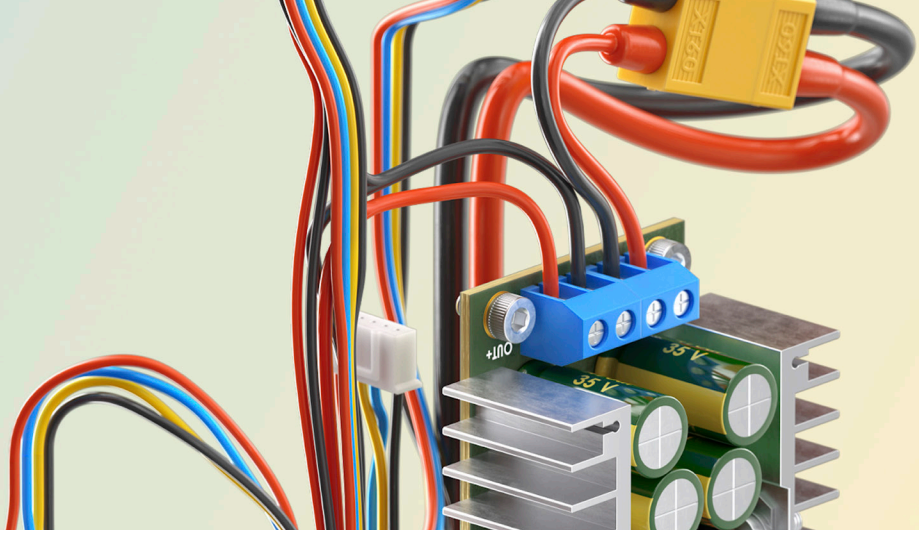
ALTIUM DESIGNER

Harness Design



As electronic systems become more complex, designs often require multiple interconnected PCBs. Managing these connections efficiently is crucial to ensuring reliable electrical performance and maintaining signal integrity. Harness design plays a key role in organizing and securing these connections, reducing errors, and streamlining both manufacturing and maintenance.

What is Harness Design?

Harness design is the process of planning and creating wiring assemblies that connect electronic components within a device. It ensures efficient signal and power transmission while keeping the system organized.

Essential for electrical engineers, PCB designers, and system integrators, harness design plays a key role in industries like automotive, aerospace, consumer electronics, and industrial automation. It simplifies complex wiring, improves manufacturability, and enhances serviceability.

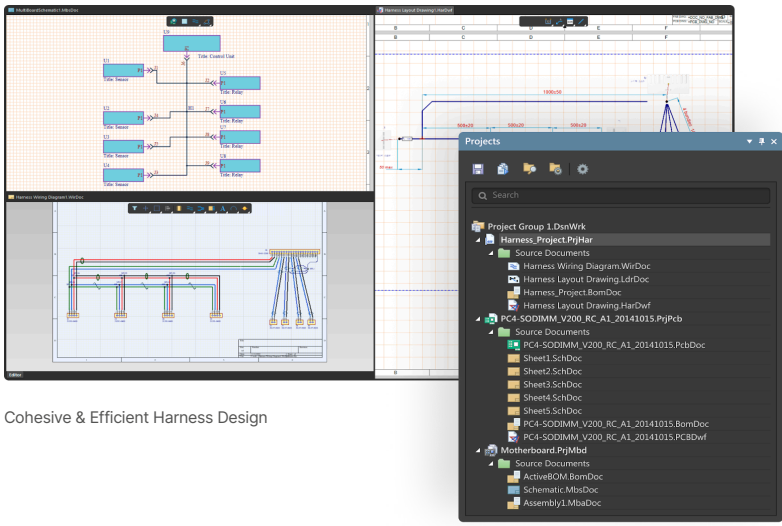
A well-structured harness prevents electrical failures, reduces manufacturing complexity, and ensures product reliability. Without it, systems risk poor signal integrity, inefficient assembly, and maintenance challenges.

Main Features of Harness Design in Altium Designer

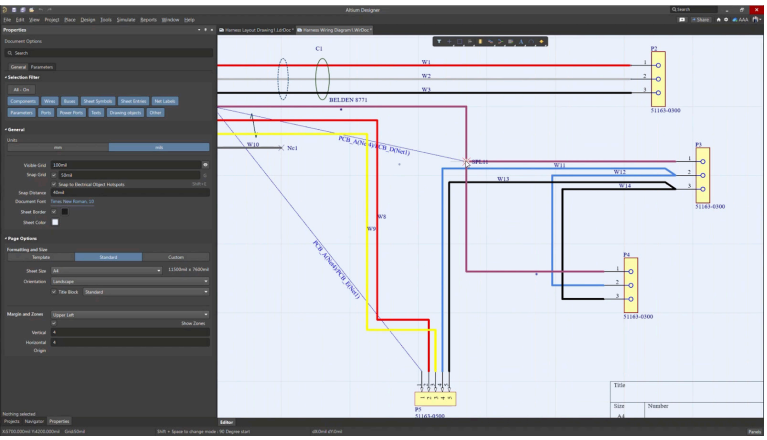
Harness Design is a powerful capability available with an Altium Designer PRO Subscription. It enables you to create complete harness systems, from logical connectivity to physical layout and production-ready documentation, all within the same unified design environment as your PCB design. By staying entirely inside Altium Designer, you avoid the friction of external tools and enjoy a continuous, cohesive workflow from design to manufacture.

