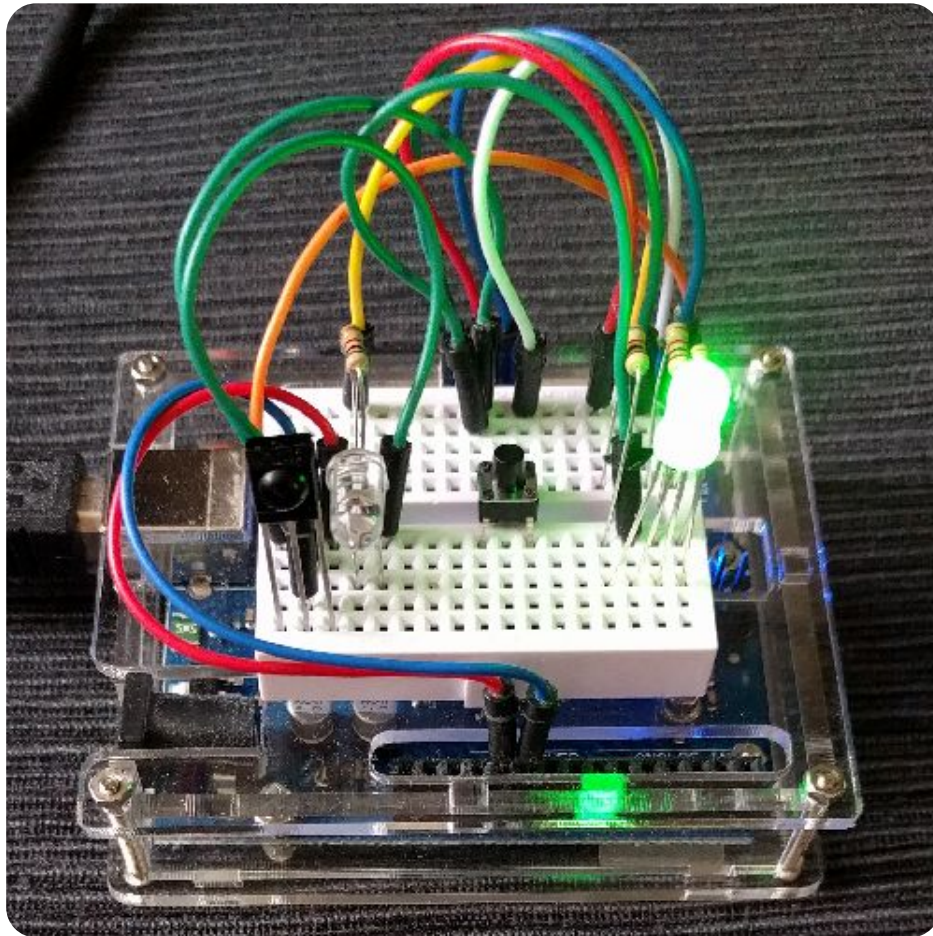


DIY TMGC+C Connect Buddy



This project was born from the idea to make EZGOTCHI (easy Gotchi points) available for the Tamagotchi Plus Color (TMGC+C). But unlike the later color Tamagotchi's the TMGC+C doesn't have a download feature to make this possible. Lucky for us the TMGC+C has a special connect feature that gives you 1000 gotchi points. However a special device is needed for this connection. So lets make one !!!

To make this project available to everyone, easy to build and inexpensive. I chose to use an Arduino. Arduino is an open-source electronics platform based on easy-to-use hardware and software. Assembling is kept easy by using a breadboard to connect everything together without the need for soldering.

Getting started

To build the Connect Buddy, you'll need the following:

- Download and install the [Arduino IDE](#) if you don't already have it.
- Get the parts listed on the [Bill of Materials](#) below.
- Get the [Connect Buddy Arduino sketch](#) (program code).
- Small phillips screwdriver (needed for case assembly).
- Some pliers (to straighten the pins of the tactile button).

