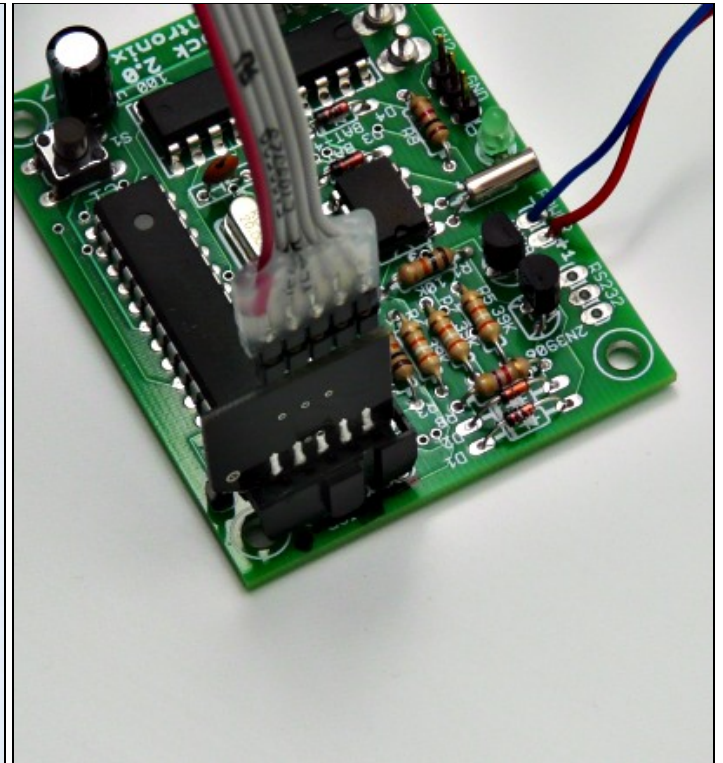Connection diagram for a tuxgraphics header to 10-pin header adapter.
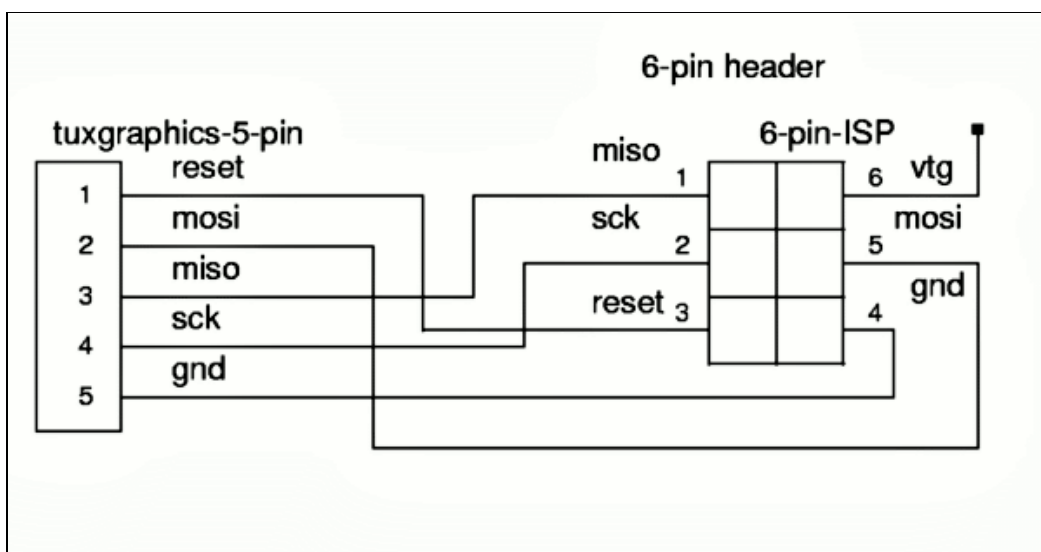
Connection diagram for a tuxgraphics header to 6-pin header adapter.

You can either build your own adapter or you can buy adapters in our shop:

Ready made adapters (use a tuxgraphics programmer with any other vendors board)

A 10-pin adapter in use.

Using other programmers with tuxgraphics boards

When you want to use the programmer hardware from a different vendor with our boards then you will need to check the following.

