

# Exercise 4 -- Measure an Analog Input (Part 2)

## Introduction

The document **Packages.pdf** in **ada-remoteio-tutorial1/** contains annotated package specifications for the packages that you will be using during this tutorial session. For this exercise you will need to reference the packages **ADC** and **Voltage**.

In the previous exercise you learned how to acquire a sampled data value from a remote ADC input. It is often preferable to model sensor data samples as real numbers corresponding to the physical property being measured or controlled.

An ADC (Analog to Digital Converter) samples and digitizes the voltage present at its input. The **ADC** package provides services to acquire a scaled voltage value instead of a sampled data value.

The function **ADC.Create** requires three parameters: An analog input object of type **Analog.Input**, a reference or full scale range voltage of type **Voltage.Volts**, and a gain factor of type **Voltage.Volts**.

The reference or full scale range voltage and gain parameters are determined by the specific ADC hardware. The LPC1114 I/O Processor board ADC hardware has a reference or full scale range voltage of 3.3V and a gain of 1.0 V/V at the terminal block. Other hardware will vary widely. If there is signal processing external to the ADC (e.g. an 10x linear amplifier for measuring small signals) the gain factor supplied to **ADC.Create** can be modified to account for it.

In this exercise you will modify the program **test\_analog\_input** to display the **voltage** at the potentiometer center terminal (yellow wire) in addition to the analog sampled data value.

## Instructions

1. You will need to add "**with Voltage**".
2. You will need to declare and create a voltage input object instance of type **Voltage.Input**, using **ADC.Create**.
3. To acquire a voltage sample, use the **Get** method of the voltage input object instance.
4. To display a voltage sample, use **Voltage.Volts\_IO.Put**.