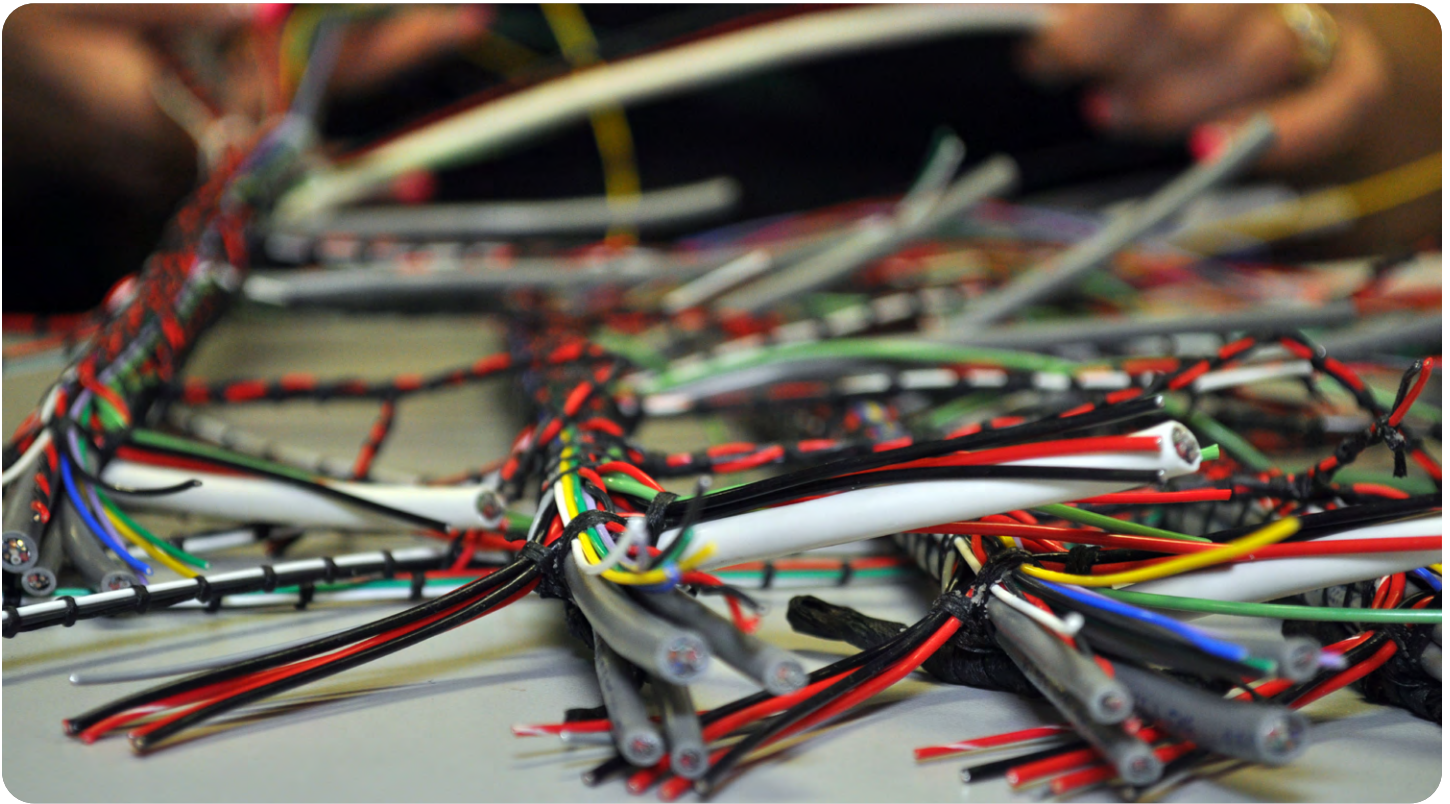


MILITARY WIRE HARNESSES & CABLE ASSEMBLIES:

A COMPLETE GUIDE



ELECTRO-PREP



Introduction

Many military operations require equipment that is engineered for reliability and safety. They are often mission-critical, meaning failure can pose significant risks to the organization, personnel, and civilians. As such, the equipment used, including individual wire harnesses and cable assemblies, must be carefully designed and constructed to the industry's strict specifications and standards.

