

ZKit-51 Keypad

User Manual

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Chapter 1. ZKit-51 Keypad

1. Overview

The ZKit-51 Keypad provides extended input capabilities to the ZKit-51 motherboard with a 16-key 4x4 row matrix. The Keypad can be used to input numbers and special characters *, #, Enter, Esc, Up Arrow and Down Arrow. The micro-controller detects keystrokes using a scanning algorithm described in Section 5, "Scanning Algorithm".

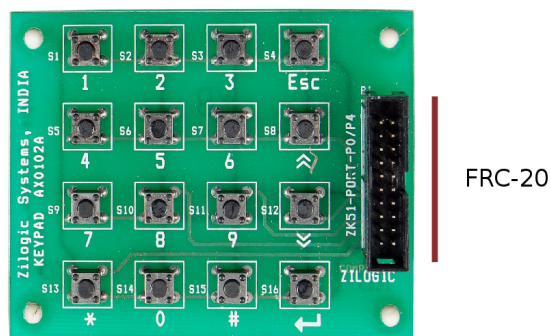
2. Features

- Low profile push button keys
- 16 Push Button Keys
- Arranged in 4x4 matrix

3. Locating Components

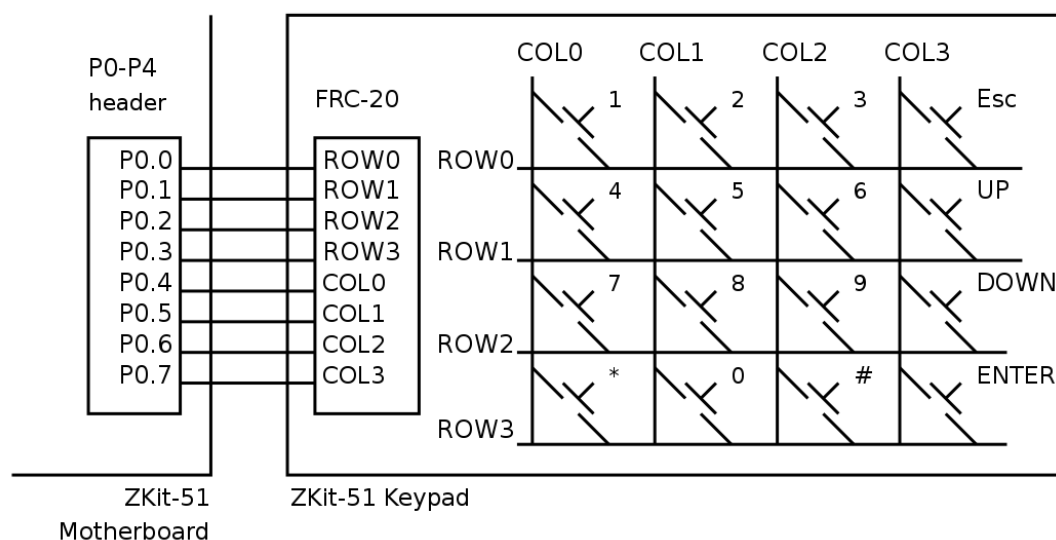
The location of the components on the board are indicated in the following diagram.

Figure 1.1. Front View



4. Connectivity

The Keypad can be connected to the ZKit-51 Motherboard's PORT-P0/P4 header using FRC-20 connector. The connection details are given below.

Figure 1.2. Signal connection diagram**Table 1.1. Signal connection table**

Pin #	Motherboard	Keypad	Pin #	Motherboard	Keypad
1	VCC	-	2	P0.0/AD0	COL0
3	P0.1/AD1	COL1	4	P0.2/AD2	COL2
5	P0.3/AD3	COL3	6	P0.4/AD4	ROW0
7	P0.5/AD5	ROW1	8	P0.6/AD6	ROW2
9	P0.7/AD7	ROW3	10	P4.0/SCK/SCL	-
11	P4.1/MISO/SDA	-	12	P4.2/MOSI	-
13	P4.3/SS	-	14	SCL	-
15	SDA	-	16	WR/P3.6	-
17	RD/P3.7	-	18	ALE	-
19	INT1/P3.3	-	20	GND	-

5. Scanning Algorithm

The micro-controller detects keystrokes using a scanning algorithm. Scanning can be done column-wise or row-wise. The row-wise scanning algorithm is described below.

- a. Configure column pins for input.
- b. Configure row pins for output.
- c. Drive 1 in all rows.
- d. Initialize `row_counter` to 0.
- e. Drive row indicated by the `row_counter` to 0.
- f. Read the column signal status.
- g. If any of the columns is low, a button at that row and column position has been pressed. Return the position of the button.
- h. Increment `row_counter`.
- i. If `row_counter` less than 4, goto step e.
- j. Return no key press.