



## Arduino Compatible PTH Kit

### Kit Information & Instructions



The Arduino Compatible Kit gives you all the components you need to build your very own development platform. When you're done with this kit, you'll not only have a fully-functioning microcontroller that can be used with Arduino code and software, but you'll also have a greater understand of how your development platform works. This kit is built with the beginner in mind and features only through-hole soldering.

#### Kit includes:

- 1x ATmega328
- 1x 28-pin socket
- 2x 6-pin female headers
- 2x 8-pin female headers
- 1x 6-pin right-angle male header
- 1x momentary push button
- 1x 5mm green LED
- 1x 5mm red LED
- 2x 330 $\Omega$  resistors
- 1x 10k $\Omega$  resistor
- 1x 16MHz crystal
- 2x 22pF ceramic capacitors
- 5x 0.1uF ceramic capacitors
- 2x 100uF electrolytic capacitors
- 1x 1N4001 diode
- 1x MCP1700 3.3V regulator
- 1x LM7805 5V regulator
- 1x PTC
- 1x barrel jack connector
- 1x Arduino Compatible PTH Kit PCB

## ! EACH STEP HAS TWO PARTS

↑ START BY PLACING THE COMPONENT THROUGH THE **TOP SIDE OF THE BOARD**.

↓ TURN THE BOARD OVER TO SOLDER ON THE **BOTTOM SIDE OF THE BOARD**.



### 1 Right-Angle 6-pin Male Header

**Right-Angle 6-pin Male Header** : Insert the shorter, bent pins into the top side of the board. Make sure that the longer pins are extending towards the edge of the board. Turn the board over and solder all six pins.



### 2 330 $\Omega$ Resistors x 2

**330 $\Omega$  Resistors** : The 330 $\Omega$  resistors have an Orange-Orange-Brown-Gold resistor code. Bend the resistor legs, so they form a "U" shape, and insert them into the top side of the PCB. On the bottom side of the board bend the legs to secure the part, and solder each leg into place. Once soldered, clip off the excess of the legs.

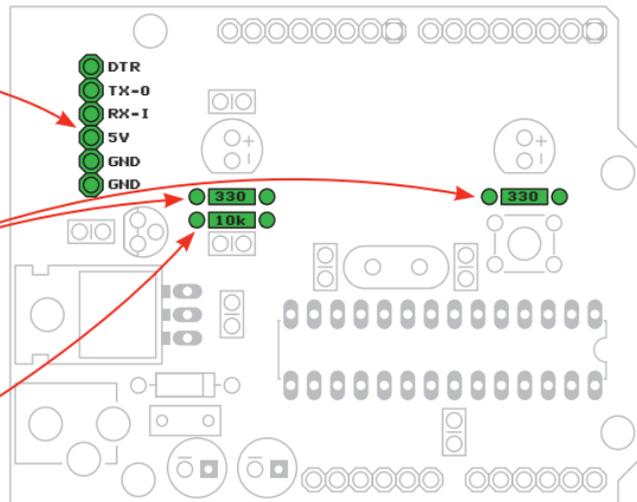


### 3 10k $\Omega$ Resistor

**10k $\Omega$  Resistor** : The 10k $\Omega$  resistor is marked with a Brown-Black-Orange-Gold band code. Solder these resistors in using the same method as described in step 2.

## TOP OF BOARD

[ Place components through this side ]





4 22pF Cap x 2

**22pF Capacitor** : The 22pF capacitors are marked with a '220'. Don't mix them up with the 0.1uF's! Insert the capacitors into the top side of the PCB. Flip the board over, bend the legs outward to secure the part, and solder them into place. Clip off the extra bits of metal legs when you're done.



