

Data acquisition with the AD7705 on the raspberry PI

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Chapter 1

Data acquisition with the AD7705 on the raspberry PI!

The AD7705 is a two channel sigma delta converter which has differential inputs, a PGA and programmable data rates. It's perfect for slowly changing inputs such as pressure, temperature, heart rate etc.

This repo offers the class `AD7705Comm` which does all the low level communications with the AD7705. The user just need to register a callback handler which then returns the samples in realtime.

The class uses the DRDY of the AD7705 connected to Port 22 and waits for a falling edge on this port to read the data. This is done via interrupts / poll so that the ADC process sleeps until new data becomes available.

Github: https://github.com/berndporr/rpi_AD7705_daq

Chapter 2

Class Index

2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

AD7705callback	Callback for new samples which needs to be implemented by the main program	5
AD7705Comm	This class reads data from the AD7705 in the background (separate thread) and calls a callback function whenever data is available	5

Chapter 3

Class Documentation

3.1 AD7705callback Class Reference

Callback for new samples which needs to be implemented by the main program.

```
#include <AD7705Comm.h>
```

Public Member Functions

- virtual void [hasSample](#) (int sample)=0
Called after a sample has arrived.

3.1.1 Detailed Description

Callback for new samples which needs to be implemented by the main program.

The function hasSample needs to be overloaded in the main program.

The documentation for this class was generated from the following file:

- AD7705Comm.h

3.2 AD7705Comm Class Reference

This class reads data from the AD7705 in the background (separate thread) and calls a callback function whenever data is available.

```
#include <AD7705Comm.h>
```

Public Member Functions

- [AD7705Comm](#) (const char *spiDevice="/dev/spidev0.0")
Constructor with the spiDevice.
- void [setCallback](#) ([AD7705callback](#) *cb)
Sets the callback which is called whenever there is a sample.
- void [start](#) (int samplingRate=[SAMPLING_RATE_50HZ](#))
Starts the data acquisition in the background and the callback is called with new samples.
- void [stop](#) ()
Stops the data acquisition.

Static Public Attributes

- static const int [SAMPLING_RATE_50HZ](#) = 0
Sampling rates.
- static const int [SAMPLING_RATE_60HZ](#) = 1
- static const int [SAMPLING_RATE_250HZ](#) = 2
- static const int [SAMPLING_RATE_500HZ](#) = 3

3.2.1 Detailed Description

This class reads data from the AD7705 in the background (separate thread) and calls a callback function whenever data is available.

3.2.2 Constructor & Destructor Documentation

3.2.2.1 AD7705Comm()

```
AD7705Comm::AD7705Comm (
    const char * spiDevice = "/dev/spidev0.0" )
```

Constructor with the spiDevice.

The default device is /dev/spidev0.0.

The documentation for this class was generated from the following file:

- AD7705Comm.h

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