



Please read this first!

Wow! This is a lot of parts!

But don't worry, we'll help you get organized.

Watch the unpacking video provided on this page:

FVResearch.com/102-300-resources

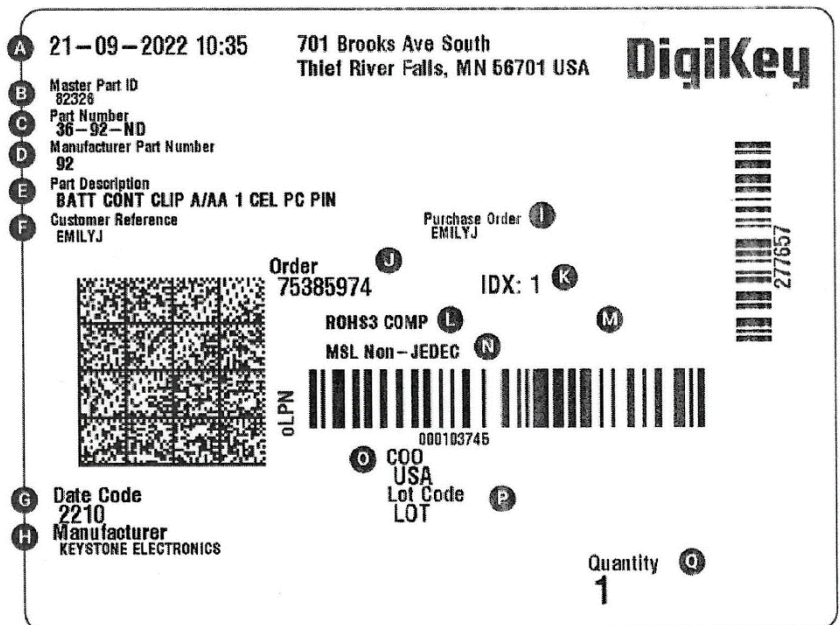
Please email sales@FVResearch.com right away if any items are missing or damaged.



FVResearch.com/102-300-resources

- 1) The following pages provide an unpacking list which shows you the part number, description and location for each part in your kit.
- 2) The box and tray numbers in the location column refer to the locations in a Harbor Freight Storehouse 10 Tray Utility box.
- 3) If you didn't add a box to your order, you can find more information about the utility box and the ready-to-cut labels here: fvresearch.com/product/label-packs/
- 4) The ready-to-cut labels provide a description and location of items in each tray
- 5) Install these cards in each tray before unpacking any parts.
- 6) Insert the label cards in the lid of each tray. The side of the card with the lined sections and names for each part should be visible when the tray lid is open.
- 7) When unpacking your parts, only open one bag at a time.
- 8) Most parts bags have a label showing a Part Number (item C) and a Part Description (item E) (Figure 1)
- 9) To help you identify everything, the Part Number and Description are also provided on the unpacking list for most parts.

Figure 1







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102-300 Sensors, Motors, and More Kit Unpacking Checklist

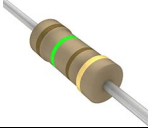


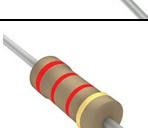
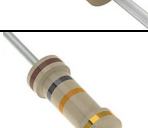


Use this checklist to double-check all parts as you put them away. It is customized for the parts in your specific kit.
Visit FVResearch.com/102-300-resources for a Reference List with schematic symbols and details on each part.

Notes:

- **Please email Sales@FVResearch.com right away if any parts are missing or damaged.**
- Parts in this kit can be used with various microcontrollers and single-board computers. Such as an Arduino or Raspberry Pi. (Not Included)
- Many parts are a choking hazard. Keep them away from small children and pets.
- Some parts look identical (except for the color code or part number). Be sure to put each part back in its place.
- The code shown in certain part images should also be printed on the actual part.
- Many parts come on strips of tape. Gently peel off any tape and wipe off adhesive before using each part.
- When working with parts, bend leads in the middle (not against the body of the component). This helps prevent the leads from breaking.
- The **location** column shows where to place each part when using a STOREHOUSE 10 Tray Utility Box from Harbor Freight.