Setting up the Arduino IDE

After downloading the Arduino IDE you need to install it. Double click the download to install. During install a options dialog windows will pop up. Just click next to go with the default setting. When prompted to install a device driver. Only choose the **Install** option for **Arduino USB Driver**. Choose **Don't install** for other drivers. When installlation is complete.

Connecting the Arduino Uno

Now connect the Arduino Uno to your PC and wait for the device driver to install. If windows wasn't able to find a driver then open **device manager** and under the **Ports** section, right click the port with yellow exclamation mark and select update driver. In the update driver windows select **Browse my computer for driver software** and browse to "**C:\Program Files (x86)\Arduino\Drivers**" and click next. If the driver was still not found. You may need to download and install the [CH340 Serial driver](#).

Uploading a sketch

Programs for the Arduino are called sketches and you're going to upload the blink example sketch to test that the Arduino IDE and Uno is working properly first.

- Click on the Arduino icon on your desktop to start the Arduino IDE.
- Select the tools menu and under the boards option, select '**Arduino/Genuino Uno**'.
- Select the tools menu again and under the ports option, select the highest COM port with highest number.
- Select the File menu and under Examples > 01.Basics menu, select and a new window with the blink sketch opens.
- Now in the new window click the green right arrow icon and the sketch will be compiled and uploaded to the Arduino Uno.

After the blink sketch is uploaded you will repeatedly see a light turn on for one second on and off again for one second.


Uploading the Connect Buddy sketch

Now that you have successfully uploaded a test sketch to your Arduino Uno. You can upload the the Connect Buddy sketch. Open the file menu again and browse to the location where you saved the **connectbuddy.ino** file. If you don't know where it was saved then try your download folder. The sketch will open in a new window again and all you have to do is click the upload icon again and wait for the upload to complete.

Assembling the Connect Buddy

After you've successfully uploaded the Connect Buddy sketch in the previous step, remove the USB Cable from the Arduino and put the Arduino in it's case. If you bought a modular case with laser cut acrylic plates with screws then screw the Arduino Uno secure on the base plate first using the spacers (small tubes). Also make sure you insert the screws from the bottom up and have the nuts on top. This will give a better ground clearance when adding the self adhesive rubber feet. Now that the Arduino Uno is in it's case. It's time to stick the mini breadboard on top of the case. But before you peel of the protective layer, have a good look at the top of the mini bread board.

You wil see that there is a numbering system on it. Vertically the rows are numbered A to E and F to J from the bottom up and the columns are numbered 1 to 17 from left to right. This has been done to make it easy to address the tie points (holes) on the breadboard. Now put the Arduino Uno in front of you with the USB port at the left side and hold the breadboard in such a way that tie point A-1 is at the bottom left. peel of the protective layer of the breadboard and stick it on top of the Arduino case so it's nicely centered.

now you're almost ready to put the parts on the breadboard. but first you need to know a bit more about some of them. 

Breadboard

The breadboard is a nice litte development board that allowes you to connect parts together by inserting them into the tie points (holes). It is important to know that the tie points are grouped together in vertical groups of five tie points. On each column the tie points on rows A to E are connected together and the tie points on rows F to J are also connected together. For this reason a part must be mounted horizontally so each pin is on a different numbered column.

Infrared LED

LED stands for Light Emitting Diode and only emits light when the current flows in one direction. It has two pins. The longer one is the anode (positive side) and the shorter one is the cathode (negative side).

Infrared Receiver

The Infrared receiver has a chip built in and has three pins. With the little blob facing front the left pin is the output, the middle pin is ground and the right pin is the power pin.

RGB LED

RGB stands for the Red, Green and Blue and LED stands for Light Emitting Diode. This LED has 3 LEDs in one and share a common pin for it's anode (positive pin) or cathode (negative pin) The version used here has a common cathode (negative pin). Unlike other LEDs the longest pin is the common pin.

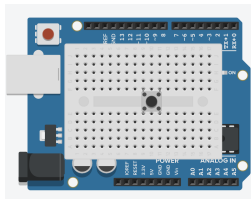
Resistor

The resistor is a pasive part and is used here to reduce the current flow through the LEDs. It can be conected either way. The colored rings on it's body tell what resistance value it has. The colors on the ones used here are Brown, Black, Red and Gold for 1KOhm 5% tolerance.

