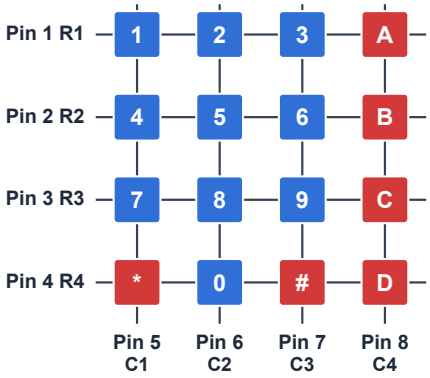
4x4 Membrane Matrix Keypad

16-key passive switch matrix with an 8-way 2.54 mm female header and adhesive back

16 KEYS | 4 ROWS x 4 COLUMNS | 8 PINS | 2.54 MM PITCH

KEY MATRIX AND PINOUT

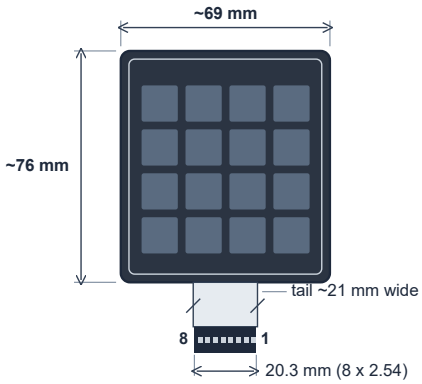


Each key joins its row to its column while pressed. Front view, not to scale.

PIN	LINE	KEYS ON THAT LINE
1	Row 1 (R1)	1 2 3 A
2	Row 2 (R2)	4 5 6 B
3	Row 3 (R3)	7 8 9 C
4	Row 4 (R4)	* 0 # D
5	Column 1 (C1)	1 4 7 *
6	Column 2 (C2)	2 5 8 0
7	Column 3 (C3)	3 6 9 #
8	Column 4 (C4)	A B C D

Pin 1 is the right-hand socket, marked 1 on the connector, with the keys facing you. Pins 1 to 8 run from right to left.

MECHANICAL OUTLINE



Front view, simplified and not to scale. Tail shown shortened. ~ = approximate.

FEATURE	VALUE	UNIT
Panel width x height	**~69 x ~76**	mm
Key pitch, rows and columns	**~14.5**	mm
Key face	**~12 x 12**	mm
Tail width, from bottom edge centre	**~21**	mm
Connector: female header, 1 row	**8 x 2.54**	mm
Mounting	**Adhesive back**	
Weight	**~6**	g

INTERFACE AND RECOMMENDED USE

ITEM	VALUE OR CONDITION
Circuit	Passive switch matrix with no power pin and no chips. A pressed key connects one row line to one column line.
Logic level	Works with 3.3 V and 5 V boards. The board's own pins and pull-ups set the signal level.
GPIO needed	8 (4 rows, 4 columns). Rows are read with pull-ups; columns are driven low one at a time.
Recommended signal Click IT	Logic-level scanning only, 5 V or less and about 1 mA or less per contact. Not for switching loads, lamps or relays directly.
Mating parts	2.54 mm male header pins or male Dupont jumper wires

SCANNING WITH THE KEYPAD LIBRARY

```
#include <Keypad.h>  // Keypad by Mark Stanley, Alexander Brevig
char keys[4][4] = {{'1','2','3','A'},{'4','5','6','B'},
                   {'7','8','9','C'},{'*','0','#','D'}};
byte rowPins[4] = {9, 8, 7, 6};   // keypad pins 1-4
byte colPins[4] = {5, 4, 3, 2};   // keypad pins 5-8
Keypad pad = Keypad(makeKeymap(keys), rowPins, colPins, 4, 4);
void setup() { Serial.begin(9600); }
void loop() {
  char k = pad.getKey();
  if (k) Serial.println(k);
}
```

Uno or Nano pin numbers shown. The library sets the row pins to INPUT_PULLUP and pulses each column low, so no external resistors are needed.

DESIGN NOTES

- **ESP32:** any eight general GPIOs work. Avoid input-only GPIO 34-39 and the boot pins 0, 2, 12 and 15.
- **Several keys at once:** a plain matrix reads one key, or two keys in different rows and columns, reliably. Three keys at the corners of a rectangle can show a fourth that is not pressed.
- **Debounce:** the library debounces each key in software, so no capacitors are needed.
- **Mounting:** peel the liner and press onto a clean, flat, dry surface. Route the tail through a slot rather than folding it sharply at the panel edge.

REVISION HISTORY

REV	DATE	CHANGE
1	2026-10-21	First release
2	2026-10-21	Pin 1 position corrected to the right-hand socket (continuity test)