1. Is the target board voltage compatible with the programmer? Boards running on 5V will usually be OK for any programmer. Boards running on 3.3V or less do require a programmer that can work with such voltage levels.
2. Does the programmer require VTG to be connected?

You can again build your own adapters according to the same wiring diagram as shown above or you can buy an adapter.
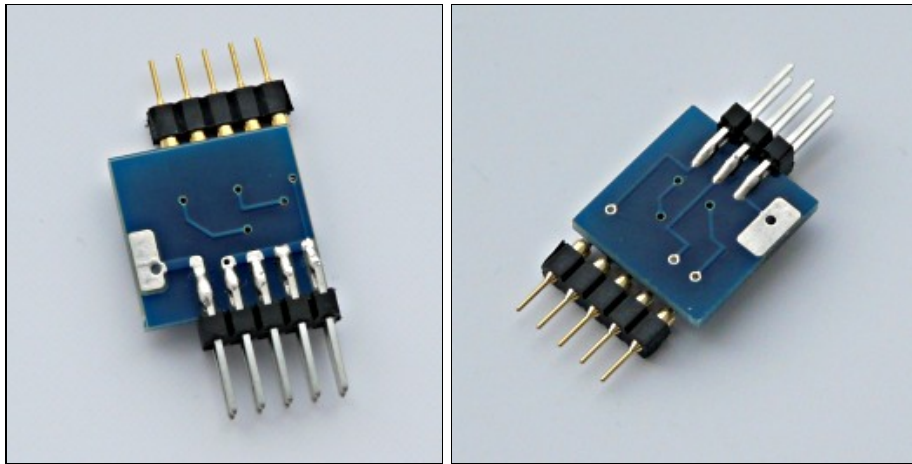
Many other vendor's programmers are not self-powered over USB. They use the connection to the target board as a power supply for the programmer internal logic. In this case the VTG pin is used to provided power to the programmer. In other words you need to connect VTG to the Vcc line of the target board. The "alien programmer to tuxgraphics socket" adapter has small grip area for use with mini alligator clips. This way you can supply target Vcc voltage to the programmer.
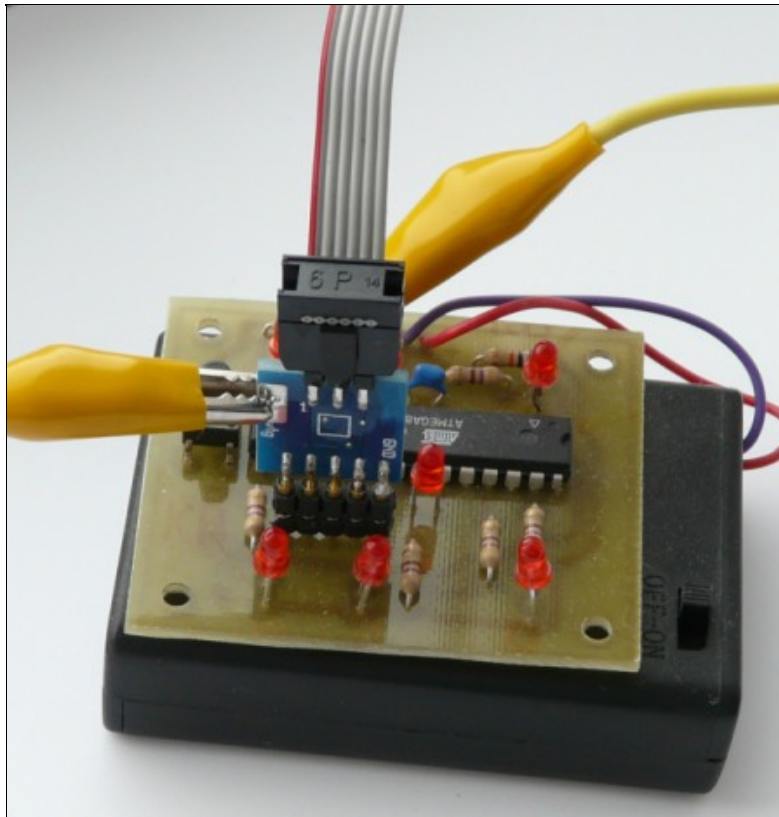
The big connector on top is the 6-pin header of a programmer from a different vendor. The circuit shown is the tuxgraphics electronic dice board.

References/Download

- Our online shop: shop.tuxgraphics.org

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