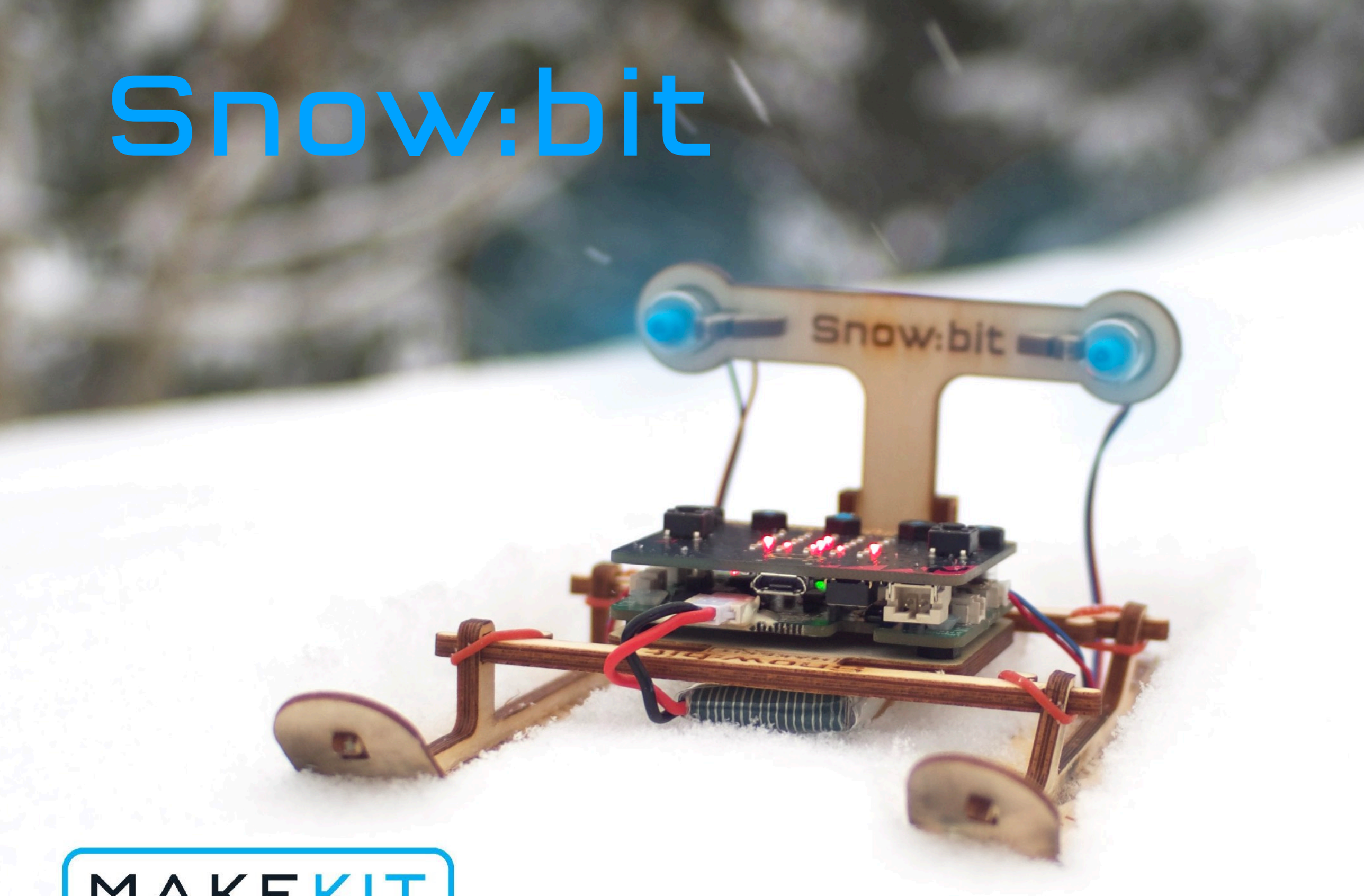
# Snow:bit




MAKEKIT

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# About us

Snow:bit is designed and manufactured in the old premises of Tanbergs Radio Factory at Skullerud in Oslo.

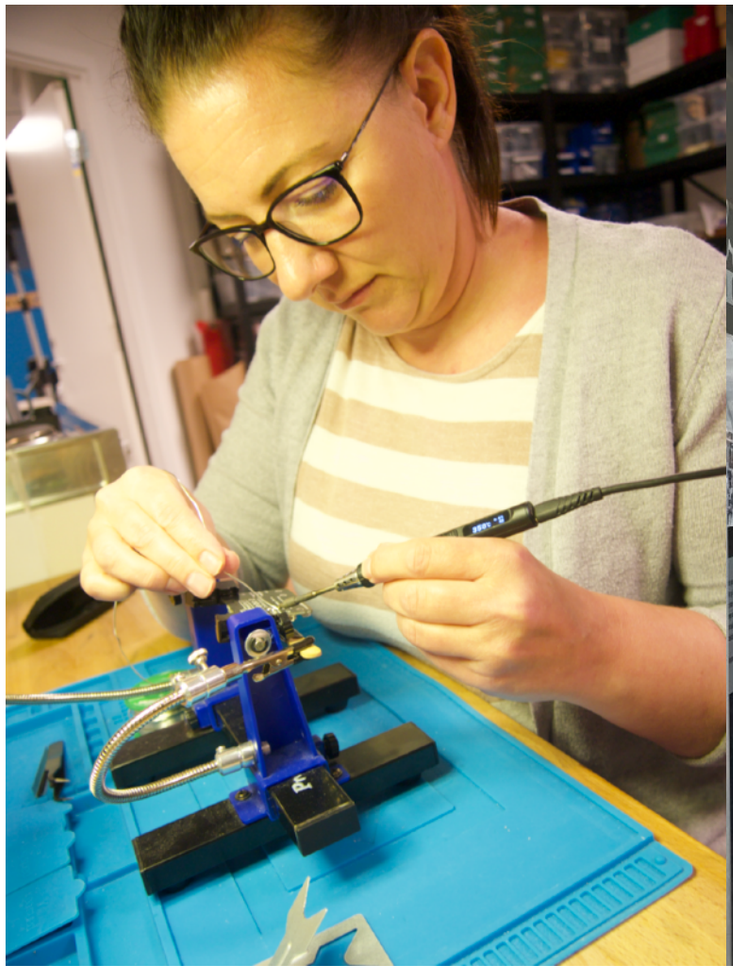
We welcome your questions and feedback. Please do not hesitate to contact us! Feel free to use our facebook chat as well.

www.makekit.no

support@makekit.no

makekit

gomakekit (også twitter)



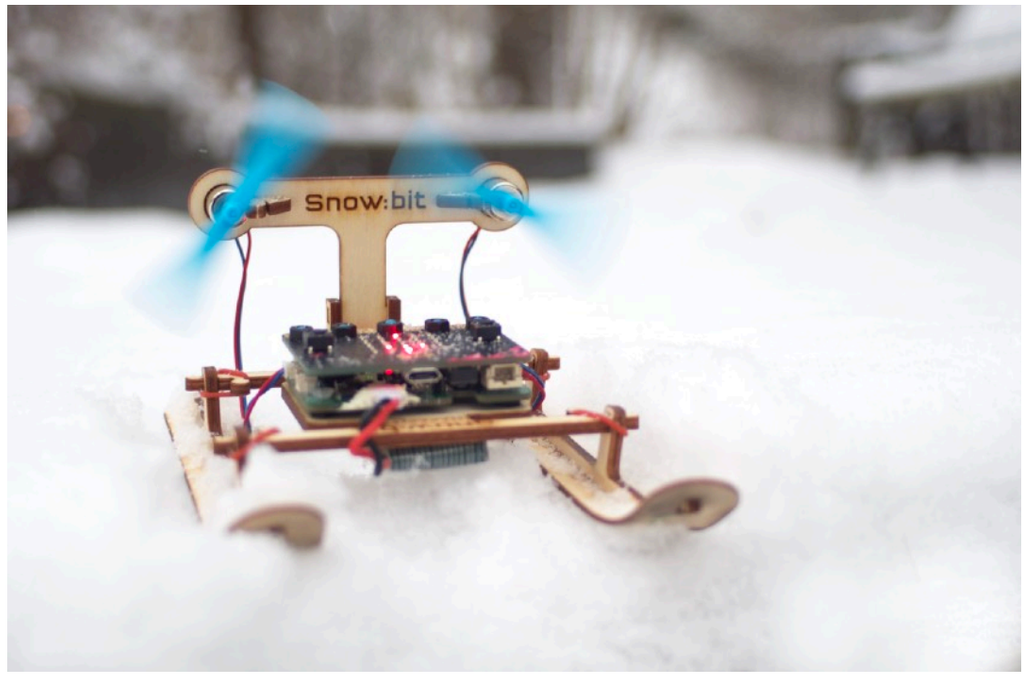
*Store manager Connie does everything from order processing to soldering printed circuit boards*