At Electro-Prep, we have extensive experience designing and manufacturing custom wire harnesses and cable assemblies. Our expert team has the knowledge and skills to create electrical connection solutions for some of the most demanding industrial applications, including those within the military. Below, we provide an harnesses and cable assemblies to serve as a helpful guide for existing and potential new customers.

About Military Wire Harnesses & Cable Assemblies

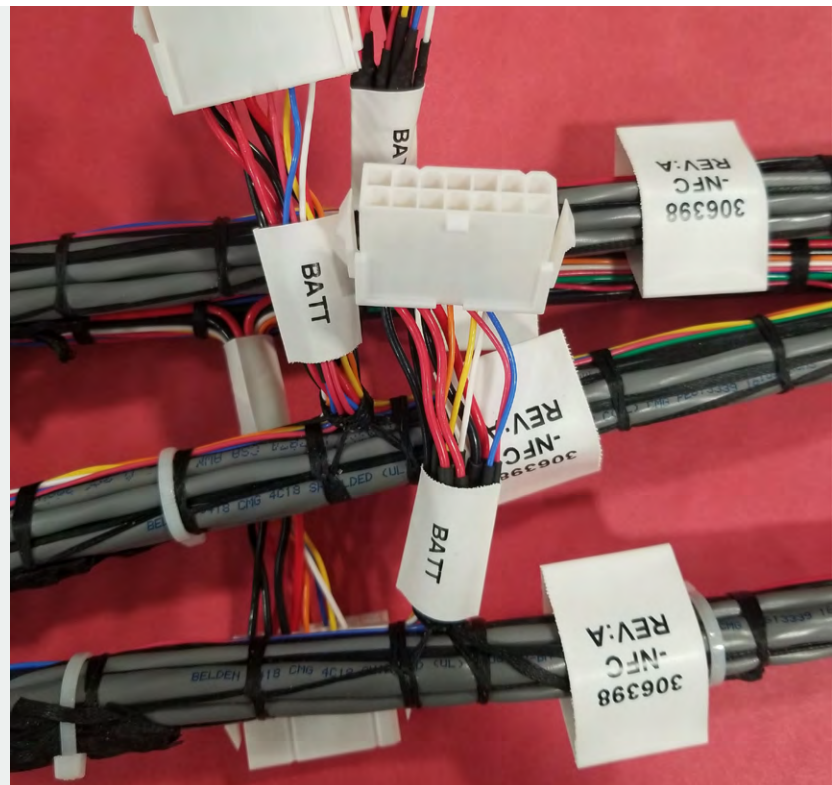
Wire harnesses and cable assemblies are essential elements of many electrical and electronic devices and systems. They are used for a variety of reasons, including improving cable and wire organization and facilitating cable and wire installation. While the two may have some similarities regarding function, they are utilized for different purposes.

What Are Wire Harnesses?

Wire harnesses are designed to transmit electricity for power or signaling applications. They consist of a wire or cable or a collection of wires and cables enclosed within a protective sheath. While the sheath provides protection to the enclosed elements, its primary purpose is to keep the wires and cables organized. The wires and cables are mainly protected by their individual insulated jackets.

The typical process of assembling a wire harness is as follows:

- The wires are cut to the desired length and labeled appropriately.
- The ends of the wires are stripped to expose the uninsulated conducting elements and fitted with the necessary terminals or connector housings.
- The wires and other components are assembled as per specification and bound together.



Properly designed and assembled wire harnesses offer a number of benefits. In addition to better organization, they can lead to:



Greater productivity. Compared to loose wires and cables, wire harnesses are easier to integrate into equipment. Additionally, they are less difficult to troubleshoot and more compact than individual wires. As a result, they are easier to service and install in tight spaces.



Lower costs. Wire harnesses are often more cost-effective than individual wires and cables. They provide some protection to individual conductors, which reduces maintenance and repair costs. Additionally, they facilitate wire installation, which decreases labor costs.



Improved safety. Wire harnesses that are well-organized can minimize the risk of foot traffic and “snagging” within the work environment. This factor decreases the risk of equipment fire and shorting caused by damaged wiring, thus protecting employees from injury and reducing potential liabilities for the company.

