ADC Interfacing on eYFi-Mega Board

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> IIT Bombay July 5, 2022









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- Sampling
- Quantization
- Encoding





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- Sampling: Converts continuous time analog signal into discrete version of input



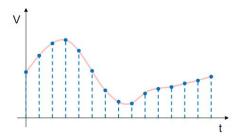


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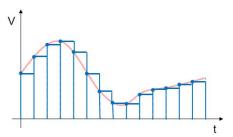


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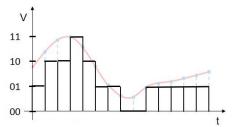


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Features of in-built ADC





Features of in-built ADC

- 10-bit Resolution
- 13 260 μ s Conversion Time
- 16 Multiplexed Single Ended Input Channels
- 14 Differential Input Channels
- 0 VCC ADC Input Voltage Range
- Selectable 2.56V or 1.1V ADC Reference Voltage
- Free Running or Single Conversion Mode
- Interrupt on ADC Conversion Complete





ADC Channels





ADC Channels

Pin Name	ADC Channel
PF0	ADC0
PF1	ADC1
PF2	ADC2
PF3	ADC3
PF4	ADC4
PF5	ADC5
PF6	ADC6
PF7	ADC7

Pin Name	ADC Channel
PK0	ADC8
PK1	ADC9
PK2	ADC10
PK3	ADC11
PK4	ADC12
PK5	ADC13
PK6	ADC14
PK7	ADC15





ADC Header on eYFi-Mega Board





ADC Header on eYFi-Mega Board

NO DO DO DO DO DO DO DO										
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- The resistance values of LDR:







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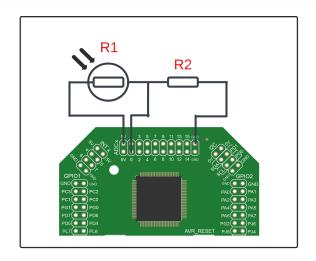


Interfacing Diagram





Interfacing Diagram











Assignment 1
ADC Conversion
ADC Conversion
Assignment 2

Assignment 1

Problem Statement: Printing the values of LDR in Serial Monitor





1 Problem Statement:

Printing the values of LDR in Serial Monitor

• LDR Pin » A0





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- Code:





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- Code:

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//Select the input pin for LDR
SensorPin = A0

//Getting LDR values using the function analogRead()
SensorVal = analogRead(SensorPin)

//Printing the values in Serial Monitor
Serial.println(SensorVal)
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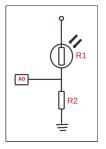
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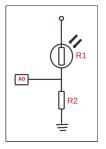






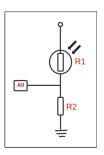






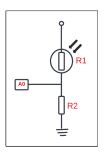








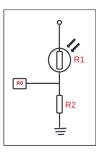




$$Vo = \frac{R2}{R1 + R2} * Vin$$







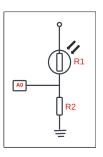
 Voltage received by A0 pin can be found by using following formula:

$$Vo = \frac{R2}{R1 + R2} * Vin$$

• Given: R2 = 100K ohms and Vin = 5V





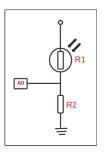


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- Given: R2 = 100K ohms and Vin = 5V
 - ① Darkness: 1 mega-ohms





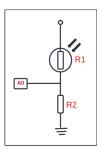


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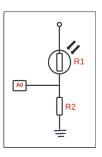


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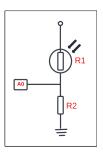


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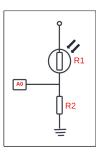


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- Given: R2 = 100K ohms and Vin = 5V
 - ① Darkness: 1 mega-ohms :: Vo = 0.45V
 - Brightness: hundred ohms :: Vo = 4.99V













$$\mbox{Digital Value} = \frac{\mbox{Resolution of ADC} * \mbox{Analog Voltage Measured}}{\mbox{Reference Voltage}}$$





• Following is the conversion formula for ADC:

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ADC on eYFi-Mega: 10-bit ADC





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- For example: Resolution of ADC = 1023, Reference Voltage = 5V





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 - ② Digital value = 863 => Analog voltage =





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ADC Conversion
ADC Conversion
Assignment 2

Assignment 2

Problem Statement: Setting threshold for turning the LED On or Off





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- LDR Pin » A0
- LED Pin » 6





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Thank You!

Post your queries on: helpdesk@e-yantra.org