*Henning and Steinar*
*At the Tandberg-exhibition at Skullerud*

# About Snow:bit

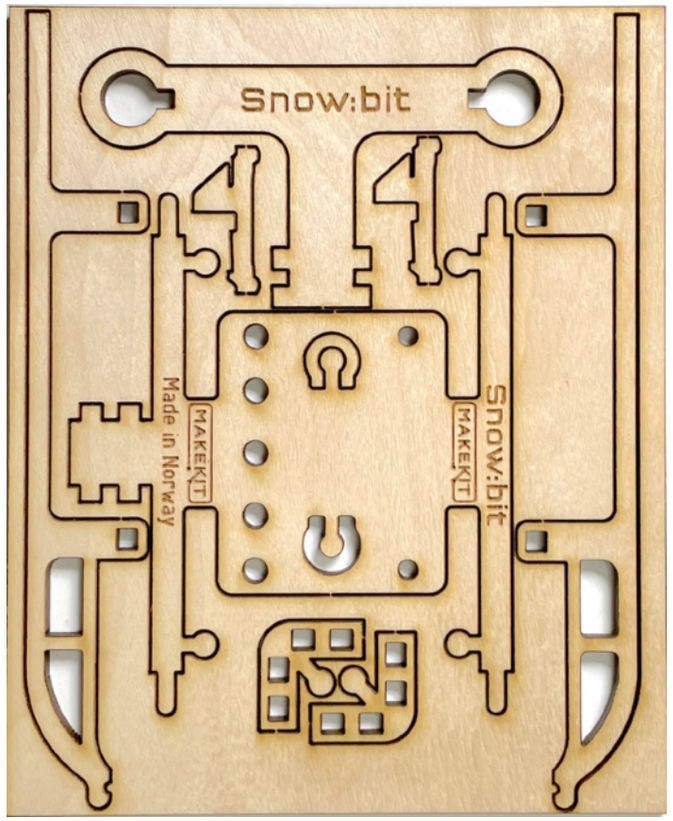
Snow:bit is an electric sled for snow and ice. It uses two powerful engines/propellers for propulsion, and for steering. Snow:bit works best on flat, level surfaces.

Snow:bit is based on bent skis of thin birch veneer, which bend with steam.

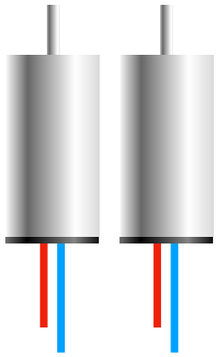


# Parts

## In the box (Standard kit):

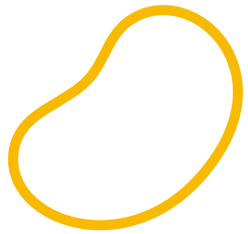



Wood parts



2x Motors

2 CW propellers



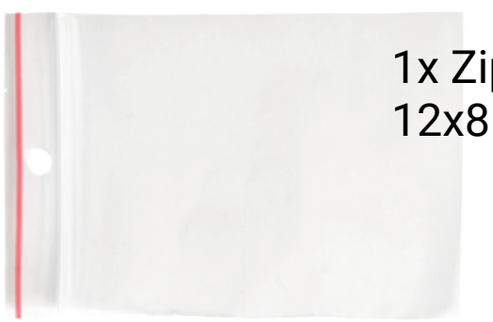
Rubber Band

5 small rubber rings

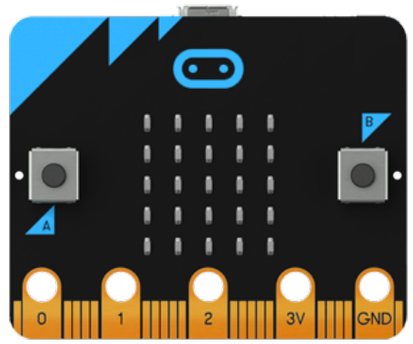
Ski



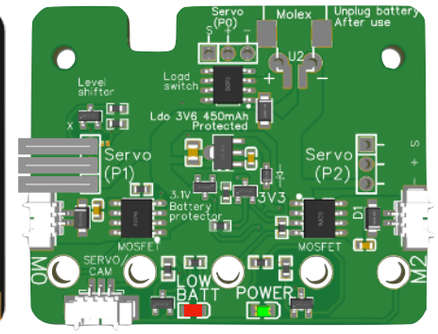
1x Zip-bag 6x8 cm



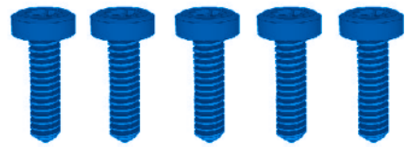
1x Zip-bag 12x8 cm




1 x micro:bit*

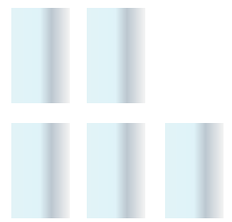



1 x Green card*

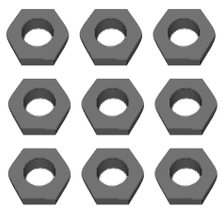


5x m3x12 nylon screws Blue

2x m3x12 screw, white

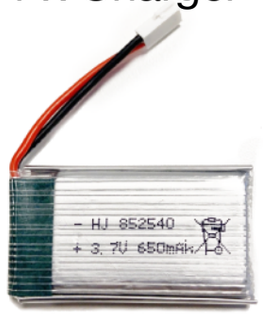


5x spacers, aluminium



9x Nuts

1 x Charger

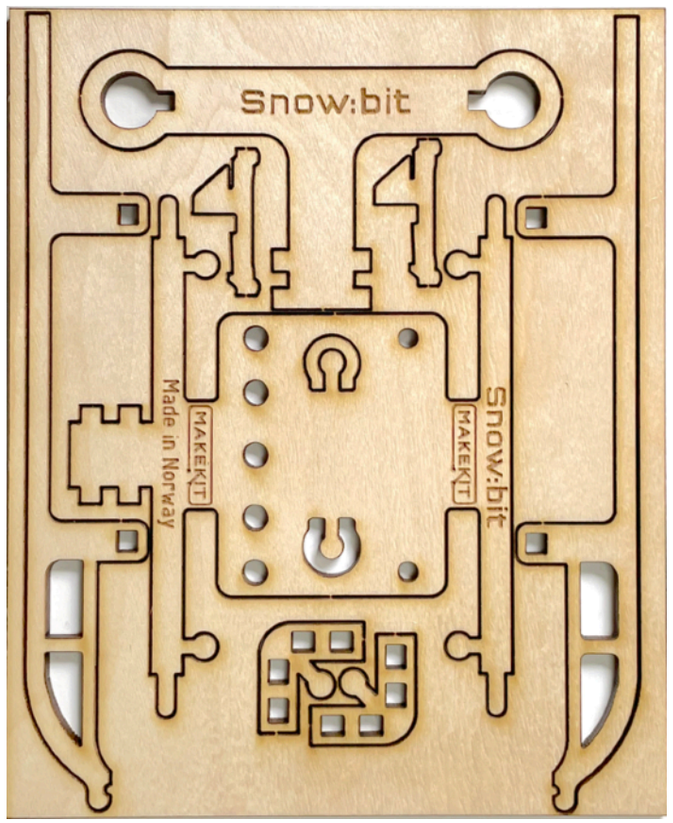



Re-chargeable battery (LiPo)

*Micro:bit, green card and certain small parts comes with certain kits

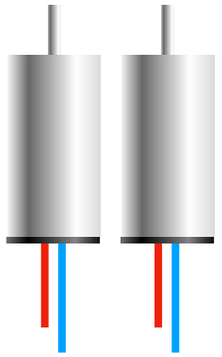
# Parts

## In the box (Plain kit):




Wood Parts

Ski



2x Motors

2 CW Propellers

Rubber Bands

5 small Rubber Rings



Zip-bag 6x8 cm



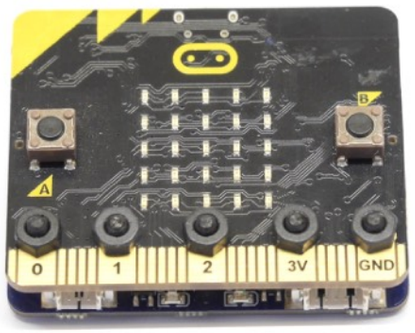
Zip-bag 12x8 cm

## From Hover:bit

micro:bit + control card

(Back side)

(Front side)



2x Nuts

Re-chargeable Battery (LiPo)
May be black

# Anbefalt verktøy

Clamps
(Possibly Wood Clamps)

