INDUSTRIAL SENSORS

| Required knowledge | Switch, Ohm's Law, Voltage Divider |

JUST Google It!	**Capacitive sensor, Inductive sensor, Photocell sensor**
	Pepperl+Fuchs, Telemecanique, Festo, Omron

Industrial sensors are used to detect object in machines. These sensors are built to withstand heavy duty circumstances. This is why these sensors are quite expensive. A large part of these industrial sensors can be connected to our Brainbox.

Different types of industrial sensors:

Inductive   : can only measure metal objects

Capacitive   : can measure other materials (look at the datasheet)

Optical sensors   : They switch when a light beam is interrupted

Sensor	Manufacturers: Pepperl+Fuchs, Telemecanique, Festo, Omron, …
Resistors	8K2, 4K7 and 390R

1. Power supply: Look at the datasheet of the sensor and make sure that the sensor can be powered by 12V DC. In a lot of cases these sensors state : U = 10-60VDC which means that this sensor can be powered with DC voltages between 10 and 60V. OK for our 12V supply! <u>Sensors that need to be powered with AC voltages or with voltages over 12V are not recommended to be used with our Brainbox for safety purposes.</u>

   - The 12V to power the sensor can be connected to the 9-16V DC terminal (see red arrow). In this case the adapter needs to deliver 12V DC. Check this voltage before you connect the sensor to the Brainbox.
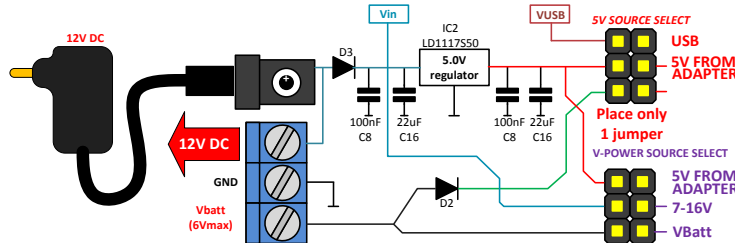
   - If you choose to power the sensor from an external power supply, make sure not to forget to connect the ground of the external power supply to the ground of the Brainbox.

2. The industrial sensors that we have tested so far can be divided in two categories:

   - The left category are sensors that – when they are activated – place a voltage on the output pin – equal to the power supply voltage (12V in our case). Because our Brainbox can only withstand voltages up to 5.5V at an input pin, we need to use a voltage divider circuit to lower this voltage to a voltage below 5V. Check this voltage before you connect the sensor to the Brainbox.
   - The right category are sensors that close an internal switch when activated and can be connected exactly the same as you have learned to connect a normal switch to the Brainbox.
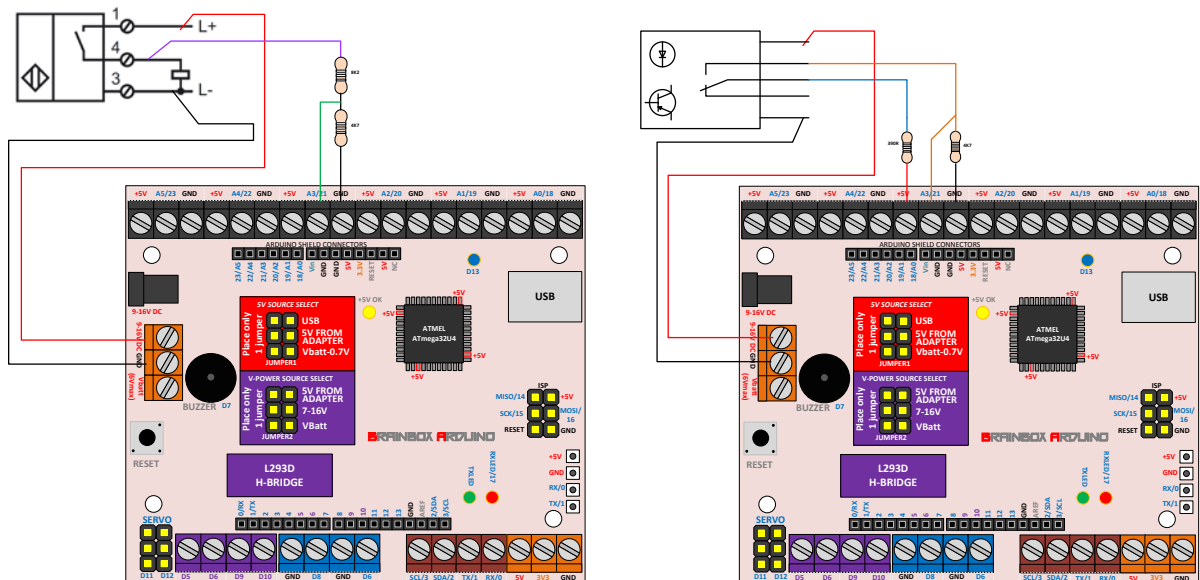
3. Connect the sensor to one of the digital IO pins.

CODE EXAMPLE: 'I-DIG'