

## WER 2020-2021 - INTERNET OF EVERYTHING

### Technical sheet

### Krypton 5 Robotics kit

What's in the box?



#### Programmable Logic Controller:

User friendly main control board. This is the brain for every project in this course. The controller manages the program signals from and to each sensor and actuator. It offers a simple UI through an LCD screen.



#### Main characteristics:

- RJ15 connector pins for 7 sensors, 4 motors, and 1 camera module
- Multicore Cortex-A7 processor @1.3GHz
- 1.6Gb storage
- 64KB RAM
- Wi-Fi & Bluetooth modules
- 2.3" single touch LCD screen
- Embedded sensors: Gyroscope, Compass, Microphone.
- 1500mAh rechargeable battery

## Structural parts:

A total of **762** plastic parts are included in this kit. These structural components are meant to be assembled without the need of special tools.

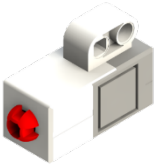
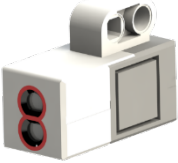
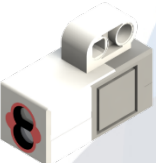
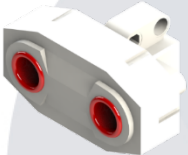
Part list				
Porous beam Black 30mm x20 	Porous beam Red 30mm x6 	Porous beam Green 30mm x6 	Porous beam Yellow 30mm x6 	Porous beam Blue 30mm x6 
Porous beam 20mm x20 	Porous beam Gray 30mm x20 	Porous beam gray 70mm x25 	Porous beam White 110mm x25 	Axle(20mm) x10 
Axle (30mm) x10 	Axle (40mm) x10 	Axle(50mm) x10 	Axle (60mm) x10 	Axle(80mm) x10 
Coupling (90°) x6 	Mecanum Wheel x 1 	Guide Wheel x4 	Coupling(20mm) x8 	Marble x1 
Bolt(20mm) x120 	Bolt(30mm) x60 	Bolt(15mm) x20 	Axle sleeve x30 	Beam U shape x2 
Middle A connector x4 	Slide bearing x8 	Short bolt(2mm) x10 	Middle L connector x10 	Middle H connector x2 
Porous beam 90° x10 	Porous beam 126.87° x20 	Porous beam 90° x10 	Porous beam 126.87° x20 	Gray gear #1 x4 

Black gear #1 x4 	Yellow gear #1 x4 	Gray gear #1 x4 	Black gear #2 x4 	Yellow gear #2 x4 
Cube x30 	Half cube x20 	Cube connector x20 	Slope cube x10 	60° cube x5 
Non-slip rubber x44 	Rail x66 	Rail rim x4 	Tire x2 	Rim x2 
Square beam x6 	Small slab x1 	1# Slab x3 	2# Slab x2 	3# Slab x1 
4# Slab x1 	8# Slab x1 	Cable para motor x12  3 pin		

## Sensors

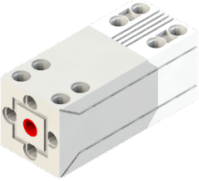
These components are used to collect data from the environment. Each sensor must be connected to the PLC board and be programmed individually.

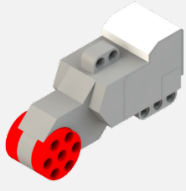
Sensor list			
Picture	Name	Quantity	Function
-	Compass (embedded)	1	Using the earth's magnetic field, determines the position in which the PLC is facing.
-	Gyroscope (embedded)	1	Determines the acceleration force magnitude in X, Y and Z axis.
-	Microphone (embedded)	1	Records any environmental audio when active.

-	Position (embedded in motor)	3	Determines motor's axis actual position and RPM
	Touch	1	Recalls the current state of the button, either pressed or not.
	Grayscale	5	Analyses the color of an object (how light or dark) to determine its shade of gray.
	Color	1	Determines the color of an object in front of it (red, green, blue, yellow, or white) or the intensity of a light shining upon the sensor. Best reads at 0.5in.
	Ultrasonic	1	Using an ultrasonic soundwave calculates the distance between the sensor and an object in front of it. Best reads from 1 to 25in.

## Actuators

These components are used to create motion within an assembly. Each actuator must be connected to the PLC board and be programmed individually.

Actuator list			
Picture	Name	Quantity	Function
-	RGB LED (embedded)	1	Individually controllable RGB LED light.
-	Speaker (embedded)	2	Play any sound coming from the PLC board.
	Small motor	1	Creates rotational motion at low torque and high speeds.

	Big motor	2	Creates rotational motion at high torque and low speeds.
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## Minimum Hardware Requirements

Mobile Device: with Operating Systems iOS 9.3 or later or Android Oreo 8.0 or later. Memory: 8GB Minimum and RAM: 2GB Minimum.

## Applications:

Download the following Apps in your device:

- Abilix Krypton Mobile App

This application encloses every functionality the Krypton robotics family has. The app contains introductory activities, a project gallery, interactive 3D assembly manuals, and three different block-based programming environments.



The app is available for iOS and Android users:

Apple AppStore: <https://apps.apple.com/mx/app/abilix-krypton-todays-future/id1140118489>

Google PlayStore: <https://play.google.com/store/apps/details?id=com.partnerx.CRobotgplay>

The App Includes 3 programming modules:

- Block-based Programming (Krypton Project Programming)

This programming tool is the easiest way to start programming robotics. The user works in an environment in which there are pre-programmed blocks; each block contains a predefined sequence which makes the robot move in a certain way. In this tool, there is no chance for failure since every block has been previously proven to work. This programming method is recommended for absolute beginners.



- Krypton Scratch Programming

This programming tool uses natural language blocks to program the robot; works just as any other Scratch programming environment. If you are already familiar using Scratch, this tool will fit you best.



- Krypton Chart Programming

This tool follows a flowchart programming scheme. Just as a regular flowchart program in any environment, the program will play from top to bottom following each block's configuration. This is the ideal tool for a more complete and complex project development.