Pot and Stove

Pliers

Wood Glue

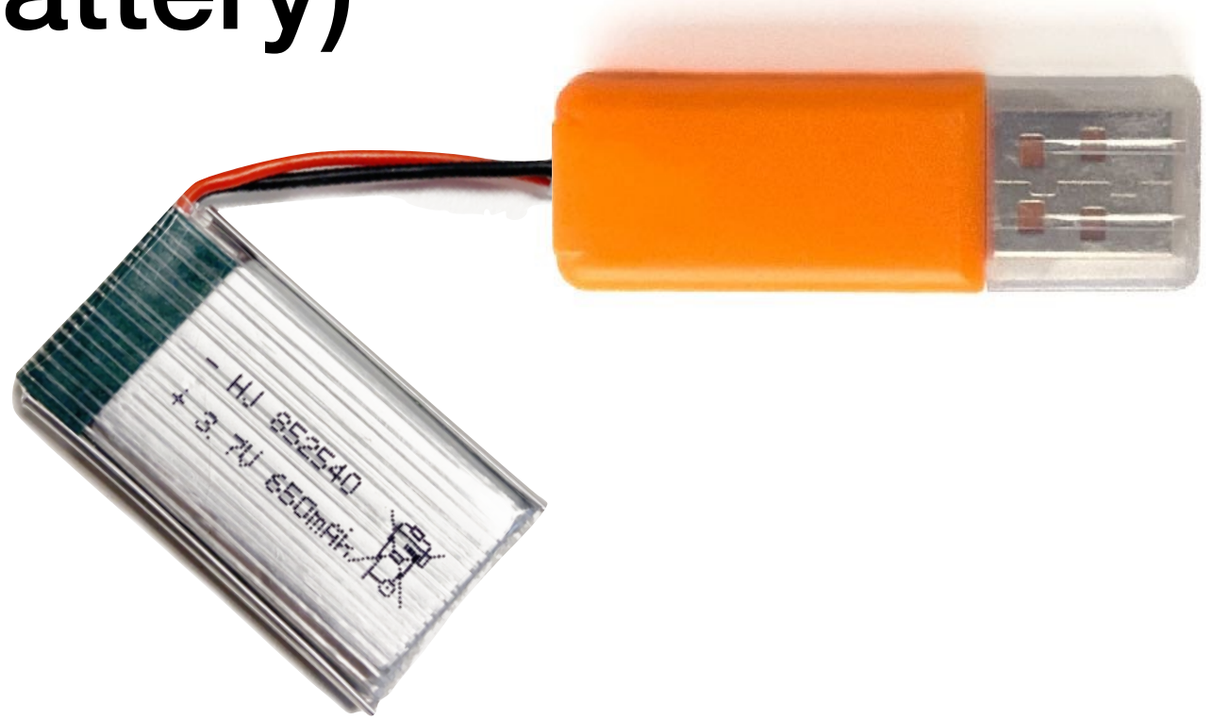
Scissors

# Charging (grey battery)

**Parts:**

Usb-charger

LiPo-Battery

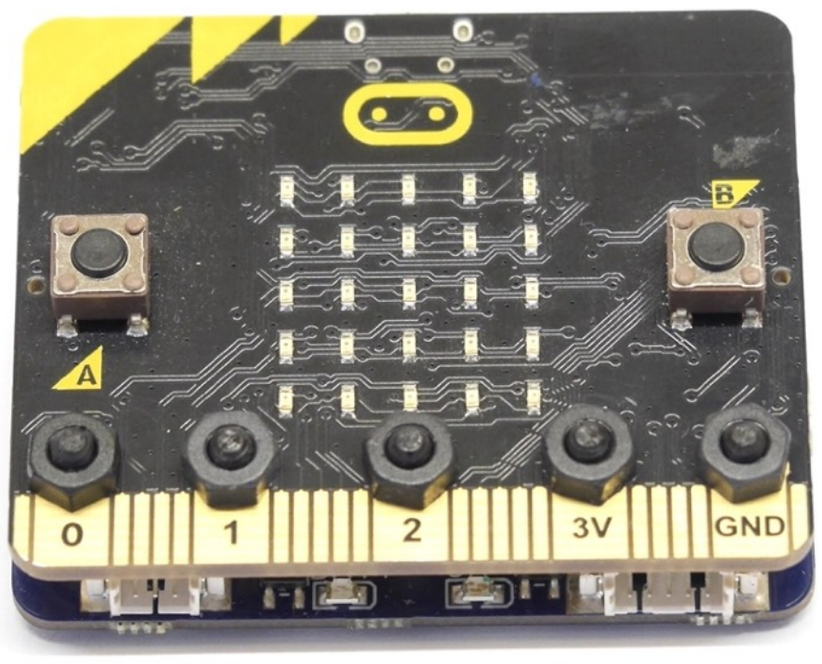



An orange charger comes with the green card. First, plug the battery into the charger. Next, plug the charger into a USB outlet. The orange lights come on until the charger is finished after 1-2 hours.

Note! For safety reasons, lithium batteries should always be charged under supervision.

# Connect control board

If you have already built hoverbit, you can use a ready-made card + micro:bit. Jump three pages ahead.




Front side

Back side

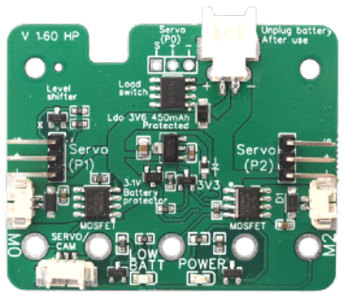
# Connect Control Cards

**Tools:** Small Phillips screw driver, socket wrench

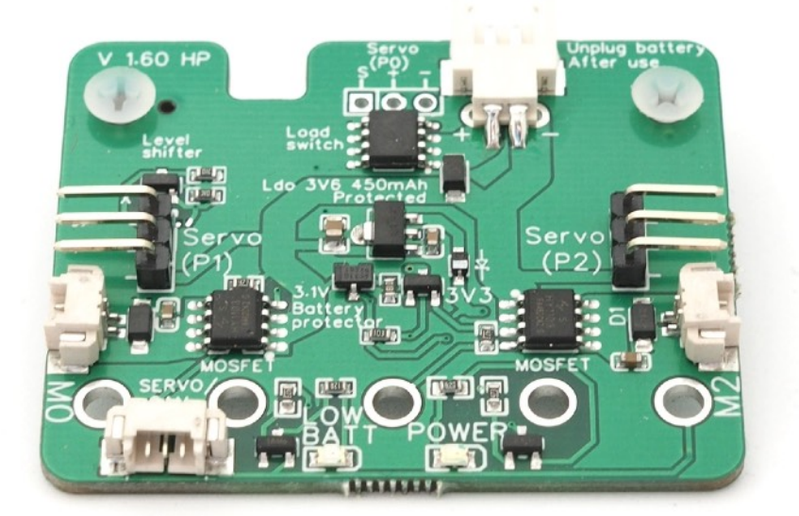
**Deler:**

2 stk
nylons screws

2 stk
Nylon nuts m3




Control Card

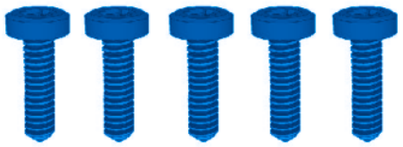


Insert the screws from above. Screw a nut to the bottom of the card.

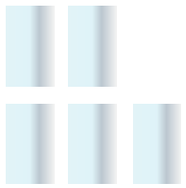
# Spacer

**Tools:** Small Phillips screwdriver

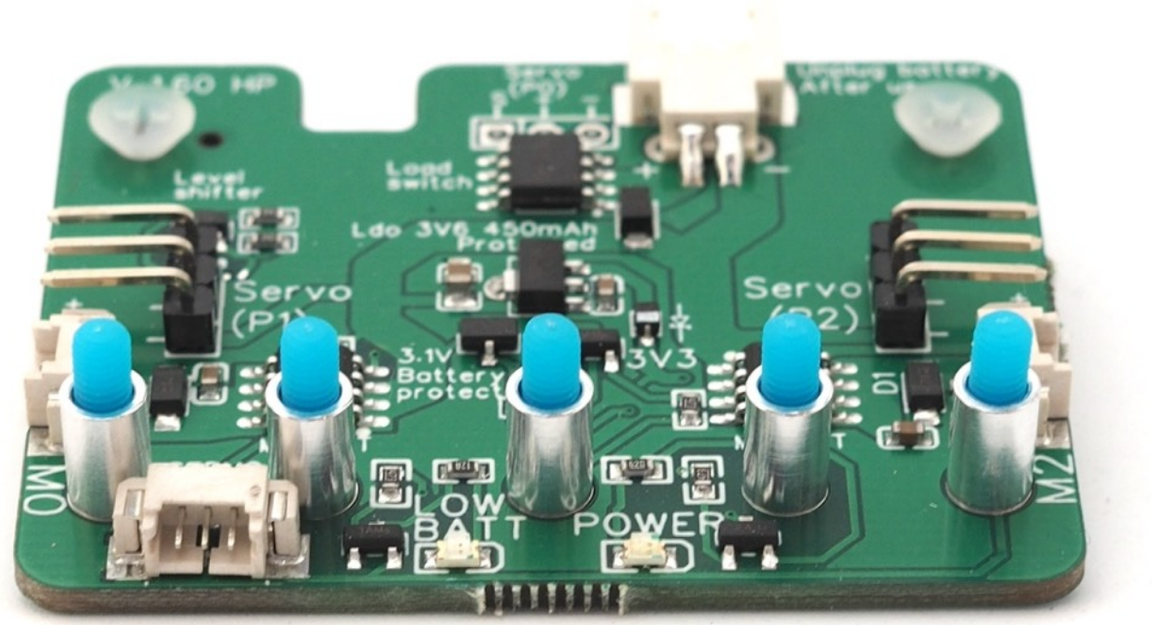
**Parts:**



5x m3x12
nylon screws, blue



5 stk
Alu-spacers

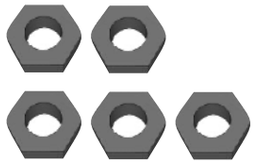



Put in five screws, pointing upwards. Thread on an aluminium spacer on each screw