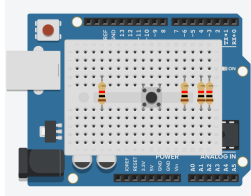
Wiring up

The wiring has been split in 7 steps below and each step has an image with it's discription to make it easier to follow.

(Click image to enlarge)

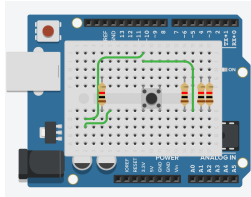


First straighten the pins of the **push button** with some plyers and then insert it at **E-9, E-11, F-9 and F-11**. If your pushbutton is larger and doesn't fit at those tie points you could put the top pins at G-9 and G-11 too.



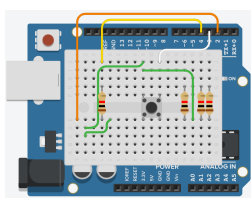
Take 4 1K resistor and bend the ends at both ends 90 degrees.

- Insert one at **E-4 and G-4**
- One at **E-14 and G-14**
- One at **E-16 and G-16**
- Last one at **E-17 and G-17**



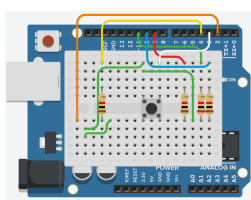
For the ground wires, take 3 short wires of the same color and ...

- Insert a wire at **C-2 and E-5**
- Insert a wire at **D-2 and J-9**
- Insert a wire at **I-9 and E-15**



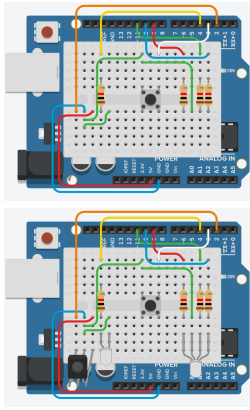
For the IR receiver, IR LED and button connections, take an orange, yellow and white wire and ...

- Insert orange wire at **E-1** and Arduino digital **Pin 2**
- Insert yellow wire at **J-4** and Arduino digital **Pin 4**
- Insert white wire at **J-11** and Arduino digital **Pin 3**



Take an red, green and blue wire for the RGB LED and ...

- Insert red wire at **J-14** and Arduino digital **Pin 9**
- Insert blue wire at **J-17** and Arduino digital **Pin 10**
- Insert green wire at **J-16** and Arduino digital **Pin 11**



Take a red and blue wire for the power lines and ...

- Insert red wire at **E-3** and Arduino **Pin 5V**
- Insert blue wire at **E-2** and Arduino **Pin GND**
- Insert the IR receiver in **A-1** to **A-3** with the blob facing front.
- Hold the IR LED with the longest end at the left and bend it 90 degrees towards you then Insert long end at **C-4** and short end at **C-5**.
- Take the RGB LED so the longest end is 2nd end and insert it at **C-14** to **C-17**

Now your done!.

Connecting your TMGC+C

Power up the Connect buddy by connecting it to your PC or a powerbank and the RGB LED should turn green. If this doesn't happen then retrace the building steps. The connect buddy is in idle mode when the RGB LED is green. Meaning it is waiting to receive infrared data or waiting for a button press.

Keep a distance of approximately 5cm / 2" between the Connect buddy and your TMGC+C for best results.

Points mode

Go to the heart icon and select the 1st option. Now when you press the B button the RGB LED will flash and your TMGC+C receives 1000 gotchi points.

Play mode

Go to the heart icon and select the 1st option. On the Connect Buddy press the button briefly. The RGB LED will flash and after a moment the building blocks connect game will start on your TMHC+C. You have an 80% change of winning it. you will also get a friend entry in your friends notebook.