1. One Environment, One Workflow

Altium Designer offers an integrated environment where harness design is seamlessly incorporated with the PCB and multiboard design processes. This unified platform allows designers to work within a single tool, eliminating the need for external software and facilitating a continuous workflow. The familiar interface ensures a low learning curve, enabling designers to leverage existing commands and menus, thereby enhancing productivity and reducing potential errors.



Cohesive & Efficient Harness Design



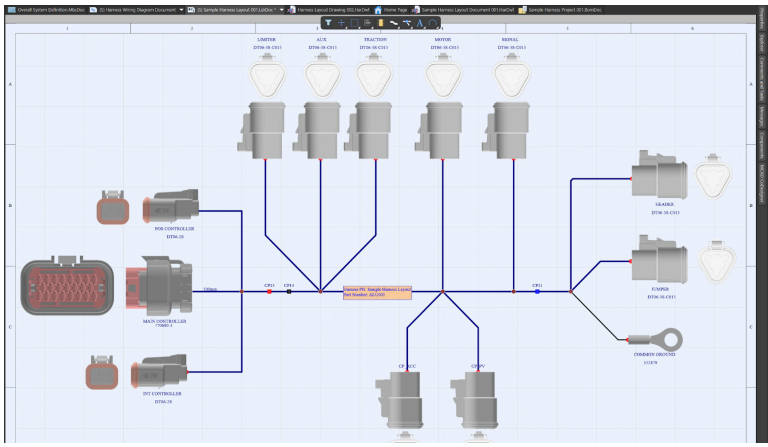
Harness Wiring Diagram

2. Straightforward and Powerful Logical Connectivity Definition

The harness wiring diagram in Altium Designer enables designers to define individual wires and cables, establishing the required physical connections within the harness. This feature provides a clear visual representation of the electrical pathways, aiding in accurate planning and troubleshooting. By utilizing this diagram, designers can ensure that all connections are correctly established, thereby enhancing the reliability of the final product.

3. Accurate Representation of Your Physical Harness Construction

The harness layout drawing allows designers to arrange wires and cables to reflect the physical construction of the harness accurately. This visual representation ensures that the harness fits within the spatial constraints of the device, facilitating efficient assembly and maintenance. By providing a detailed layout, designers can anticipate and resolve potential issues related to space and cable management, streamlining the manufacturing process.



Harness Layout Drawing

4. Complete Component Visibility

Harness design in Altium Designer includes a comprehensive BOM feature that catalogs all materials required for the harness. This encompasses connectors, splices, connection points, cavities, layout labels, harness coverings, and wires or cables with their respective lengths. A detailed BOM ensures that all necessary components are accounted for, facilitating efficient procurement and assembly processes, and reducing the likelihood of production delays.