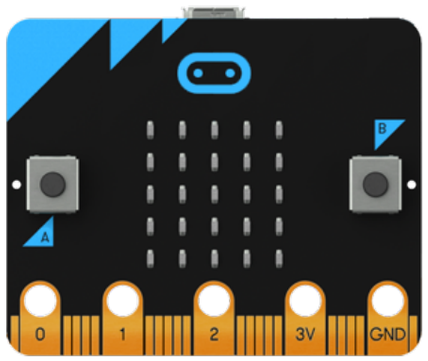
# Attach the micro:bit

**Tools:** Small Phillips Screwdriver, socket wrench

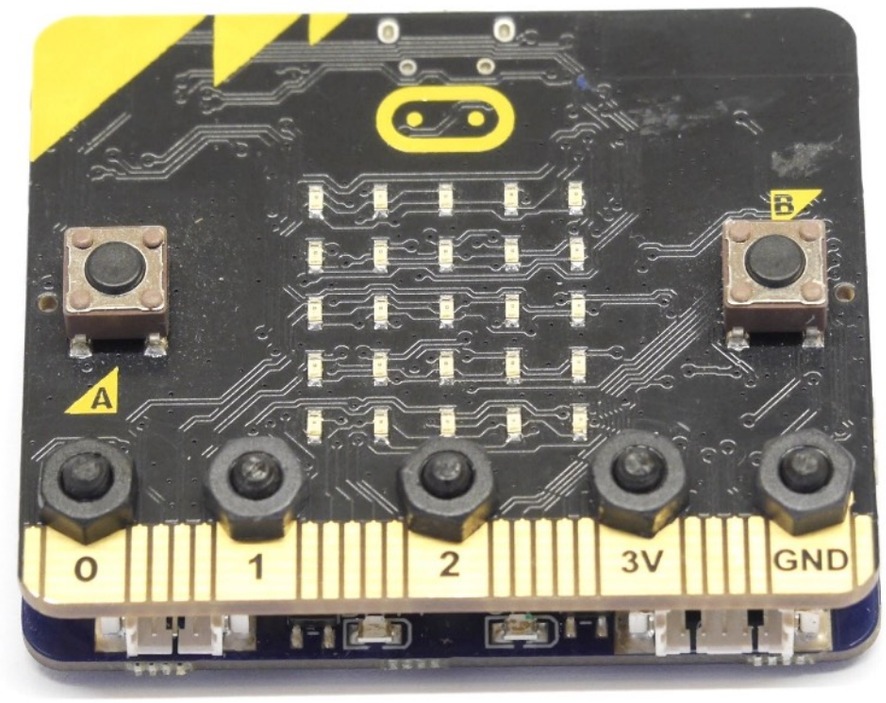
**Parts:**



5 nuts




micro:bit




Place the micro:bit over and screw on the five nuts on top. Tighten the nuts on top (a little), so there will be close and good contact.

# Bending the skis

**Tools:**
Pot of boiling water, cooking tongues

**Parts:**

Ski

Fill up about 5 cm with water in the saucepan and bring the water to a boil.

Hold the tip of the ski (where the hole is) into the boiling water for at least one minute.

Use tongs or sausage clips so you don't get hot steam on your hands.

Take up the ski and bend the tip upwards.

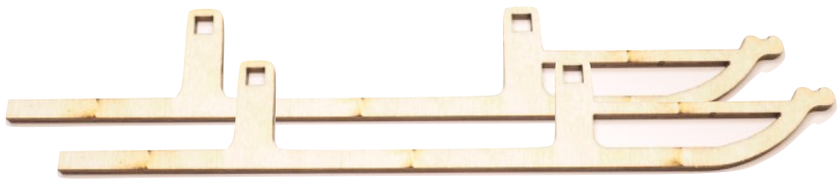
Take care not to crack. Repeat on the other ski.

# Gluing the Skis

**Tools:**
Wood Glue, Kitchen Roll, clamps

**Parts:**

Ski



Mow

Hook/click the tip of the Mow on the ski so it's stuck.

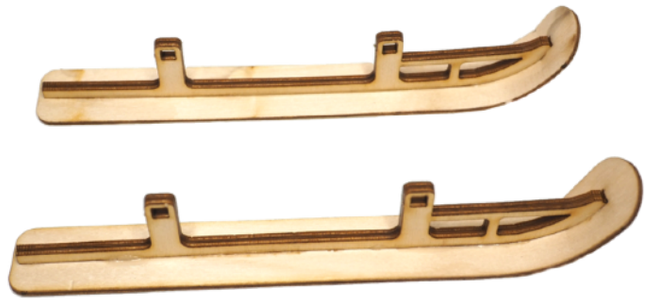
Place a strip of glue over the entire center of the ski.

Pinch together so there is pressure all the way under the ski. Wipe off glue that comes outside. Repeat on the other ski.

# Assembly 1

**Tools:**

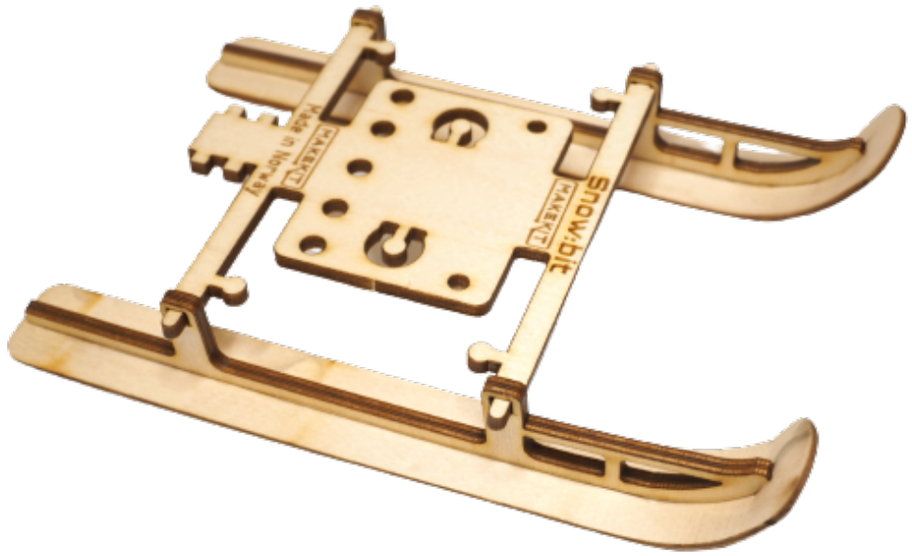
**Parts:**



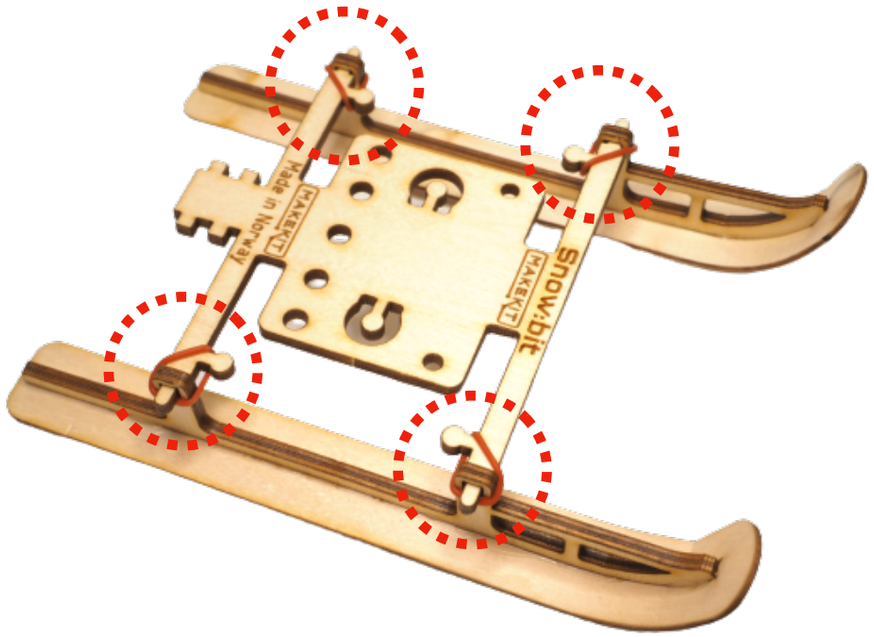
Ski with Mows

Senter plate

4 small rubber rings




Put on the on the center plate so that the "snowbit" writing is at the front.

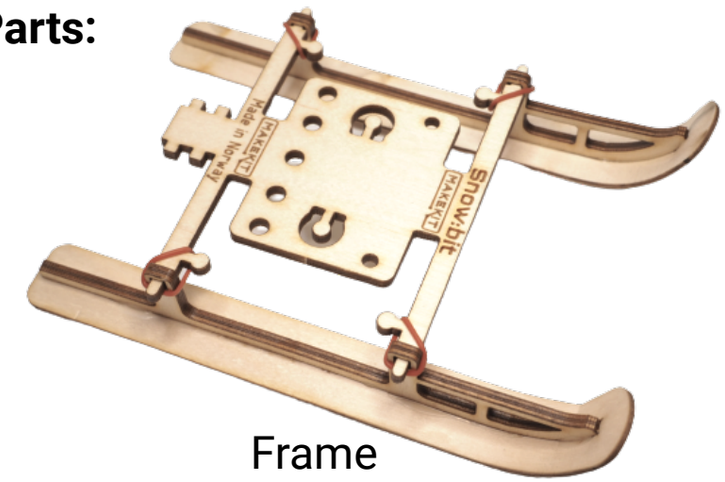



Put on the rubber rings to hold it all together.

