I-AN LIGHT MEASUREMENT WITH LDR

Required knowledge LDR, Ohms Law, Voltage divider

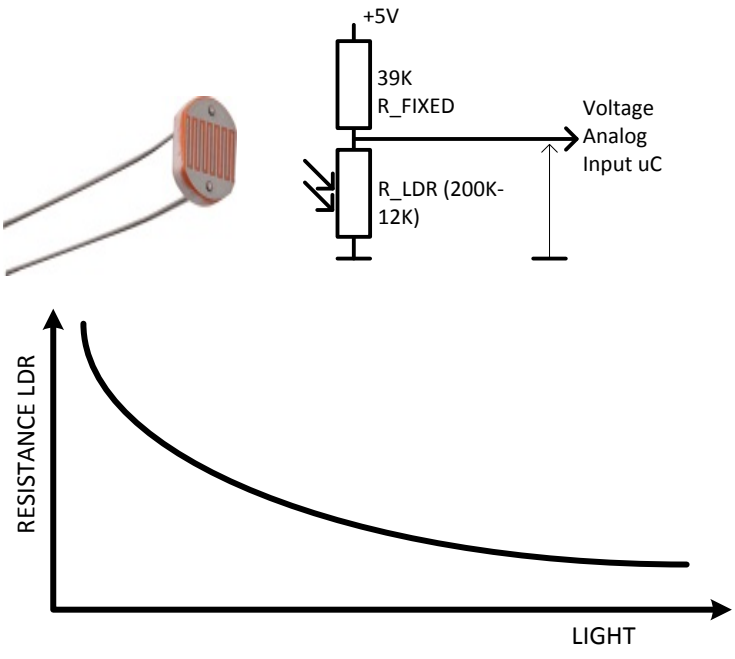
JUST GoogleIt!	**Basic** : Ohms Law, voltage divider LDR , light dependent resistor

LDR – " Light Dependent Resistor" is an electronic component that can be used to measure light. The resistance of an LDR changes when more or less light reaches the LDR sensor.

components:

LDR light sensor	VT90N1 Farnell: 2293503
Resistor 39KOhm – 250mW	

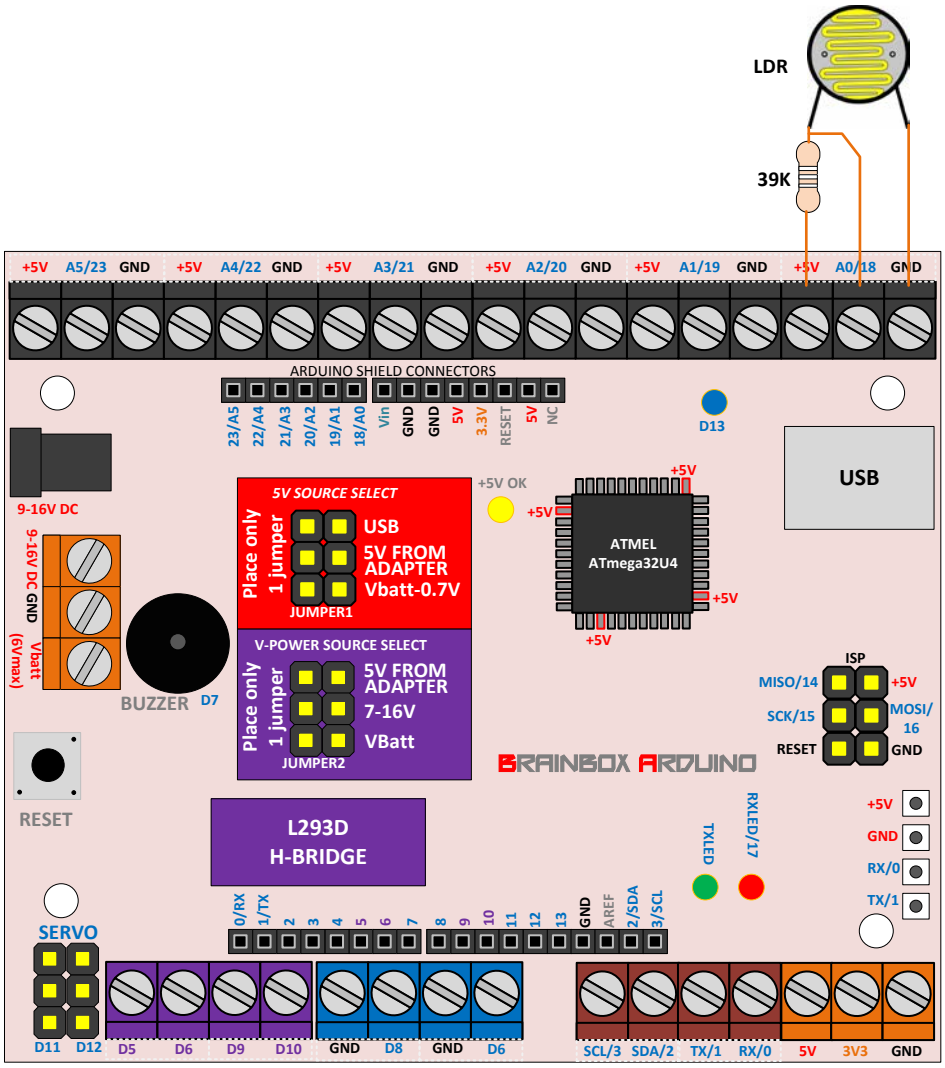
1. Our microcontroller can measure analog voltages between 0V and 5V. It cannot measure resistance. We need to find a way to convert the resistance of the LDR to a voltage between 0V and 5V. We will use a voltage divider to do this.



R_FIXED	39
LDR - Kohm	Voltage Analog Input uC
200	4,18
150	3,97
100	3,60
50	2,81
40	2,53
30	2,17
20	1,69
18	1,58
16	1,45
14	1,32
12	1,18
10	1,02

2. The resistance of our LDR sensor varies between 200KOhm when there is no light and approximately 12KOhm when the LDR measures a lot of light. We have chosen a series resistor of 39KOhm. With the formula $Voltage\ Analog\ Input\ uC = 5V.(\frac{R\_LDR}{R\_LDR+R\_FIXED})$ we can calculate the voltage at the Analog input pin of the uC. You can see a few calculated values in the table.

3. Connect the LDR to one of the 6 analog inputs (A0, A1, A2, A3, A4, A5) as you can see in this drawing:



CODE EXAMPLE: '**I-AN**'