LEDs					
Item Located? (✓)	Part Number (P/N)	Kit QTY	Image	Part Description (With simple description in parentheses)	Location
<input type="checkbox"/>	365-1182-ND	10		LED RED CLEAR 5MM T/H (5mm Red LED)	Box 3, Tray 8
<input type="checkbox"/>	1125-1184-ND	2		LED GREEN DIFFUSED 5MM ROUND T/H (5mm Green LED)	Box 3, Tray 8
<input type="checkbox"/>	1497- XLMDKVG58M-ND	5		5mm Bi-color Red/Green Two Lead LED	Box 3, Tray 8
<input type="checkbox"/>	1568-1213-ND	5		ADDRESS LED DISCR SERIAL RGB 5PC (5mm Addressable Diffused RGB LED)	Box3, Tray 8










**102-300 Sensors, Motors, and More Kit
Unpacking Checklist**

Resistors					
All resistor tolerances are $\pm 5\%$ (gold stripe)					
Item Located? (<input type="checkbox"/>)	Part Number (P/N)	Kit QTY	Image	Part Description (With simple description in parentheses)	Location
<input type="checkbox"/>	150QBK-N	10		RES 150 OHM 5% 1/4W AXIAL (150 Ω ¼W 5% Carbon Film Resistor) (Brown, Green, Brown, Gold)	Box3, Tray 7
<input type="checkbox"/>	CF14JT360RCT-ND	10		RES 360 OHM 5% 1/4W AXIAL (360 Ω ¼W 5% Carbon Film Resistor) (Orange, Blue, Brown)	Box3, Tray 7
<input type="checkbox"/>	CF14JT1K0OCT-ND	10		RES 1K OHM 5% 1/4W AXIAL (1K Ω ¼W 5% Carbon Film Resistor) (Brown, Black, Red, Gold)	Box3, Tray 7
<input type="checkbox"/>	CF14JT2K2OCT-ND	10		RES 2.2K OHM 5% 1/4W AXIAL (2.2K Ω ¼W 5% Carbon Film Resistor) (Red, Red, Red, Gold)	Box3, Tray 7
<input type="checkbox"/>	CF14JT10K0CT-ND	10		RES 10K OHM 5% 1/4W AXIAL (10K Ω ¼W 5% Carbon Film Resistor) (Brown, Black, Orange)	Box3, Tray 7
<input type="checkbox"/>	PDV-P8103-ND	1		CDS PHOTORESISTOR 16-33KOHM (CdS Photocell)	Box 3, Tray 8
<input type="checkbox"/>	3386P-103TLF-ND	1	 103	(CDS PHOTORESISTOR 16-33KOHM) 10K Ω Trimmer Potentiometer	Box 3, Tray 8

102-300 Sensors, Motors, and More Kit Unpacking Checklist





Capacitors Package color may vary.					
Item Put Away? (✓)	Part Number (P/N)	Kit QTY	Image	Part Description	Location
<input type="checkbox"/>	BC1084CT-ND	2	 104	CAP CER 0.1UF 50V X7R RADIAL (0.1μF (100,000 pF) Ceramic Capacitor)	Box 3, Tray 8
<input type="checkbox"/>	445-180638-1-ND	2	 334	CAP CER 0.33UF 50V X7R RADIAL	Box 3, Tray 8
<input type="checkbox"/>	732-8851-1-ND	2		CAP ALUM 1UF 20% 50V RADIAL (1 μF 50V Electrolytic Capacitor)	Box 3, Tray 8
<input type="checkbox"/>	P19529CT-ND	2		CAP ALUM 1000UF 20% 50V RADIAL (1000μF 50V Electrolytic Capacitor)	Box 3, Tray 8
Transistors, Diodes, and Integrated Circuits					
<input type="checkbox"/>	641-1312-1-ND	2	 1N4007	DIODE GEN PURP 1KV 1A DO41 (1N4007 Rectifier Diode)	Box 3, Tray 10
<input type="checkbox"/>	PN2222ATFCT-ND	2	 PN2222	TRANS NPN 40V 1A TO92-3 (PN2222 Bi-Polar Junction Transistor (BJT))	Box 3, Tray 10
<input type="checkbox"/>	296-9518-5-ND	1	 L293	IC MTR DRV BIPOLAR 4.5-36V 16DIP (L293D Quadruple half-H motor driver, 16 pin DIP)	Box 3, Tray 10
<input type="checkbox"/>	MCP3008-I/P-ND	1	 MCP3008	IC ADC 10BIT SAR 16DIP (MCP3008 10-bit Analog to Digital Converter, 16 pin DIP)	Box 3, Tray 10
<input type="checkbox"/>	SN74HC595N	1	 SN74H595N	SN74HC595N 8-BIT Shift Register (16 pin DIP)	Box 3, Tray 10
<input type="checkbox"/>	497-1443-5-ND	1	 7805	IC REG LINEAR 5V 1.5A TO220AB (7805 5V Voltage Regulator)	Box 3, Tray 10