# Assembly 2

**Tools:**

**Parts:**



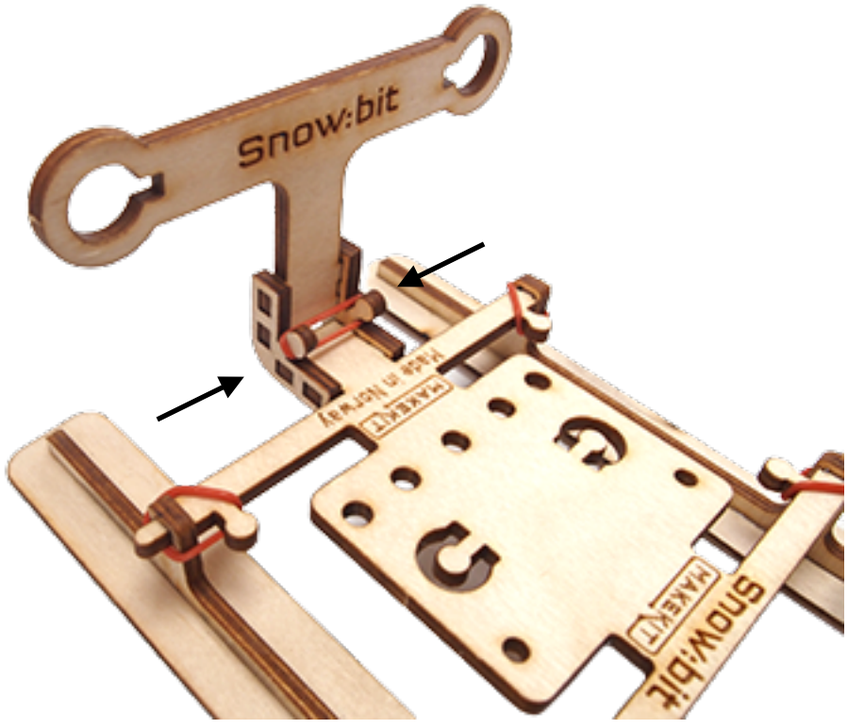

Frame

Motor holder

Small rubber ring

Corner mounts

Wedges



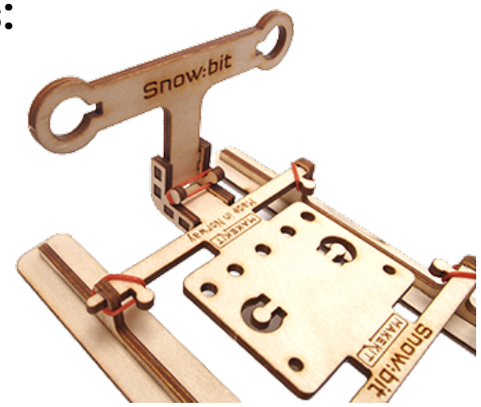

Secure the engine holder with the corner mounts. Pull over a rubber ring to hold them together.

Press the wedges on top of the engine holder. They should be fully inserted to make room for the motors.

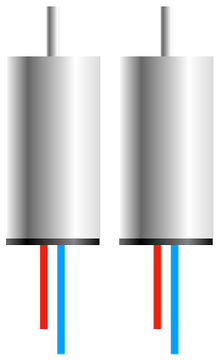
# Assembly 3

**Tools:**

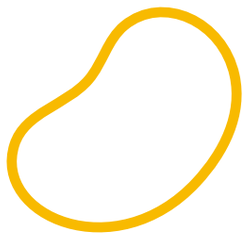
**Parts:**



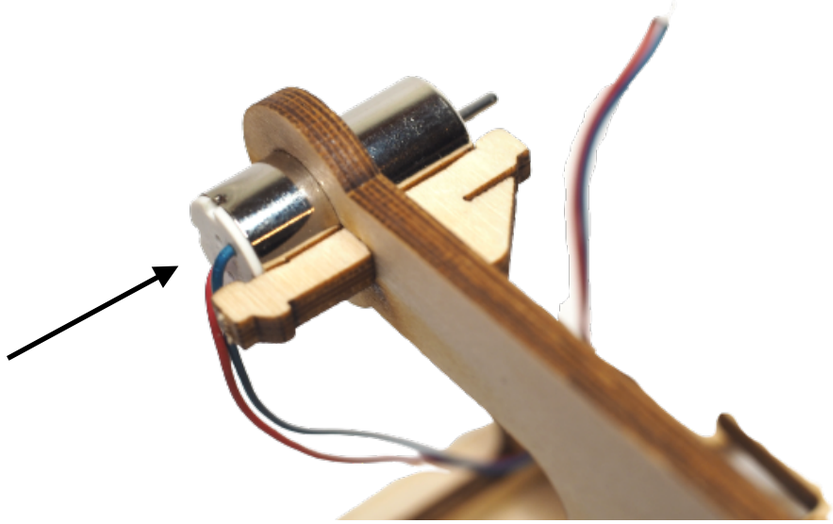

Frame



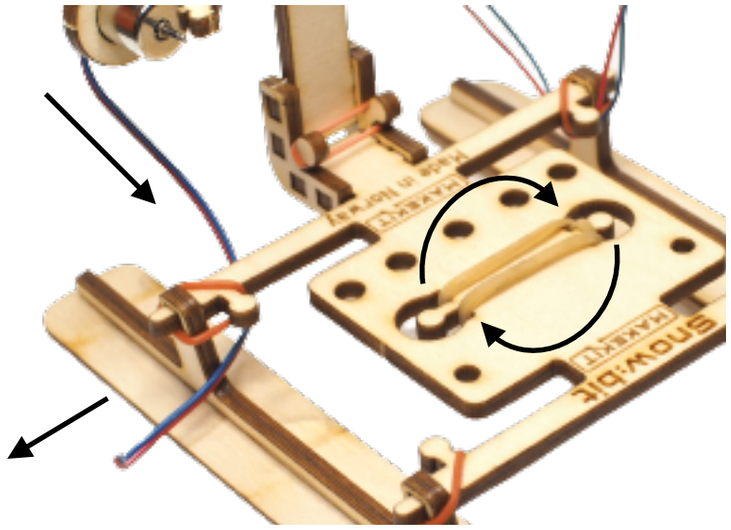
2x Motors



Rubber Band



Push the engines forward so they click into place. If it's slow, try pressing the wedges more to make room for the engine.




Pass the rubber band between the knobs on the underside and the top side of the plate so that it becomes tight.

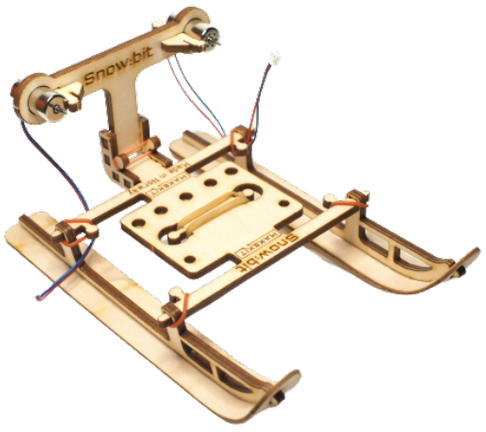
Guide the wires through the frame as shown in the picture so they go clear of the propellers that come later.

# Assembly 4

**Tools:**

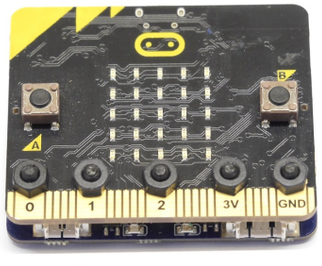
Scissors

**Parts:**




Frame

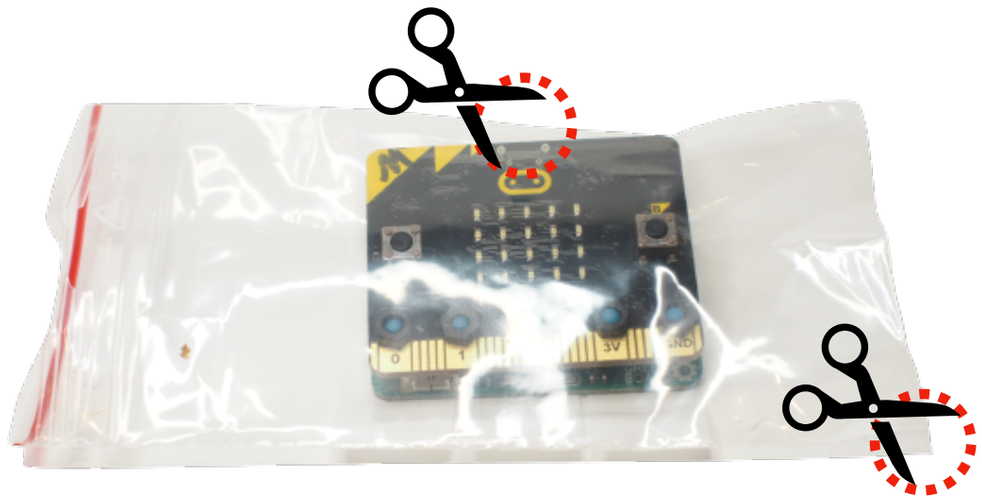
2x Nuts




Micro:bit + green or black card

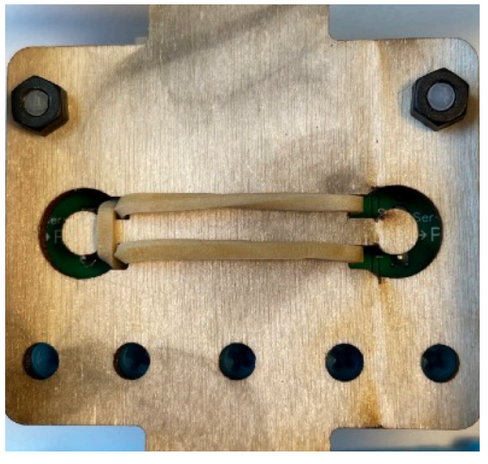


Small zip-bag

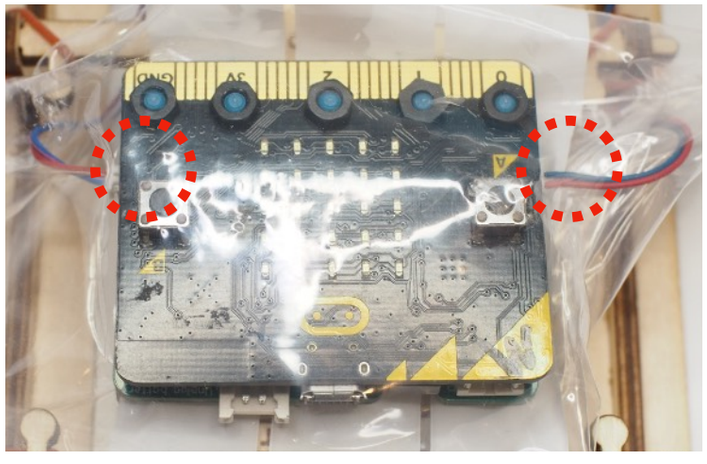


Place the micro:bit in the middle of the bag. Cut a small hole in the lower right corner and in the centre for the wires to enter.