What Are Cable Assemblies?

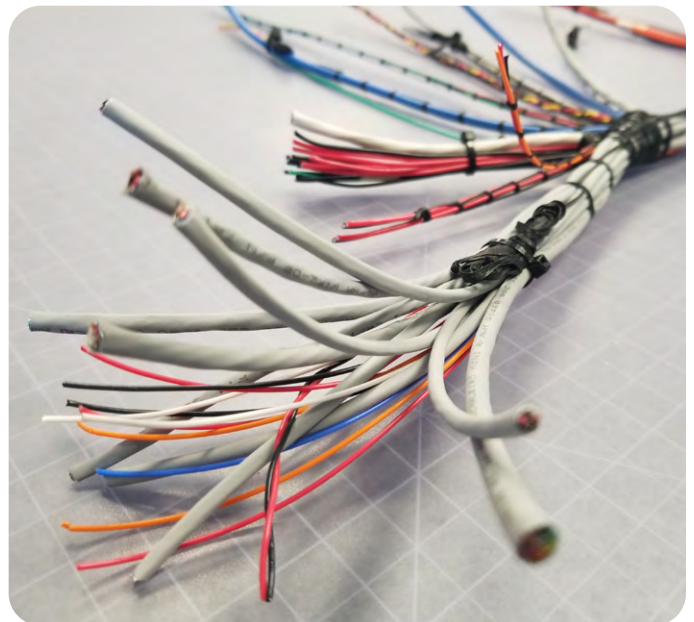
Cable assemblies are a collection of wires and cables sheathed in a durable protective covering. Unlike the coverings in wire harnesses, the coverings in cable assemblies are made from heavy-duty materials that offer durability and reliability in demanding conditions. As such, cable assemblies are better suited for use in harsh environments, such as those commonly found in military applications.



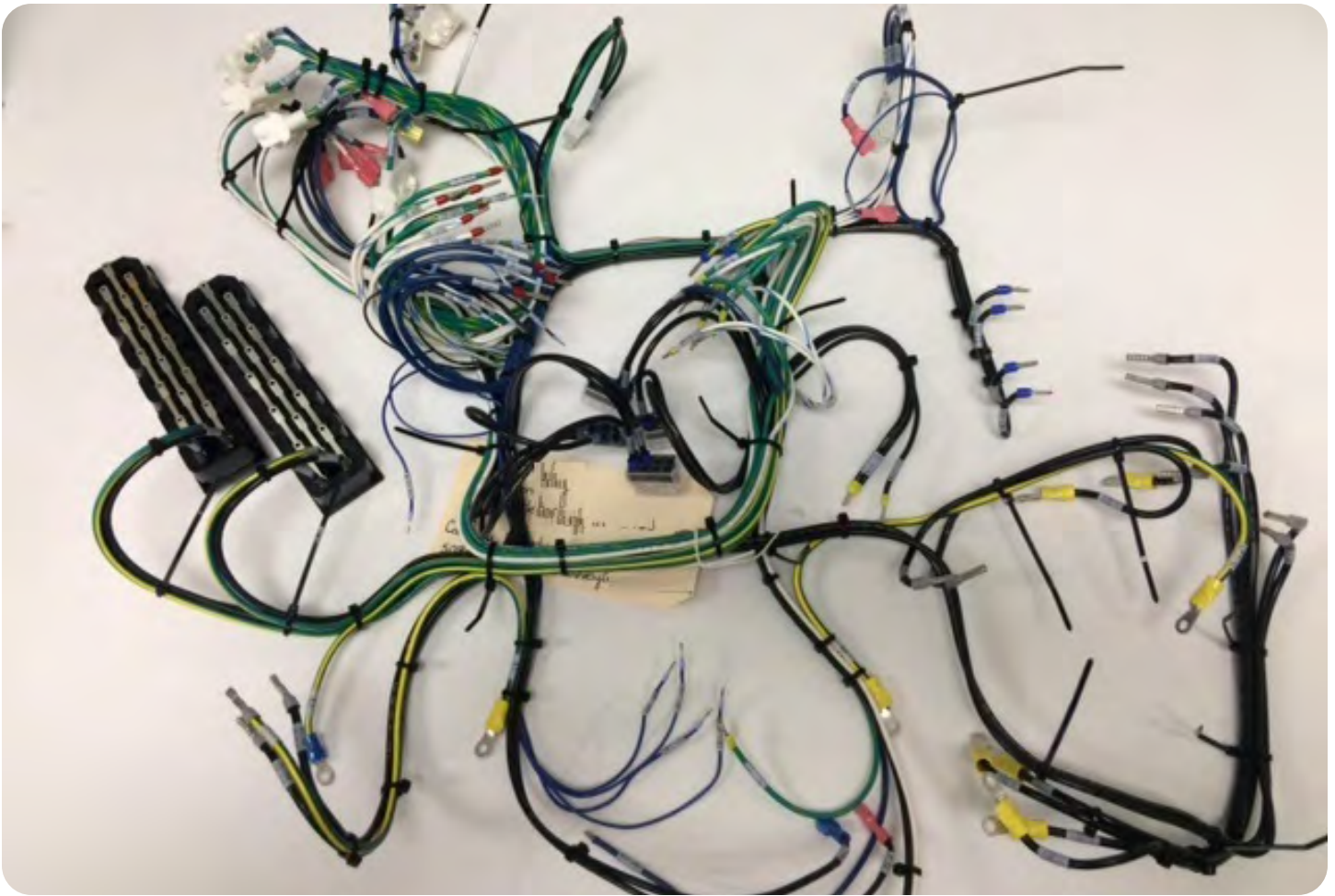
What Are Military Wire Harnesses & Cable Assemblies?

