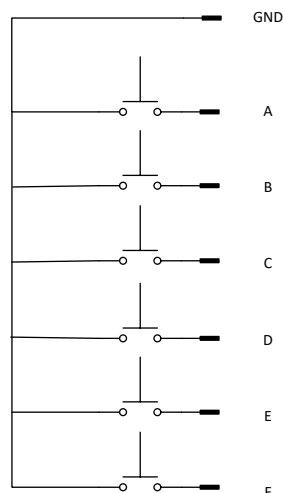


DESCRIPTION

The Momentary Button module is a simple and easy to use 6 channel push button normally open tactile switches arranged as a controller pad. Only the 6 buttons are integrated in this compact module allowing a module size of only 50x25mm board dimension. Microcontroller users may simply enable the internal pull-up (or pull down in some microcontrollers) resistors and avoid the need for external resistors. Arduino / Saleng-Uno users in particular, may directly insert the module into the header pins for digital pins 8 – 13 (see figure 2). The Momentary Button module is part of Layad Circuits’ Kimat series of rapid prototyping products.

SCHEMATIC



APPLICATION NOTES

When the male pin headers are installed at the bottom side, the module may connect directly, without wires, with the Arduino / Saleng Uno’s headers 8-13 as show in figure 2.

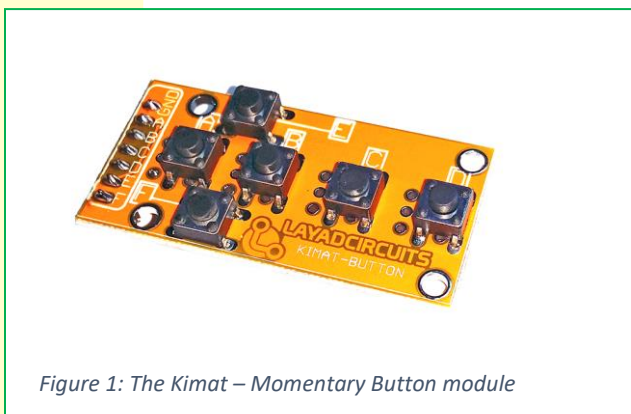


Figure 1: The Kimat – Momentary Button module

FEATURES

- 6 Channel Tactile NO push buttons
- Compatible with 3.3V or 5V controllers
- Compact form factor, board dimensions: 50x25mm
- Standard 2.54mm pitch headers
- Pin header connects directly with Arduino headers

PIN FUNCTIONS

Pin Label	Function/Operation/Remarks
Gnd	Common ground pin for all buttons
A ~ F	Individual pins for each button.

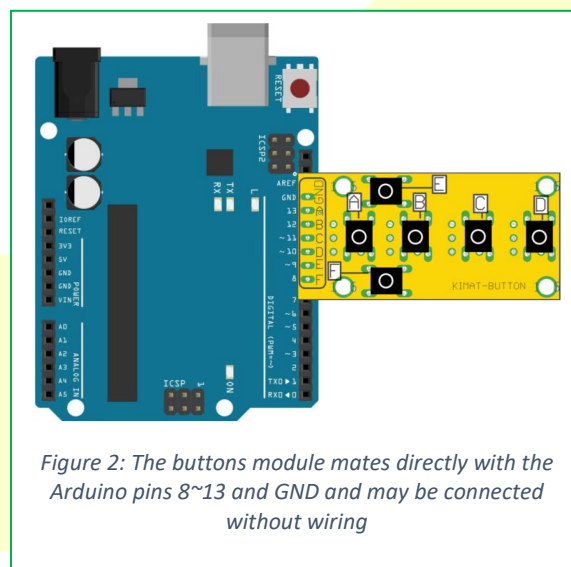


Figure 2: The buttons module mates directly with the Arduino pins 8~13 and GND and may be connected without wiring

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Below is an example Arduino sketch demonstrating how the module may be used. This follows the connection as shown in figure 2. The sketch simply enables the internal pull-up resistors and then prints the state of each pin. As this is a demonstration, it is noteworthy that certain applications may require debounce code.

```
const byte KEYA = 13;
const byte KEYB = 12;
const byte KEYC = 11;
const byte KEYD = 10;
const byte KEYE = 9;
const byte KEYF = 8;
byte a,b,c,d,e,f; //stores button states
```