Marry mode

Go to the heart icon and select the 1st option. On the Connect Buddy press and hold down the button. After half a second the RGB LED will start alternately flashing cyan and purple. The color of the RGB LED determines the gender of the next generation Tamagotchi you will get. You will get a baby boy when you release the button when the RGB LED is cyan and a baby girl when the RGB LED is purple.

When you try to Marry a pre adult stage Tamagotchi. your Tamagotchi will shake his/her head and the Connect Buddy's RGB LED will shortly flash red to tell the marriage was canceled.

However you can force a marriage with pre adult Tamagotchi's by using the Marry mode again for a 2nd time.

(This video is of the proof of concept version that uses an Arduino Pro Micro and different status colors)

Will there be more?

Well for the TMGC+C this is it. There was also the visit connection. But it wasn't fun as your Tamagotchi would just leave and Return. However it has been confirmed that this [Tamacom](#) communication protocol is also supported by TAMAGO, iD, iDL, P's and Yume Kira Bag. So if there is updated sketch or a new sketch for other Tamagothi's in the future, all you need to do is upload the sketch and you can enjoy the new features.

If you want to try out and see how other Tamagotchi's react then please do!. If you open the Arduino IDE **Serial Monitor** from the **Tools** menu, you can see the data frames being received and sent. You can also use this method to find out what the English name of your tamagotchi is.

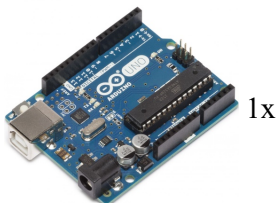
Can I use this with other Tamagotchi's?

Yes! The get points mode works with **iD** and **iDL** version too! and the play mode will give you 9999 gotchi points on the **Tamagotchi P's!!!**

Bill Of Materials

Parts can be ordered for low prices through

Image
(click to enlarge) Quantity Discription



1x

Arduino Uno with USB cable

The Arduino Uno is the most popular Arduino board and several variants exist. Any variant will do. But get one that includes a cable as you may not have a USB A to B cable lying around.

[Order from digitspace](#)



1x

Arduino Uno acrylic case

Protects the Arduino board and fuctions as a mounting place for the mini breadboard. A clear case is recommended so you can still read the pin discriptions on the Arduino board. The one pictured here requires a small phillips screwdriver for assembling.

[Order from digitspace](#)

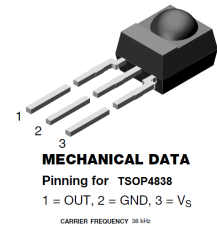


1x

mini breadboard (170 tie points)

A small self adhesive breadboard that will be stuck on top of the Arduino case. The parts and wires can be easily connected together by inserting them into the tie point holes.

[Order from digitspace](#)

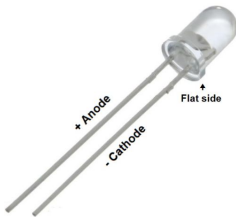


1x

38KHZ Infrared receiver

Any generic infrared receiver will do like TSOP4838, TSOP38238, TL1838 or VS1838 etc.

[Order from digitspace](#)



1x

5mm infrared LED (950nm or 940nm)

Any generic Infrared LED will do but a 5mm LED with a wavelength of 950nm or 940nm is preferred. Note on using this LED that it has a short and long leg. The short leg is the negative cathode and the long leg is the positive anode.

[Order from digitspace](#)



1x

5mm 4 pin RGB LED common cathode (diffused)

[Order from digitspace \(non diffused\)](#)



4x

1K resistor

Any general purpose resistor with a value of 1 kilo Ohm.

[Order from digitspace](#)



1x

6x6mm tactile push button

These come in many varieties. But a 6x6mm one fits best on a breadboard. They also come in different heights. The one I used has a height of 7mm. But I recommend a height of 5mm which is less wobbly when pressed.

[Order from digitspace](#)



1x

Jumper wire set male to male

These wires often come in sets of 20 or 40 with male and/or female ends. Make sure you get a set of Male to Male. Only 11 wires are needed for this project.

[Order from digitspace](#)



1x

Self adhesive rubber feet

These will prevent the screws of the Arduino case from damaging the surface it is standing on.