DAQCplate Quick Reference Guide 1.02

Digital Input Functions

getDINbit(addr,bit) - return single bit value

getDINall(addr) - return all eight bits

enableDINint(addr, bit, edge) - enable interrupts for an input change on the specified bit. The "edge" value can be 'r' for rising, 'f' for falling, of 'b' for both.

disableDINint(addr,bit) - disable interrupts on the specified bit

getTEMP(addr,bit,scale) - a special function to read a DS18X20 temp sensor attached to the specified bit input. Scale values can be 'c', 'f', or 'k' for Celsius, Fahrenheit, or Kelvin. Note that this function takes about 1 second to complete.

Digital Output Functions

setDOUTbit(addr, bit) - set single bit

clrDOUTbit(addr, bit) - clear single bit

toggleDOUTbit(addr, bit) - toggle a single bit

setDOUTall(addr,byte) - set all the bits a once. Value must be 172 or less.

Analog to Digital Functions

getADC(addr, channel) - return voltage from single channel

getADCall(addr) - return voltage from all channels

Digital to Analog Converter & Pulse Width Modulator Functions

setPWM(addr,channel,value) - set PWM duty cycle from 0 to 1023 (0 to 100%)

getPWM(addr,channel) - return current PWM setting.

setDAC(addr,channel,value) - set DAC output voltage to 0 to 4.097 volts.

getDAC(addr,channel) - return current DAC output voltage.

calDAC(addr) - calibrate the DAC outputs. Use this function if you are unsure about the quality of your power supply.

Bicolor LED Control Functions

setLED(addr,color) - turn on one of the LEDs in the bicolor LED package

clrLED(addr,color) - turn off one of the LEDs in the bicolor LED package

Hybrid Functions

getRANGE(addr,channel,units) - reads distance from an HC-SR04 ultrasonic sensor. The channel argument calls out the value of the digital input / digital output pair required to interface to the sensor. The units can 'i' for inches or 'c' for centimeters.

System Level Functions

getID(addr) - return Pi-Plate descriptor string

getFWrev(addr) - return FW revision in byte format

getHWrev(addr) - return HW revision in byte format

getADDR(addr) - return address of pi-plate. Used for polling available boards at power up.

intEnable(addr) - enable interrupts from the DAQC. GPIO22 will be pulled low if an enabled event occurs.

intDisable(addr) - disables and clears all interrupts on the DAQC.

getINTflags(addr) - returns 16 bit flag value then clears all INT flags

Poll() - determine what Pi-Plates are on stack as well as their addresses

Switch Functions

getSWstate(addr) - returns current state of on board switch. A value of 1 is returned when the switch is up and a value of 0 is returned when it's down.

enableSWpower(addr) - pushing button on ppGPIO will short RPI GPIO23 to GND and then remove 5VDC 45 seconds later. Note that this setting is saved in nonvolatile memory and only has to be performed once

disableSWpower(addr) - disables the above. Note that this setting is stored in nonvolatile memory and only has to be performed once.

enableSWint(addr) - allows the switch to generate an interrupts when pressed. Global interrupts must be enabled before using this function.

disableSWint(addr) - blocks switch on board from generating an interrupt.

Definitions

Address (addr): DAQCplates have jumpers on the board that allow their address to be set to a value between 0 and 7.

ADC (analog to digital converter) channels can be 0 through 8 for a total of 9 channels. Reading channel 8 will return the power supply voltage.

DIN (digital input) bit values can be 0 through 7 for a total of 8 bits

DOUT (digital output) bit values can be 0 through 6 for a total of 7 bits

PWM (pulse width modulator) channels can be 0 or 1 for a total of 2 channels. The output values can be between 0 and 1023.

DAC (digital to analog converter) channels can be 0 or 1 for a total of 2 channels. The output value can be between 0 and 4.096 volts

LED (led) values can be 0 for the red LED or 1 for the green.

For more information and examples visit Pi-Plates.com