Bottom side



Top side

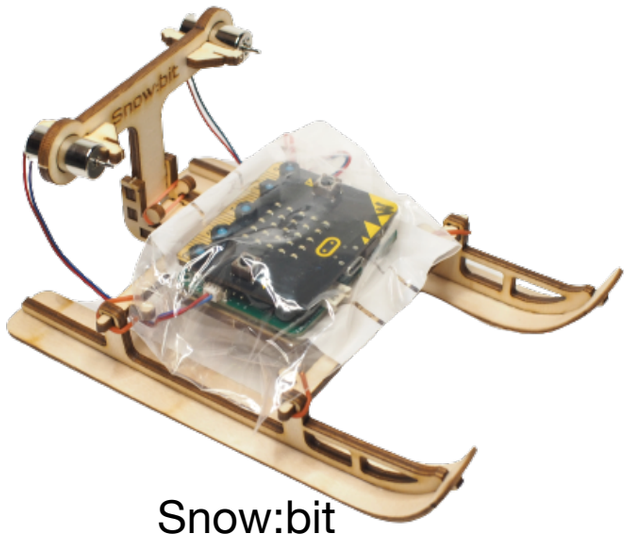



Screw firmly with two nuts on the underside. Connect the motors on either side. The nearest motor connects to the nearest plug.

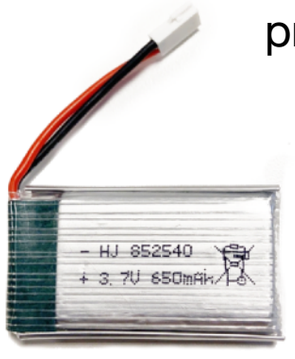
# Assembly 5

**Tools:**
Scissors

**Parts:**



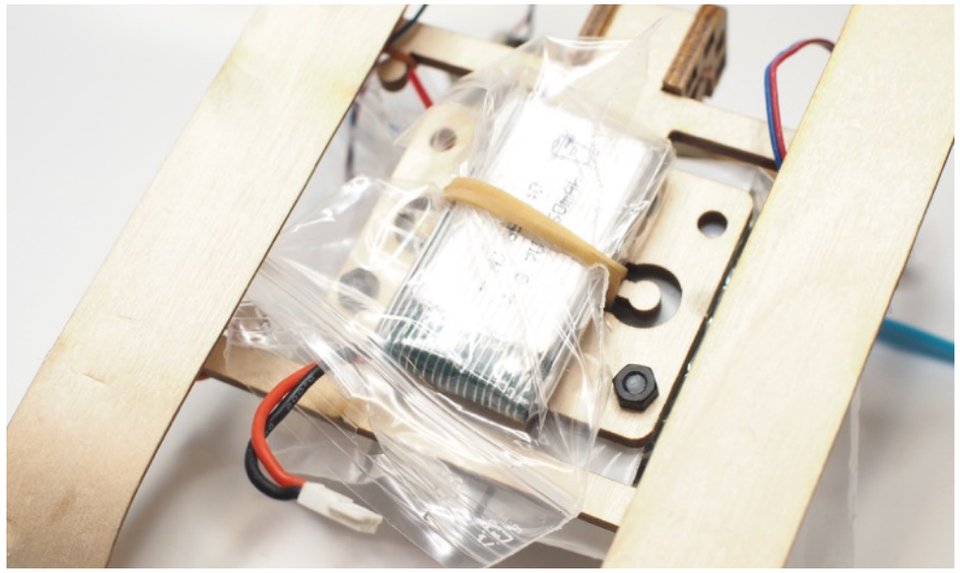

Snow:bit
without
propellers




LiPo-battery



Small zip-bag



Place the battery in the bag and secure it under the elastic band on the underside so that the wire comes out on the front of the sled..

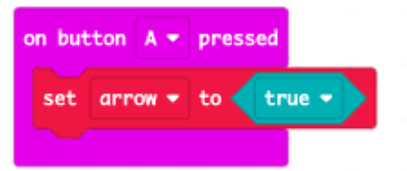
**Note! Do not attach the propellers until you have downloaded and tested the code.**

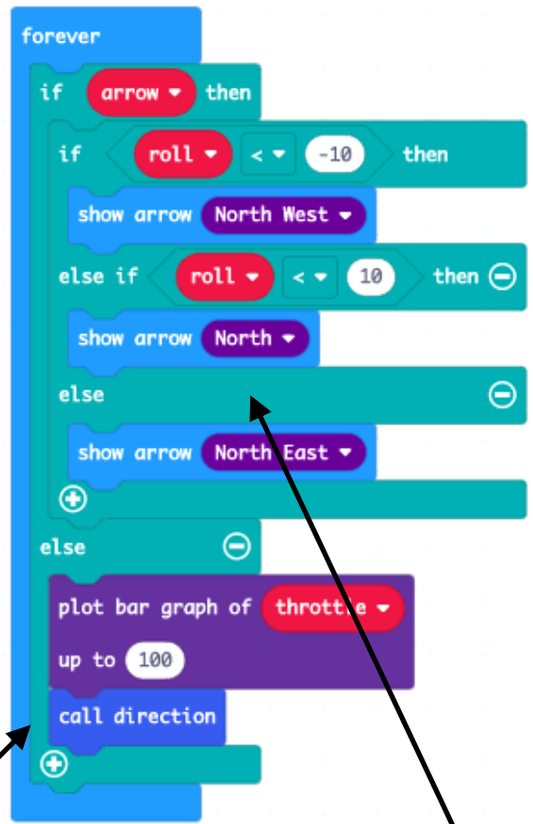
**Watch your fingers - do not touch the rotating propellers!**

# Code

The code can be downloaded from www.makekit.no/docs

Choose radio channel

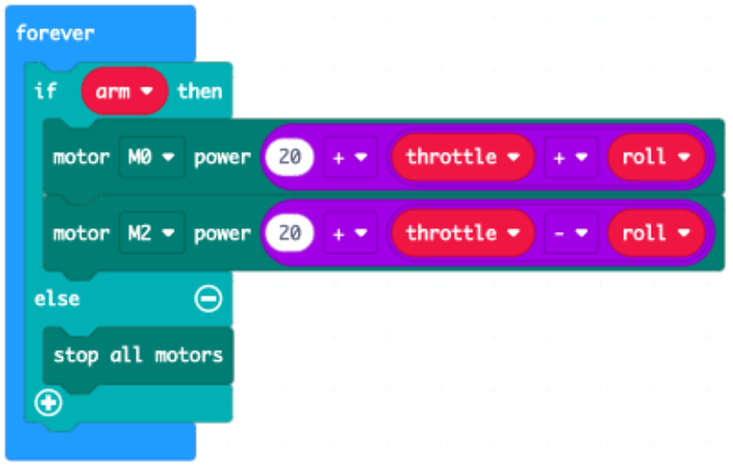


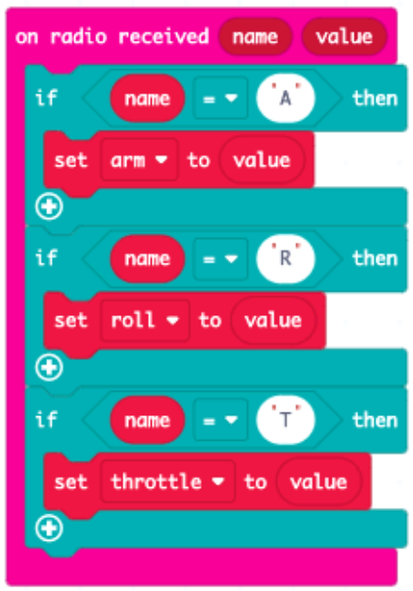



Alternate screen. (Press B-button)

The screen shows arrows indicating different directions

Motor control:
Throttle + turn = speed of engines

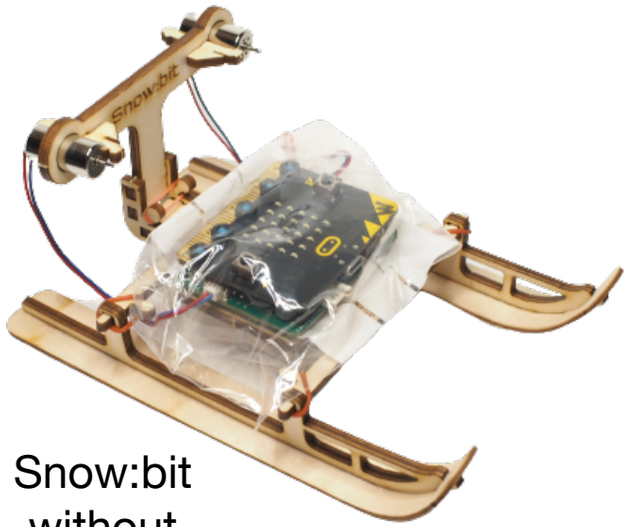



Radio reception:
Arm = start and stop
Roll = turn
Throttle = the gas (speed)

