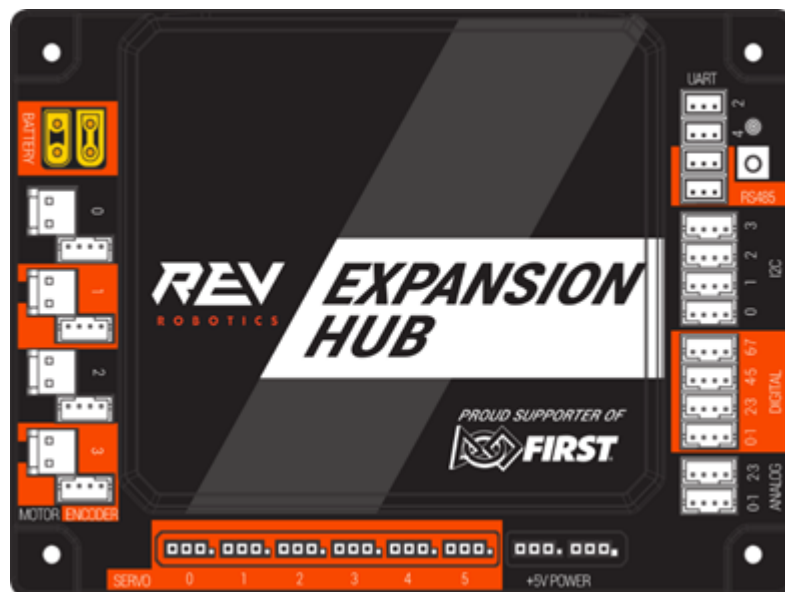


Expansion Hub Basics

The REV Robotics Expansion Hub ([REV-31-1153](#)) is a low-cost education device that can communicate with any computer (Commonly the [REV Robotics Control Hub](#) or an Android Phone) to provide the interfaces required for building robots and other mechatronics. The Expansion Hub was purposely built to stand up to the rigors of the classroom and competition field. It features a mature firmware designed for basic and advanced use cases with the ability to be field upgraded in the future.

The IO ports of the Expansion Hub are identical in specification to the Control Hub. Within this documentation, many sections may refer to the Control Hub, but the connections are the same for the Expansion Hub.

The REV Robotics Expansion Hub is an approved device for use in the FIRST Tech Challenge and FIRST Global.



- Physical Dimensions
 - 143mm X 103mm X 29.5 mm
 - Mounting holes on a 16mm spacing
- Input Voltage
 - 12V nominal (8-15V DC)
- Processors
 - Texas Instruments ARM® Cortex-M4
- 3.3V Ports

- 8x Digital I/O: 1A source max
- 4x I2C 100kHz/400kHz Busses: 500mA source max
- 4x 12-bit Analog Inputs: 500mA source max
- 4x Quadrature Encoder Inputs: 500mA source max
- 5V Ports
 - +5V Power: 2A source max
 - Servos: 2A source maximum per pair (0-1, 2-3, 4-5)

PORT LABEL	QTY	CONNECTOR	DESCRIPTION
Battery	2	XT30	Connect one 12V NiMh battery, add an Expansion Hub with second port
Motor	4	JST VH, 2-pin	Motor power output
Encoder	4	JST PH, 4-pin	Quadrature encoder input
Servo	6	0.1" Header	Extended range 5V servo output (500-2500ms)
5V Aux Power	2	0.1" Header	Auxiliary device 5V/2A
Analog	4	JST PH, 4-pin	Analog input 0-3.3V with two channels per connector
Digital	8	JST PH, 4-pin	Digital Input/Output with two channels per connector
I2C	4	JST PH, 4-pin	Four separate I2C busses, 100kHz/400kHz bus speed
RS485	2	JST PH, 3-pin	Serial communication port to add a Hub (Control or Expansion)

UART	2	JST PH, 3-pin	Debugging only
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MINI USB	1	USB Mini-B	Connect directly to the Robot Controller Android device or PC
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