Military applications often involve harsher operational and environmental conditions (e.g., high altitudes, pressure fluctuations, extreme temperatures) than non-military applications, which is why military products are typically subjected to stricter specifications and standards. These requirements and restrictions ensure they can withstand use within their specific application without failing unexpectedly.

Typical qualifications for military wire harnesses and cable assemblies include:



- High strength and durability
- Reliability in extreme environments
- Compliance with strict quality specifications and standards



Standards for Military Wire Harnesses & Cable Assemblies

Military wire harnesses and cable assemblies differ from non-military ones in that they are specifically designed, engineered, and fabricated to meet military specification (MIL-SPEC) standards. All components used in their manufacture (e.g., wires, cable, terminations, etc.) must be specified and/or approved for use in military applications.

The government and regulatory standards relevant to military wire harnesses and cable assemblies include:

National Electrical Manufacturers Association (NEMA)

The National Electrical Manufacturers Association (NEMA) defines and publishes standards for all electrical equipment in the United States. These standards help promote the functionality, performance, and safety of products that use electrical components.

Qualified Products List (QPL)

The Qualified Products List (QPL) encompasses a list of products with government regulations. It provides guidance to manufacturers during the stage for cable assemblies.

IPC/WHMA-A-620 Class III

The Wire Harness Manufacturer's Association (WHMA) established this standard, which serves as a single, unified standard for wire harness and cable assembly manufacturing.

