

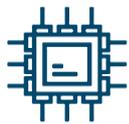
## EXTENDED LENGTH FLEX BY PIONEER CIRCUITS

Pioneer Circuits has the capability to manufacture flexible printed wiring boards that are larger than the standard flex material of 24" by 36". Our panel size can go up to 24" by 85", and our unique splicing technology allows us to manufacture even larger sizes! Using an extended length flex to replace standard size circuits eliminates the need for connectors and assembly labor, offers a lighter alternative, provides further flexibility, and improves reliability for the end use application.



FLEXIBLE RELIABLE

## EXTENDED LENGTH FLEX BENEFITS



### HARDWARE

Reduces the amount of hardware and components needed



### ASSEMBLY

Eliminates assembly labor and risk of assembly errors



### WEIGHT

Less weight than the discrete wiring alternative



### 3D SPACE

3D space is reduced when compared to discrete wiring



### DURABILITY

Improves mechanical function with high reliability

## OUR EXTENDED LENGTH FLEX CAPABILITIES

### LENGTH

We can build extended length flex circuits that are 33ft (10M) and longer with our unique splice technology.

### SPLICE

Our custom splice technology, honed through years of development, allows for extended length flex circuits with demanding requirements.

### IMPEDANCE

We have the capability to offer controlled impedance in both strip line and micro strip configurations for our extended length flex circuits.

### LAYERS

Our extended length flex circuits can be multilayer, and our experience includes manufacturing 20+ layers for parts that are larger than 36".

## GOOD APPLICATIONS FOR EXTENDED LENGTH FLEX

### DEEP SPACE



### MILITARY



### AEROSPACE



### ROBOTICS



### UAV's



### MEDICAL



## DESIGN CONSIDERATIONS

- Make sure supplier is advised:
  - Current voltage & drop budget on power lines
  - Critical loss budget on signal lines
  - Operating frequency
  - Controlled impedance: pay attention to shield to signal relationship on SMA type devices
- Splice Methods can join multiple flex segments
- Part sizes up to 22x34" have no restrictions on plated through hole location
- For sizes greater than 34", be sure to consult our Applications Engineers for hole type and location

### PROGRAM HIGHLIGHT: CURIOSITY

The Mars Rover, Curiosity, utilizes Pioneer Circuits' unique extended length flex capabilities. We manufactured and assembled over 50 rigid flex circuits for the rover that included splice technology, impedance control and multi-layer capabilities to power the rover. A 10M extended length flex was used in Curiosity's mast structure and another 5M extended length flex was used in the robotic arm. Our extended length flex proved its reliability by passing 600,000 endurance test cycles that simulated the harsh Martian environment and is still operational on the Red Planet today. Our extended length flex technology will also be used on the next Mars Rover planned to launch in 2020.