Group by | Add new | Reset Supply Chain | Refresh | Search

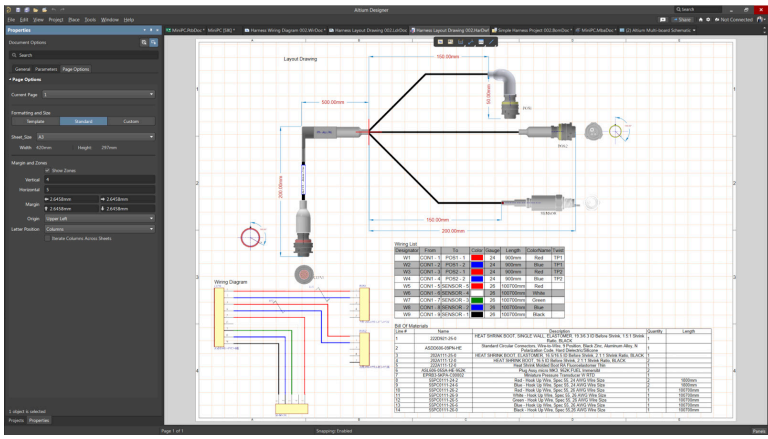
Item Details

	Line #	Name	Description	Designator	Revision ID	Revision Status	Quantity	Length	Manufacturer 1
1	1	DT06-3S-C015	Combination Line C...	AUX, HEADER, JUMPER, LIMITER, MOTOR, PRESSURE VALVE, RB-RA...	CMP-00038-7	Up to date	9		TE Connectivity Deutsch
2	2	1062-16-0177	Automotive Termina...	AUX.A.Crimp, AUX.B.Crimp, AUX.C.Crimp, HEADER.A.Crimp, HEADER...	CMP-00048-1	Out of date	30		TE Connectivity
3	3	W3S	Connector Accessor...	AUX_Associated1, HEADER_Associated1, JUMPER_Associated1, LIMI...	CMP-00043-1	Up to date	9		TE Connectivity Deutsch
4	4	152879	Closed Ring Tongue...	COMMON GROUND	CMP-00040-2	Up to date	1		TE Connectivity
5	5	1011-344-0205	Connector Accessor...	INT CONTROLLER_Associated1, POS CONTROLLER_Associated1	CMP-00013-1	Up to date	2		TE Connectivity Deutsch
6	6	DT06-2S	Combination Line C...	INT CONTROLLER, POS CONTROLLER	CMP-00006-1	Out of date	2		TE Connectivity Deutsch
7	7	770680-1	Combination Line C...	MAIN CONTROLLER	CMP-00014-6	Up to date	1		TE Connectivity
8	8	770520-1	Automotive Termina...	MAIN CONTROLLER.1.Crimp, MAIN CONTROLLER.2.Crimp, MAIN C...	CMP-00049-1	Up to date	19		TE Connectivity
9	9	114017	Connector Accessor...	PRESSURE VALVE.A.Plug, RB-RADAR_PWR.A.Seal	CMP-00010-1	Up to date	2		TE Connectivity Deutsch
10	10	UL1015-PVC-18AWG-0	UL1015 Black 18AWG	W1, W2, W6, W7, W9, W16, W20, W22, W25, W27	CMP-00033-4	Up to date	10	22040mm	
11	11	UL1015-PVC-18AWG-2	UL1015 Red 18AWG	W3, W4, W8, W15, W17, W19, W21, W23, W26, W28, W30, W31,...	CMP-00022-5	Up to date	16	27860mm	
12	12	UL1015-PVC-18AWG-6	UL1015 Blue 18AWG	W5, W10, W12, W13, W14, W29, W36, W37, W38	CMP-00028-3	Up to date	9	26780mm	
13	13	UL1015-PVC-18AWG-9	UL1015 White 18A...	W11	CMP-00036-3	Up to date	1	3720mm	
14	15	UL1015-PVC-18AWG-7	UL1015 Purple 18A...	W18	CMP-00027-3	Out of date	1	500mm	
15	16	UL1015-PVC-18AWG-5	UL1015 Green 18A...	W24	CMP-00034-3	Up to date	1	3720mm	
16	17	UL1015-PVC-18AWG-45	UL1015 Yellow/Gree...	W35	CMP-0003-1	Up to date	1	500mm	

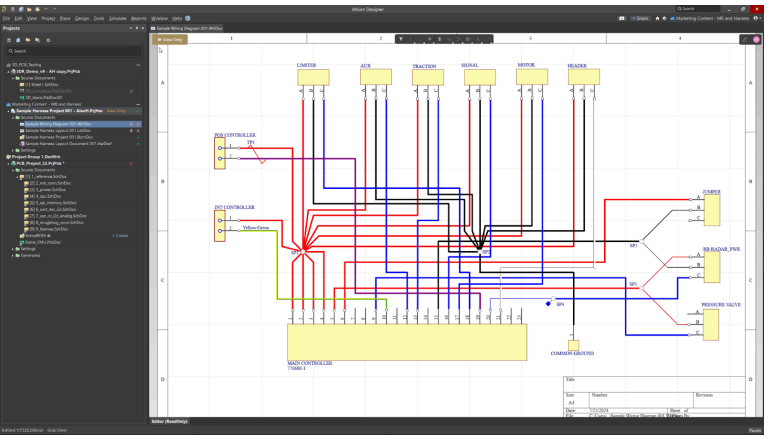
Harness BIll of Materials

5. Manufacturing Ready Documentation

Through the Draftsman tool, Altium Designer enables the creation of detailed manufacturing drawings tailored for harness production. These drawings can include wiring diagrams, layout views, BOMs, wiring lists, callouts, connection tables, and more. By providing comprehensive documentation, manufacturers gain clear guidance on assembly procedures, which enhances production efficiency and ensures that the final product aligns with design specifications.



Harness Documentation In Draftsman



View Only Mode In Altium Designer.
Note: The View Only Tag At The Top Left Of The Schematic

6. Collaboration and Review with Altium 365

Even without a PRO Subscription, users with a Standard License can still participate meaningfully in the harness design process. While editing is restricted, you can open, view, and generate outputs in view only mode.