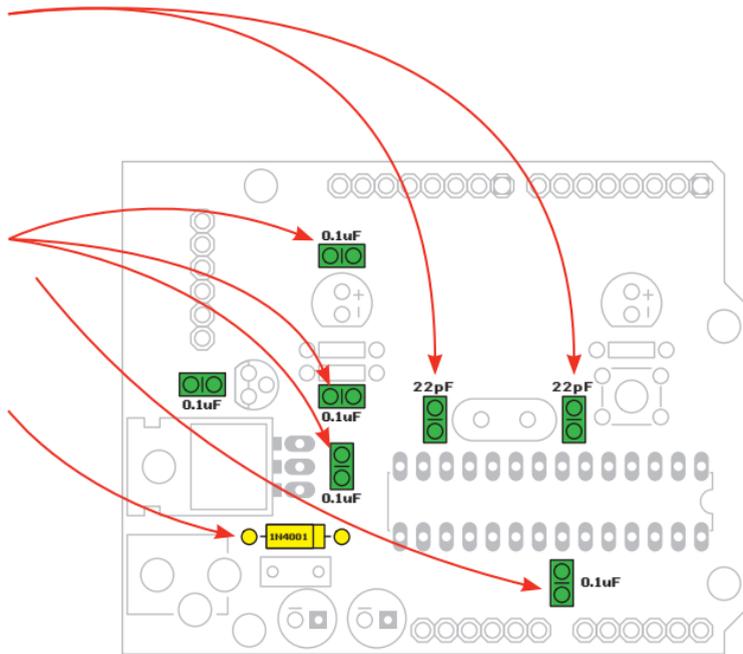
5 0.1uF Cap x 5

**0.1uF Capacitor** : The 0.1uF capacitors are marked with a '104'. Follow the instructions in step 4 to solder these into your board.



6 1N4001 Diode 

**1N4001 Diode** : This part is polarized! Bend the legs so that the part forms a "U" shape. Insert the diode so that its silver band matches up the white line on the PCB. Flip the board over, bend the legs to secure the part, solder, and clip the excess legs.



Steps highlighted with a yellow warning triangle represent a polarized component. Pay special attention to the component's markings indicating how to place it on the board.



**7** LM7805 5V Regulator 

**LM7805 5V Regulator** : Bend all three legs at a 90 degree angle, so they point toward the back of the chip. Insert the regulator, matching it up with the white outline on the PCB; the metal side of the regulator should be touching the board. Turn the board over, solder the three pins, and cut off any excess.



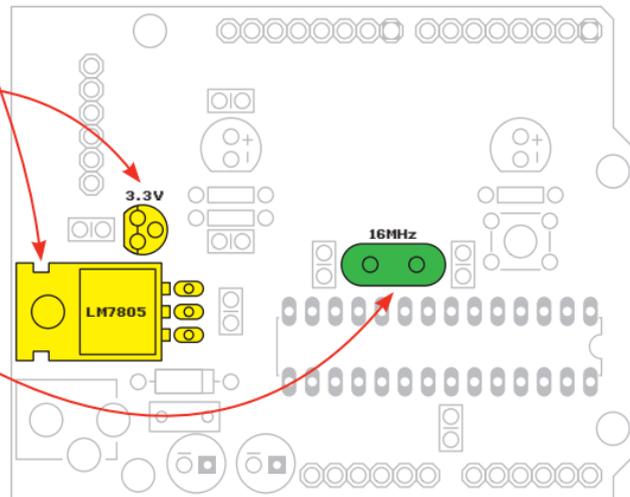
**8** MCP1700 3.3V Regulator 

**MCP1700 3.3V Regulator** : Slightly bend the middle leg out towards the curved side of the regulator. Line up the flat side of the regulator with the white flat line on the PCB, and gently push the regulator as far down as it will go. Flip the board over and solder all three legs, then clip off the excess legs.



**9** 16MHz Crystal

**16MHz Crystal** : Insert the crystal on the top side of the board. Flip the board over, bend the legs to secure the part, and solder. Clip the any remaining excess of legs.



Steps highlighted with a yellow warning triangle represent a polarized component. Pay special attention to the component's markings indicating how to place it on the board.



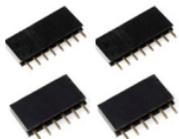
10 Reset Button

**Reset Button** : Line the pins of the button up to the PCBs footprint, and push it down gently. Flip the board over and solder all four pins.



11 Resettable Fuse (PTC)

**Resettable Fuse (PTC)** : Insert the PTC on the top side of the PCB, pushing it down as far as it will go. Bend the legs on the bottom side to secure the part, solder the legs, and clip off any excess.