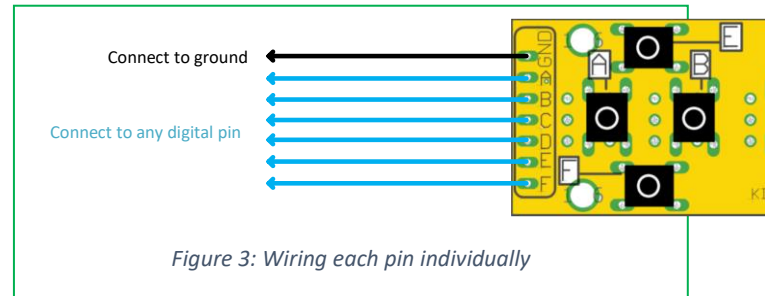
```
void setup() {
  pinMode(KEYA, INPUT_PULLUP);
  pinMode(KEYB, INPUT_PULLUP);
  pinMode(KEYC, INPUT_PULLUP);
  pinMode(KEYD, INPUT_PULLUP);
  pinMode(KEYE, INPUT_PULLUP);
  pinMode(KEYF, INPUT_PULLUP);
  Serial.begin(9600);
}
```

```
void loop() {
  a = digitalRead(KEYA);
  b = digitalRead(KEYB);
  c = digitalRead(KEYC);
  d = digitalRead(KEYD);
  e = digitalRead(KEYE);
  f = digitalRead(KEYF);

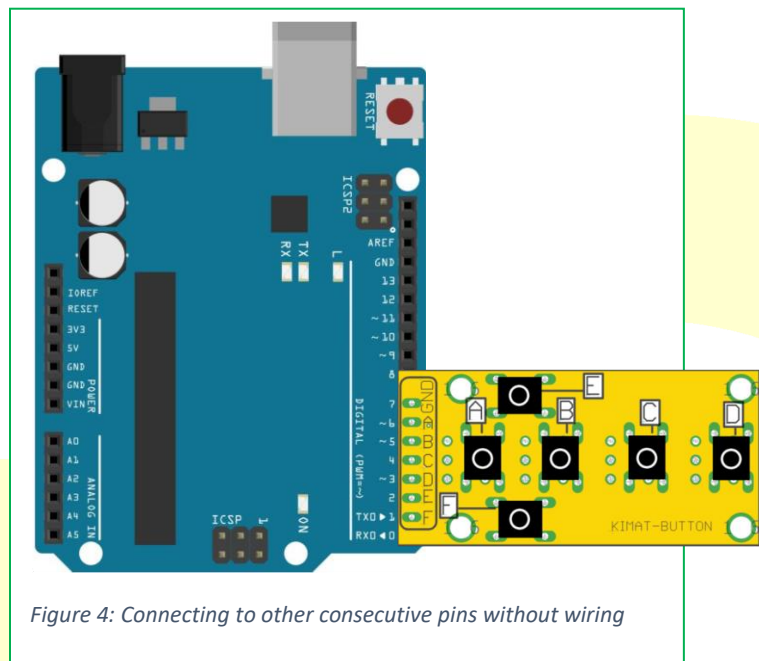
  if(a == LOW) Serial.print("ON \t");
  else Serial.print("OFF \t");
  if(b == LOW) Serial.print("ON \t");
  else Serial.print("OFF \t");
  if(c == LOW) Serial.print("ON \t");
  else Serial.print("OFF \t");
  if(d == LOW) Serial.print("ON \t");
  else Serial.print("OFF \t");
  if(e == LOW) Serial.print("ON \t");
  else Serial.print("OFF \t");
  if(f == LOW) Serial.print("ON \t");
  else Serial.print("OFF \t");
  Serial.println();
  delay(100);
}
```

To test, upload the sketch and open the serial monitor with a baud rate of 9600.

If you need to use other pins, you may simply connect each pin individually.



If you are connecting to pins that are consecutive, you could also use a digital pin as ground by declaring that pin as output and setting it LOW.



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The following Arduino sketch demonstrates how to use the setup shown in figure 4.

```
const byte KEYA = 6;
const byte KEYB = 5;
const byte KEYC = 4;
const byte KEYD = 3;
const byte KEYE = 2;
const byte KEYF = 1;
const byte GROUND = 7;

byte a,b,c,d,e,f; //stores button states

void setup() {
  pinMode(KEYA, INPUT_PULLUP);
  pinMode(KEYB, INPUT_PULLUP);
  pinMode(KEYC, INPUT_PULLUP);
  pinMode(KEYD, INPUT_PULLUP);
  pinMode(KEYE, INPUT_PULLUP);
  pinMode(KEYF, INPUT_PULLUP);
  pinMode(GROUND, OUTPUT);
  digitalWrite(GROUND, LOW);
  Serial.begin(9600);
}

void loop() {
  a = digitalRead(KEYA);
  b = digitalRead(KEYB);
  c = digitalRead(KEYC);
  d = digitalRead(KEYD);
  e = digitalRead(KEYE);
  f = digitalRead(KEYF);

  if(a == LOW) Serial.print("ON \t");
  else Serial.print("OFF \t");
  if(b == LOW) Serial.print("ON \t");
  else Serial.print("OFF \t");
  if(c == LOW) Serial.print("ON \t");
  else Serial.print("OFF \t");
  if(d == LOW) Serial.print("ON \t");
  else Serial.print("OFF \t");
  if(e == LOW) Serial.print("ON \t");
  else Serial.print("OFF \t");
  if(f == LOW) Serial.print("ON \t");
  else Serial.print("OFF \t");
  Serial.println();
  delay(100);
}
```

