

# Use of the PIC serial board in your individual and group projects.

The PIC serial board supports several capabilities which you may find useful in creating robust and effective projects. Its capabilities include:

3 analog values which consist of single turn pots with a scale of 0-255. ( see `getAnalogValues` )

13 keys that can be used to simulate binary inputs. ( see `getAllKeyData` )

8 led's that can be used to demonstrate binary outputs ( see `setLeds` )

A 32 character LCD display for textual output. ( see `setDisplayChar` )

To use each of these functions, the following list of Operations is provided (you will also need to include `ioLib.h`, `tyLib.h`, `iomani.h` in your project configuration file in the "Standard Headers" section).

## **getAnalogValues ( int i )**

*Returns the value of each of the 3 analog values on the PIC board.*

Return type is 'char'

### Args:

'int' i (having a range of 0-2)

The format of the 3 analog values is a number on the range 0 – 255.

## **getAllKeyData ( int i )**

*Returns the status and values of all Keypad buttons.*

Return type is 'long'

### Args:

'int' i (having a range of 0-0xFFFF)

The input parameter is used to reset the COS bits. A '1' in a bit position will reset the COS bit. If no parameter is used, it defaults to 0xFFFF.

The 32 bit long returned by this operation is comprised of 4 bytes. 2 status bytes and 2 data bytes.

The format of the status bytes is as follows:

*Each time `getAllKeyData(int i)` is called, it returns and clears the change of state status of the Keypad values.*

Status Byte[3]

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
n/a	COS Key 1	COS Key 2	COS Key 3	COS Enter	COS Key 4	COS Key 5	COS Key 6

Status Byte [2]

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
n/a	COS Key 7	COS Key 8	COS Key 9	unused	COS Key .	COS Key 0	COS CHS

*Each time `getAllKeyData()` is called, it returns the Keypad values.*

Data Byte [1]

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
n/a	Key 1	Key 2	Key 3	Enter	Key 4	Key 5	Key 6

Data Byte [0]

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
n/a	Key 7	Key 8	Key 9	unused	Key .	Key 0	CHS

## **setDisplayChar ( int I, char p\_Display )**

*Allows the user to set each element of the 32 character Display on the PIC board.*

Return type is 'void'

### Args:

'int' i1 → the index of the display character to set. 0-31

'char' p\_Display → the character in ASCII\* that is displayed.

The display character set is described in: [PICserialDisplayCharacters.pdf](#)

## **setLeds ( char p\_leds )**

*Allows the user to set the 8 led's on the PIC board.*

Return type is 'void'

### Args:

'char' p\_leds → the 8 element led display, each bit is treated as one of the 8 led's.