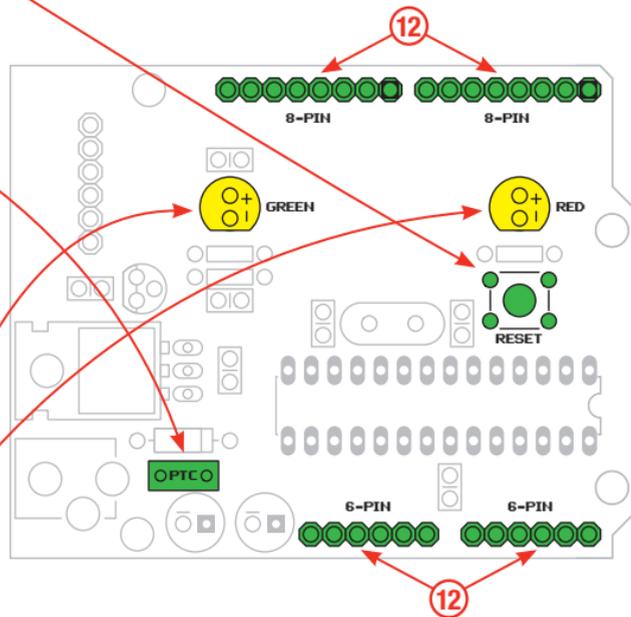
12 8-pin and 6-pin Female Headers x 2

**8-pin and 6-pin Female Headers** : Insert these headers on the top side of the board. Flip the board over and solder the headers in. While soldering make sure to keep the bottom of the headers as flush with the board as possible.



13 Red and Green LEDs ⚠

**Red and Green LEDs** : LEDs are polarized, make sure you put them in correctly! Insert the two LEDs on the top of the board. Pick whichever color you want for On and Status indicators. Each LED has one side that is flat (the leg is also shorter on this side). Make sure that the flat side aligns with the flat white marking on the PCB. Turn the board over and bend the legs to secure the LED. Solder the legs and clip off any remaining excess.



Steps highlighted with a yellow warning triangle represent a polarized component. Pay special attention to the component's markings indicating how to place it on the board.



14 Barrel Jack

**Barrel Jack** : Insert the barrel jack on the top side of the board. Flip the board over and solder all three pins. You may have to use a little extra solder on this part!



15 28-pin Socket ⚠

**28-pin Socket** : Insert the socket on the top of the board, making sure to match up the notch on the socket with the white notch on the board. Flip the board over and solder all 28 pins.



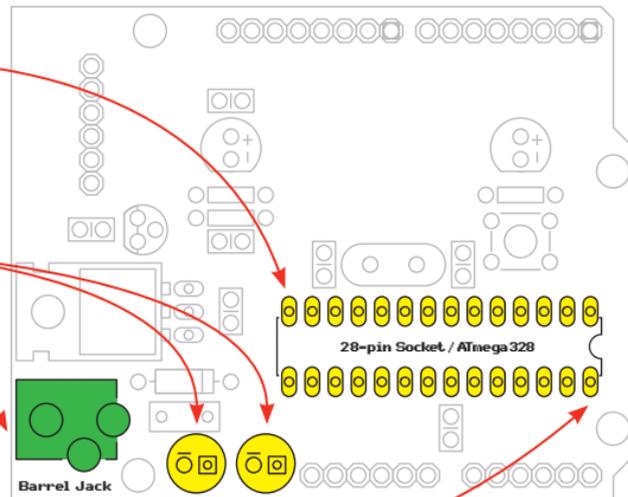
16 100uF Capacitors x 2 ⚠

**100uF Capacitors** : These capacitors are polarized, make sure shorter leg (marked with a gold minus sign on the side of the cap) goes into the hole of the board with the '-' marking. Insert the part on the top side of the board, turn it over, bend the legs to secure, then solder, and clip excess legs.



17 ATmega 328 ⚠

**ATmega328** : No soldering necessary here! Bend the legs slightly inward so the chip easily plugs into the 28-pin socket. Be gentle, don't force it in, and make sure to match up the notches once again.



Steps highlighted with a yellow warning triangle represent a polarized component. Pay special attention to the component's markings indicating how to place it on the board.

## Powering the Arduino Compatible PTH Kit

To power the Arduino a DC power source between 6V and 15V should be plugged into the barrel jack. A standard 9V Wall Adapter power supply would be perfect.

## Arduino Compatible PTH Kit Programming Instructions

When you first power up your Arduino, it should run a basic Blink sketch. To load a new program onto the Arduino, you'll need one more piece of hardware – a 5V FTDI Basic Breakout board. One side of the FTDI Breakout connects via USB to your computer, while the other side connects to the right-angle 6-pin male header on your kit. When you connect the FTDI Breakout to your Arduino, make sure to line up the 'BLK' and 'GRN' labels. The FTDI Breakout can also be used to power your Arduino. If you haven't already, you'll need to install drivers for the FTDI Basic Breakout board. Once everything's correctly plugged in, and drivers are installed, you're almost ready to upload a new sketch to your Arduino. In Arduino, make sure you select the correct port under 'Tools>Serial Port', and under 'Tools>Board' select 'Arduino Uno'. Now you're all set to program the Arduino Compatible PTH Kit!



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