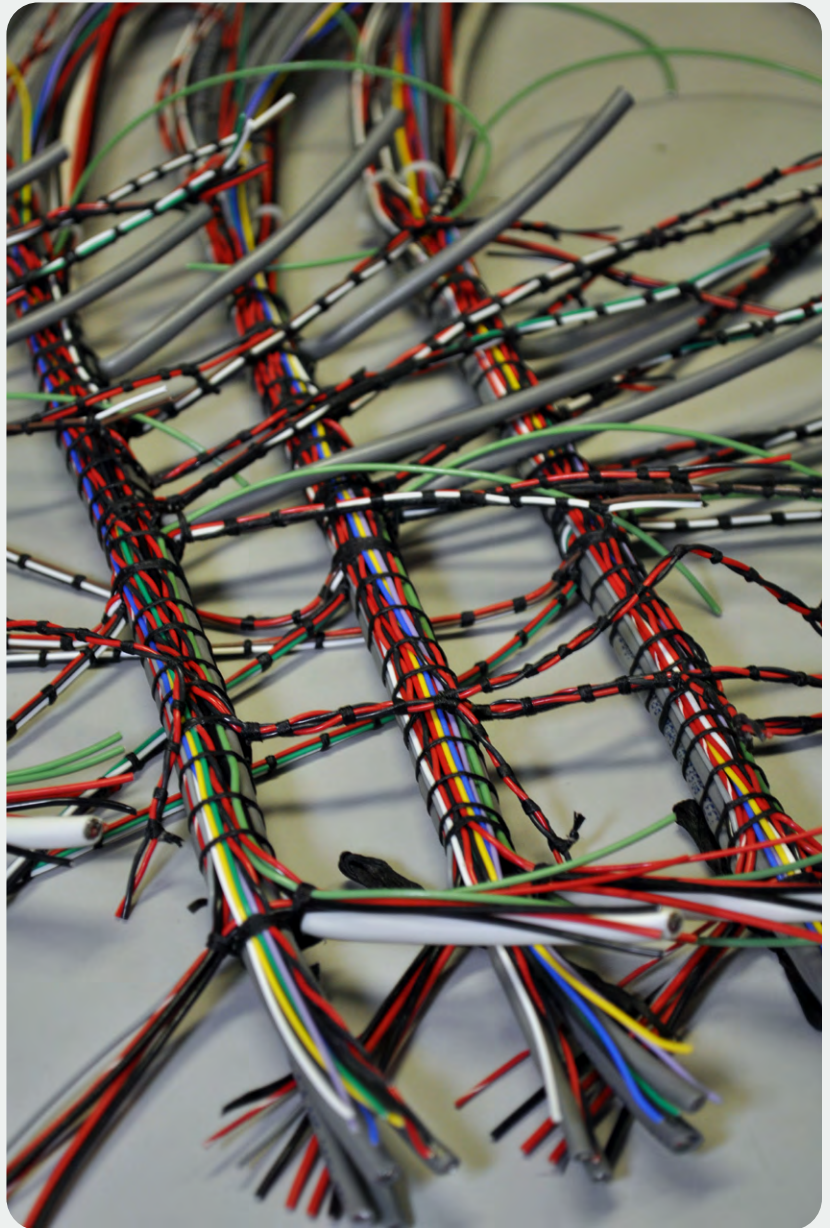
MIL-STD-454

This standard applies to all electronic equipment used in military or defense applications.

Applications of Military Wire Harnesses & Cable Assemblies

Wire harnesses and cable assemblies play vital roles in a wide range of military devices and systems. Examples of typical applications include:

- Airborne communication and navigation systems
- Avionics systems
- Electromagnetic interference (EMI) sensitive equipment
- Field and inter-shelter communication systems
- Ground equipment
- Military-grade batteries and vehicle lighting
- Mobile tactical field command platforms
- Remote weapons control systems
- Satellites and space shuttles
- Ships, submarines, and other marine systems
- Space Force systems





Quality Military Wire Harnesses & Cable Assemblies From Electro-Prep

In military applications, lives often depend on the performance of wire harnesses and cable assemblies. At Electro-Prep, we have what it takes to provide durable and reliable wire and cable solutions for a range of military devices systems, from unmanned underwater vehicles to Packbot robots to surveillance systems. Armed with extensive wire and cable assembly experience and expansive military industry knowledge, our wire harnesses and cable assemblies meet some of the strictest industry specifications and standards. All of our products are built to IPC-620 workmanship and J-STD soldering standards.

To learn more about how Electro-Prep serves the military assembly products and services solutions, check out our military assemblies page. To discuss our wire harness or cable assembly products and services, check out our expert team members and request a quote anytime.

Quality Wire Harness Manufacturing by Electro-Prep

Since 1977, Electro-Prep has been a leading provider of superior quality wire and cable arrays for electronic instruments in industrial, commercial, military, and medical settings, among many others. We pride ourselves on producing custom wire harnesses to meet exacting specifications and stringent industry standards.

Our commitment to quality is evident in our extensive certifications, including IPC/WHMA-A-620, IPC J-STD-001, ISO 9001:2015, UL, and CSA. To learn more about our comprehensive wire harness manufacturing capabilities, contact us or request a quote today.

[Contact Us](#)

8 Kendrick Rd, Wareham, MA 02571

Phone: 800.478.4578 Email: info@electroprep.com

<https://www.electroprep.com>

