

## Electrical flex and rigid flex specification standards

## MANUFACTURING FORMATS AND SPECIFICATIONS

The following tables describe, in brief, Glenair flex and rigid-flex manufacturing formats and specifications. Glenair recommends commercial customers specify IPC-6012/6013 standards of workmanship which are fully supported by Glenair.

FLEX ASSEMBLIES	
<b>Design Formats</b>	PADS • PADS PRO • Pro E / Creo • SolidWorks • Autodesk Inventor • CAM 350 • Altium • Valor • POLAR • XPedition
<b>Manufacturing Formats</b>	DXF • Gerber • ODB++ • IPC 2581
<b>Layer Count</b>	Max typ. up to 8
<b>Termination</b>	Thru hole • Straddle-mount • ZIF • Surface-mount
<b>Conductor Width/Space</b>	Lines: .003" • Spacing: .003" (dependent on copper weight)
<b>Bend Radius (military)</b>	Single Metal Layer: 4–6X overall flex thickness • Double Metal Layers: 6–10X overall flex thickness • Multi Layer Metal: 12–15X overall flex thickness
<b>Materials / Tg</b>	<b>Substrates:</b> DuPont™ Kapton® adhesive and adhesiveless -60°C to +125°C Panasonic Felios adhesive and adhesiveless -60°C to +160°C DuPont™ Pyralux® HT adhesive and adhesiveless -60°C to +225°C <b>Cover layers:</b> DuPont™ Kapton®, Panasonic Felios <b>Stiffeners:</b> FR4 or DuPont™ Kapton® (metal stiffeners available upon request) <b>Conductors:</b> Copper, Constantan (Copper-Nickel alloy)
<b>Surface Finish</b>	ENIG • ENIPIG • HASL • Immersion Tin and Silver • Soft and Hard Gold
<b>Specs and Quality Management</b>	IPC-6013 Class I, II, III, types 1-3 • ISO 9001, AS 9100J-STD-001 Space
RIGID-FLEX ASSEMBLIES	
<b>Design Formats</b>	PADS • PADS PRO • Pro E / Creo • SolidWorks • Autodesk Inventor • CAM 350 • Altium • Valor • POLAR • XPedition
<b>Manufacturing Formats</b>	DXF • Gerber • ODB++ • IPC 2581
<b>Max Panel Thickness</b>	Range of thicknesses from .010" to as thick as .250"
<b>Layer Count</b>	27 +
<b>Via Technology</b>	Blind • Buried • Thru hole • Filled (conductive and non-conductive)
<b>Conductor Width/Space</b>	Lines: .003" • Spacing: .003" (dependent on copper weight)
<b>Materials</b>	Substrate: Nelco 4000, Rogers, Megtron, Polyimide, DuPont™ Pyralux® HT, and more
<b>Surface Finish</b>	ENIG • ENIPIG • HASL • Immersion Tin and Silver • Soft and Hard Gold
<b>Specs and Quality Management</b>	IPC-6013 Class I, II, III, type 4 • ISO 9001, AS 9100, J-STD-001 Space

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