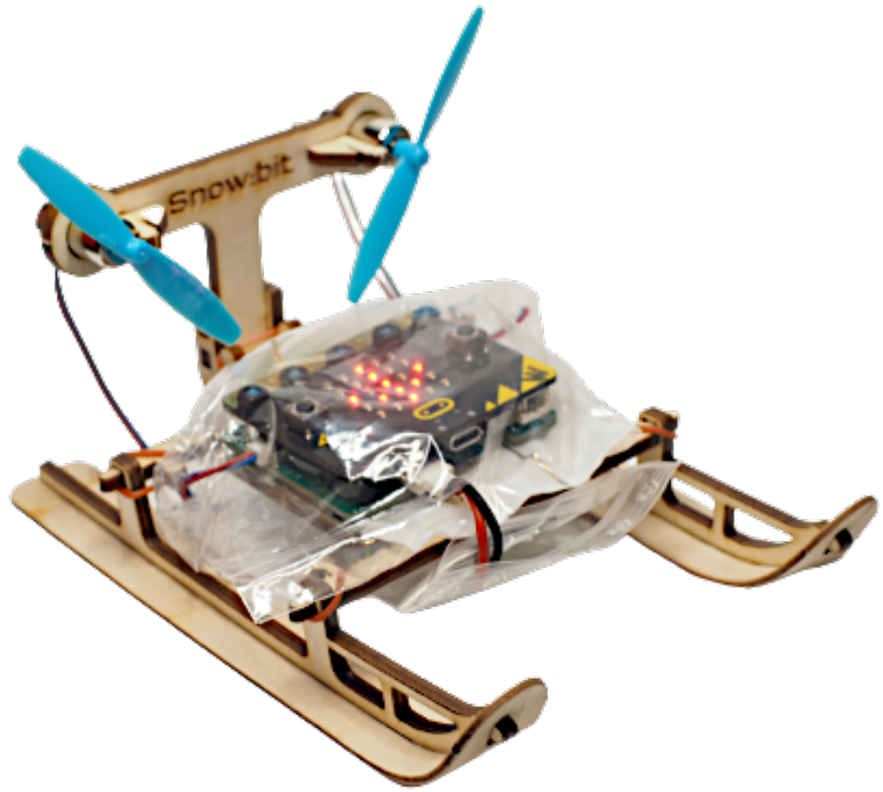
# Assembly 6

**Parts:**

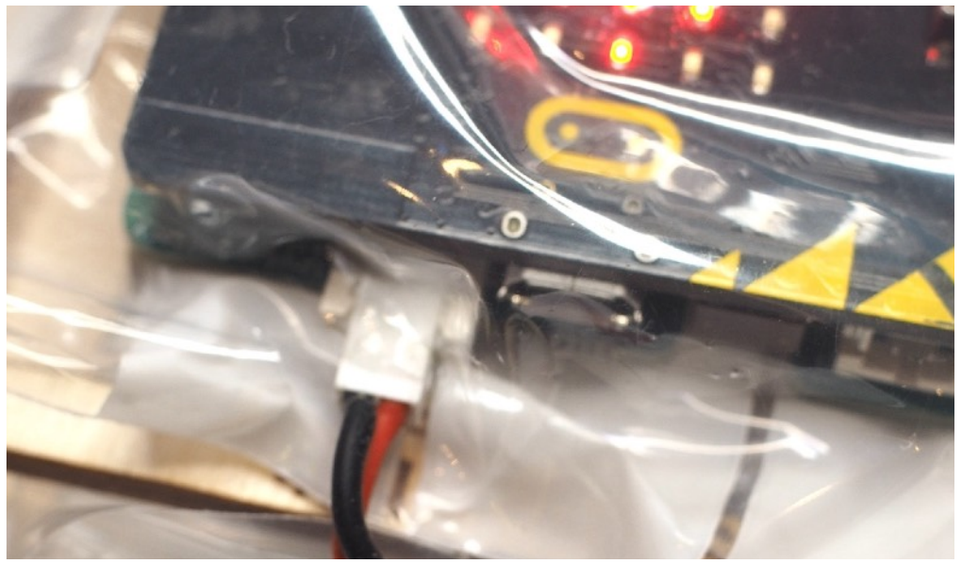



Snow:bit
without
propellers

2 CW
propellers




Attach the propellers to the engines.



To turn the power on and off, plug the battery into the battery plug near the USB connector.
Watch your fingers from the propellers!

# Removing friction under the skis

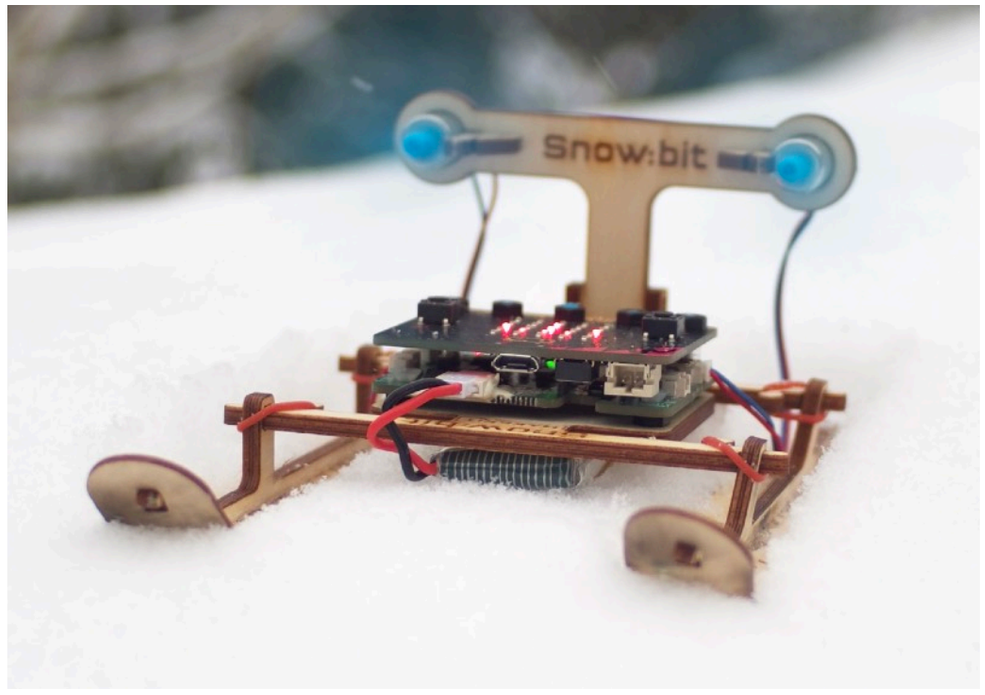
**Tools:**
Clear tape or ski wax, alternately fine sand paper.

Snow:bit relies on a perfectly smooth ski. The following methods can be used:

-Sanding/polishing with fine sandpaper from 300 and up to 800
-Waxing with candle wax or ski wax
-Attach a clear and shiny tape under both skis

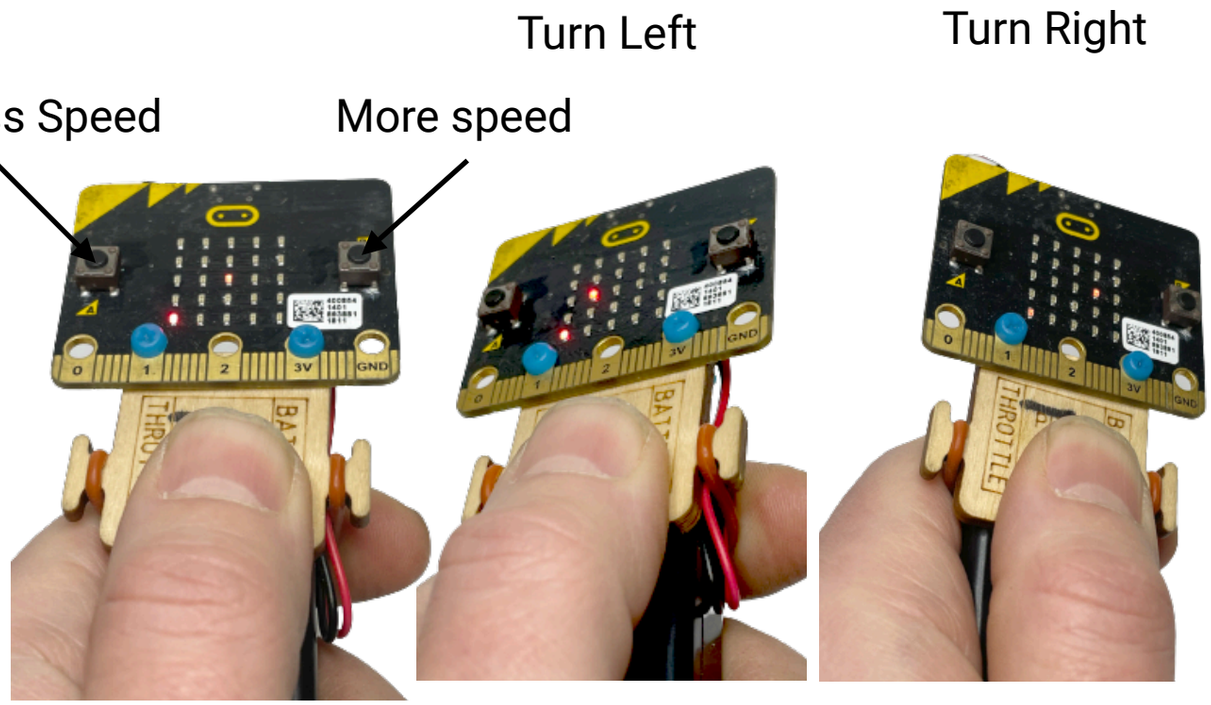
Feel that the skis are completely smooth before testing!