102-300 Sensors, Motors, and More Kit Unpacking Checklist

Switches and Relays					
Item Put Away? (✓)	Part Number (P/N)	Kit QTY	Image	Part Description	Location
<input type="checkbox"/>	450-1131-ND	1		SWITCH TACTILE SPST-NO 0.05A 24V Tact Pushbutton Switch	Box 3, Tray 1
<input type="checkbox"/>	PB1690-ND	1		RELAY GEN PURPOSE SPDT 12A 12V (Relay – SPDT (1 Form C))	Box 3, Tray 1
Magnets					
<input type="checkbox"/>	No Part Number on Bag	1		3D printed magnet wand containing a brushed nickel neodymium-iron-boron (NdFeB) magnet (For use with Hall effect sensor)	Box 3, Tray 2
Displays					
<input type="checkbox"/>	A-7007 or A-7058	1		0.96" 128x64 OLED Display Module I ² C SSD1306 Display will be white or blue depending on availability (Remove from plastic case when placing in tray.)	Box 3, Tray 10
Sensors					
<input type="checkbox"/>	US1881EUA-AAA-000-BU-ND	1	 <small>US1881</small>	MAGNETIC SWITCH LATCH TO92UA (US1881 Hall Effect Digital Switch Latch)	Box 3, Tray 9
<input type="checkbox"/>	505-TMP36GT9Z-ND	1	 <small>TMP36</small>	SENSOR ANALOG -40C-125C TO92-3 (TMP36 Analog Temperature Sensor)	Box 3, Tray 9
<input type="checkbox"/>	ADXL345	1		ADXL345 3axis digital accelerometer	Box 3, Tray 6
<input type="checkbox"/>	HC-SR01	1		HC-SR501 PIR Motion Sensor	Box 3, Tray 6
<input type="checkbox"/>	HC-SR04	1		HC-SR04 Ultrasonic Distance Sensor	Box 3, Tray 6

**102-300 Sensors, Motors, and More Kit
Unpacking Checklist**


Power Supplies and Battery Connectors

Item Put Away? (✓)	Part Number (P/N)	Kit QTY	Image	Part Description	Location
<input type="checkbox"/>	N145-ND	1		9V Alkaline Battery Note: Ensure the contacts don't touch anything metal by storing in a separate compartment or with battery connector attached.	Box 3, Tray 2
<input type="checkbox"/>	1568-1366-ND	2		BATT CONNECT SNAP 9V 1 CELL WIRE (9V Battery Connector with plug for breadboard jumpers)	Box 3, Tray 5
<input type="checkbox"/>	11-LR6XWA/BXU-ND	2		Two pack AA alkaline batteries (Brand may vary) Total of four batteries	Box 3, Tray 2
<input type="checkbox"/>	BH34AASF-ND	1		BATT HOLDER AA 4 CELL SNAP (Four AA battery holder with plug for 9V Battery Connector) Note: Ensure the contacts don't touch anything if stored with batteries installed.	Box 3, Tray 4





Prototyping Supplies

<input type="checkbox"/>	1738-1326-ND	1		BREADBRD TERM STRIP 3.20"X2.00" 400 Point Solderless Plug-in Breadboard	Box 3, Tray 5
<input type="checkbox"/>	438-1045-ND	1		BREADBRD TERM STRIP 2.20"-7.00" 830 Point Solderless Plug-in Breadboard	Box 3, Tray 5
<input type="checkbox"/>	1568-1511-ND	1		Jumper Wires Male to Male 6" 20PCS	Box 3, Tray 4
<input type="checkbox"/>	No Part Number	1		Jumper Wires Male to Female 6" 20PCS	Box 3, Tray 4

Speaker

<input type="checkbox"/>	668-1135-ND	1		SPEAKER 80HM 100MW TOP PORT 75DB Note: Remove the sticker that says, "Remove After Washing."	Box 3, Tray 6
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**102-300 Sensors, Motors, and More Kit
Unpacking Checklist**

Motors					
Item Put Away? (✓)	Part Number (P/N)	Kit QTY	Image	Part Description	Location
<input type="checkbox"/>	1528-2589-ND	1		GEARMOTOR 200 RPM 3-6V DC	Box 3, Tray 3
<input type="checkbox"/>	1528-1366-ND	1		STEPPER MOTOR PM GEARED UNI 5V (28BYJ-48 Unipolar Stepper Motor)	Box 3, Tray 3
<input type="checkbox"/>	1528-1076-ND	1		SERVOMOTOR RC 5V TOWERPRO (SG92R Servomotor and horns 3V to 6V) Keep the small plastic pieces (called servo horns) in the same tray as the servomotor.	Box 3, Tray 6
Safety					
<input type="checkbox"/>	3M162316-ND	1		3M TOUR-GUARD V PROTECTI 1=1PC Safety Glasses, Use With or Without prescription Eyewear	Not stored in parts boxes