In case of the Arduino Mega, there are several schemes to avoid wiring. Figure 5 shows how to wire at either

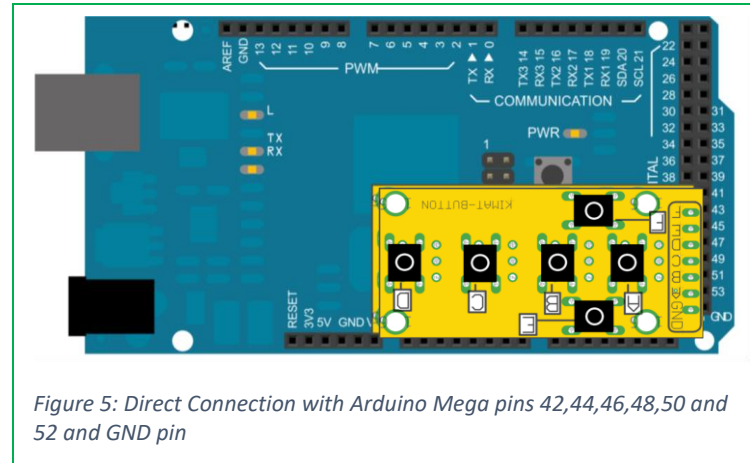


Figure 5: Direct Connection with Arduino Mega pins 42,44,46,48,50 and 52 and GND pin

pins 42,44,46,48,50, 52 or pins 43,45,47,49,51, 53 and the true GND pins beside 52 and 53.

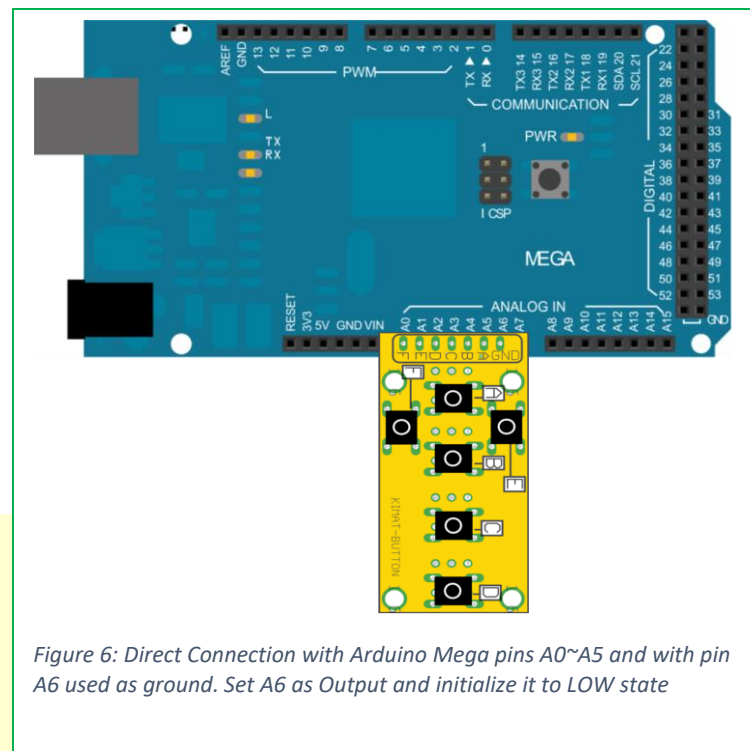


Figure 6: Direct Connection with Arduino Mega pins A0~A5 and with pin A6 used as ground. Set A6 as Output and initialize it to LOW state

Figure 6 uses pin A0~A5 as inputs and A6 as ground. A6 would have to be set as an output and initialized to the LOW state.

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General inquiries: info@layadcircuits.com Sales: sales@layadcircuits.com FB: facebook.com/layadcircuits Mobile: +639164428565

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