# Driving snow:bit




Snow:bit is controlled just like hover:bit and with the same remote control. (Air:bit control can also be used)

Start and stop: A + B button (press and release)
Less gas: Button A
More gas: Button B
Turn: Turn sideways like a key (see photo)



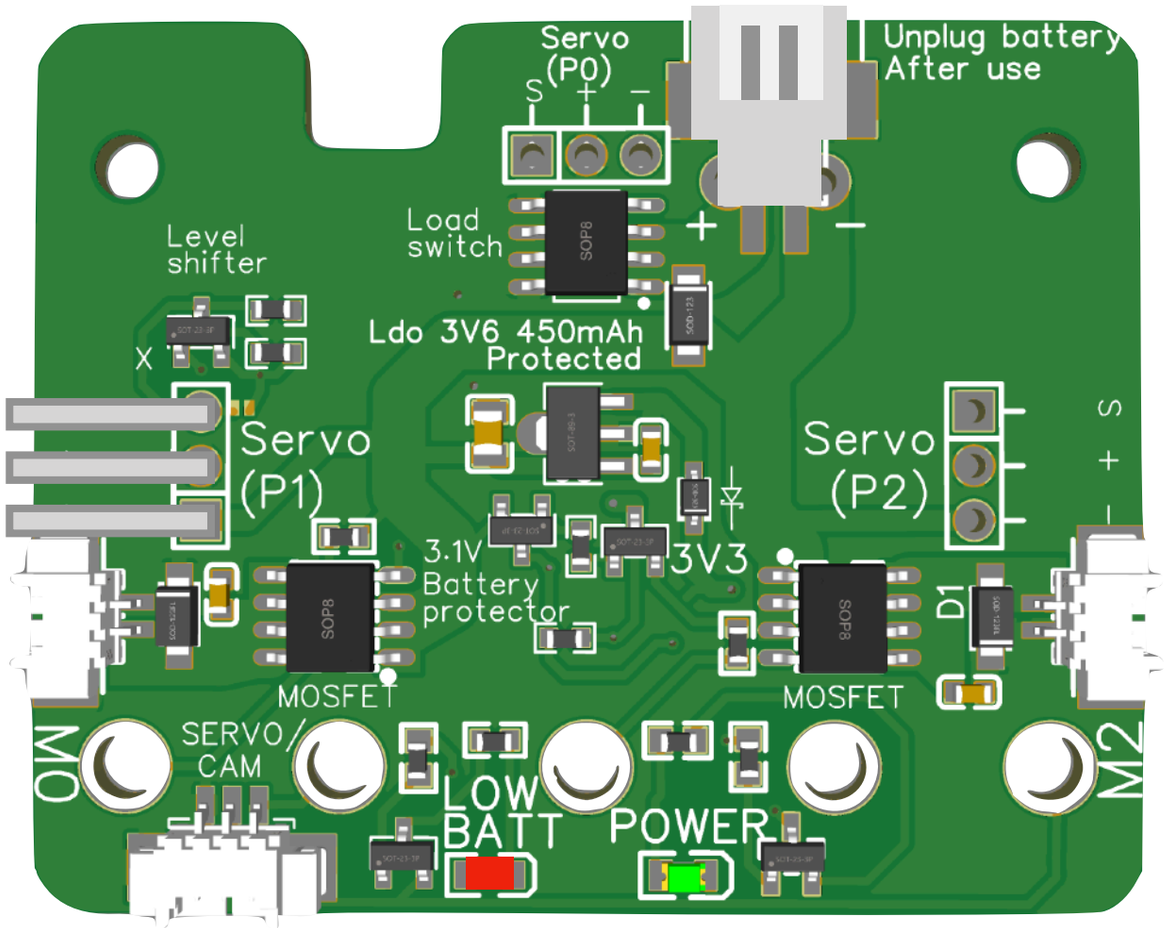

To turn, first hold control horizontally. Then turn the controller to the side you want to swivel. The more you twist, the more you turn.

**Battery Recommendations**
Fully charge the battery and allow it to maintain room temperature until it is ready to use.

Low temperature affects the effect. Try keeping the battery warm until use.

# Want to know more?

Connection for Battery




Connection for
Left motor

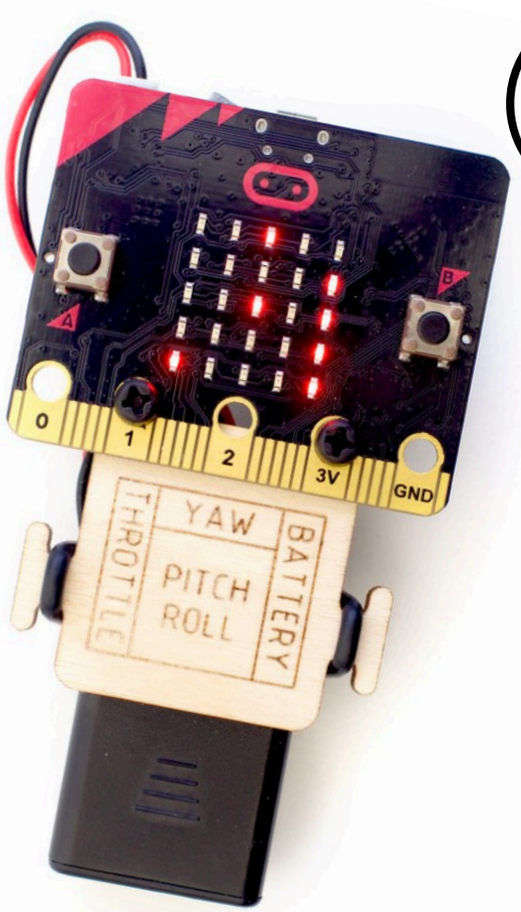
Connection for
Right motor

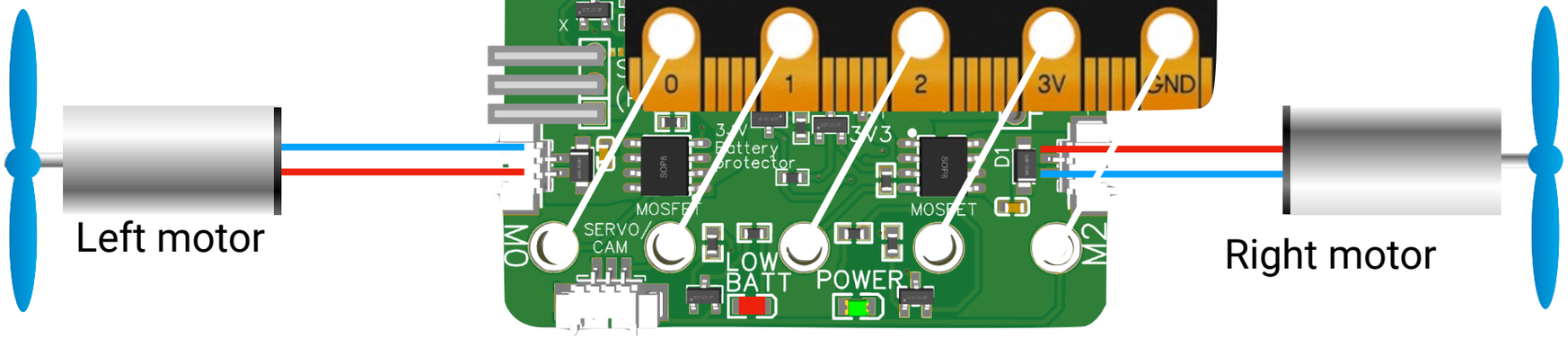
**Battery**
**Warning Light**

The control board amplifies the current from the micro:bit out to the motors. It also ensures that the micro:bit gets the right amount of voltage from the battery. If the battery is nearing empty, the red light will start blinking. Disconnect the battery to protect it. This is so as not to drain and damage the rechargeable battery.

**Note that if the red light flashes, the battery must be charged.**

# Electrical connections






LiPo battery

Micro:bit

Control Card

The microbit on the left transmits the three parameters Arm (start and stop), Roll (angle of taileror) and Throttle (gas) over radio.

The second micro:bit receives the signal, and then controls the M0 and M2 motors. The signals are amplified with the control board and sent to the motors.

MAKEKIT

**Rebuild your Snow:Bit for other things!**
**See more fun projects On makekit.no/docs**

Snow:bit is designed and manufactured in the old premises of Tanbergs Radio Factory at Skullerud in Oslo.

We welcome your questions and feedback.
Please do not hesitate to contact us!
Feel free to use our facebook chat


www.makekit.no

support@makekit.no

makekit

gomakekit (also on twitter)