The JK microsystems matrix keypad driver provides an easy means of scanning a matrix of up to 8x8 keyswitches or pushbuttons. Each keypress transmits a programmer-defined character to DOS or the current application. This process does not interference with the existing serial console input.

Software configuration

The matrix keypad driver source file may need to be configured before installation. To locate the proper source code for your controller, look in the keypad subdirectory under the appropriate controller board on the development kit CD, or the downloads section of our website. In addition, you will need a text editor, TASM (or equivalent) assembler and linker, and an .EXE to .COM converter such as EXE2BIN or EXE2COM.

The first task in configuring the keypad driver is to set the number of rows and columns used by the keypad. The number of rows scanned must be correct since scanning a non-existent row may indicate a keypress in that row and thus prevent the driver from scanning of the rest of the matrix. Edit the data area of the .ASM file and modify the equates for the number of rows and columns to accurately reflect your keypad. Valid values are from 1 to 8.

Next edit the keymap to properly reflect the characters you wish to send. Row 1, column 1 is an * (asterisk) in the release software. Below is the default keymap:

Row 4	1	2	3	A
Row 3	4	5	6	B
Row 2	7	8	9	C
Row 1	*	0	#	D
	Col 1	Col 2	Col 3	Col 4

You may specify up to 8 rows and 8 columns. Unused rows require a db 0 directive as a placeholder. After you have modified the keymap to suit your needs, close the file, reassemble, relink and convert the .EXE file to a .COM file. Upload the .COM file to your JK microsystems controller.

Hardware configuration

The keypad is connected to I/O ports on the controller. Connections for using a 4x4 keypad with a Flashlite V25 are illustrated below. See the table below for the required connections on other controllers. P0.0 to P0.7 are used as scanning outputs for columns 1 to 7. PT.0 to PT.7 are used for row inputs 1 to 7. Each active row (input) must have a pullup resistor to Vcc. The resistor value is not critical, 10k ohms is fine.

Final configuration and test

Connect the keypad and power up your controller. Run the keypad driver. You should get a DOS prompt after the driver loads. Press the keypad keys. You should see the proper characters appear on the console screen. Modify the STARTUP.BAT file to load the keypad driver at power up or reset.

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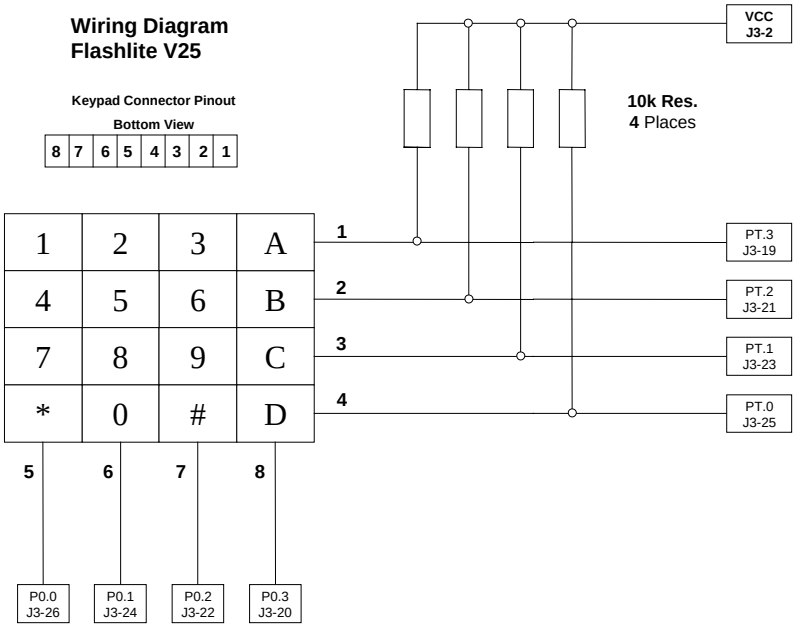

		4x4 Keypad Connector							
		Rows (input)				Columns (output)			
	Pullup	1	2	3	4	5	6	7	8
Flashlite V25	Vcc J3-2	PT.3 J3-19	PT.2 J3-21	PT.1 J3-23	PT.0 J3-25	P0.0 J3-26	P0.1 J3-24	P0.2 J3.22	P0.3 J3-20
Flashlite 386Ex	Vcc J2-2	PA.3 J2-19	PA.2 J2-21	PA.1 J2-23	PA.0 J2-25	PB.0 J2-26	PB.1 J2-24	PB.2 J2-22	PB.3 J2-20
LogicFlex	+3.3V J6-2	PA.3 J6-19	PA.2 J6-21	PA.1 J6-23	PA.0 J6-25	PB.0 J6-26	PB.1 J6-24	PB.2 J6-22	PB.3 J6-20
Flashlite 186	+3.3V J9-6	PC.3 J9-19	PC.2 J9-21	PC.1 J9-23	PC.0 J9-25	PD.0 J9-26	PD.1 J9-24	PD.2 J9-22	PD.3 J9-20

Generating multiple characters per keypress

It is possible to load more than one copy of the keypad driver in order to generate multiple characters per keypress. Create a uniquely named copy of the driver for each keypress, with the keymap of each driver edited for each of the successive characters in the string. Load the drivers in reverse of the order in which characters should be displayed (the last driver loaded is the first in the chain). This technique should be limited to 2 or 3 characters because of the increased timer tick interrupt latency.

Rev	Date	Author	Changes
A	24 Dec 2002	EW	Combine documents for all controllers (V25, 386Ex, LF, FL186)

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