

## Printed Wiring Board (PWB) Services

### Low cost PWB to replace hand wiring

- No more tedious wiring
- No more crimp pins
- No more trouble shooting incorrect wiring
- Cut assembly time from days to hours
- Improve quality
- Replace expensive “DIN RAIL” terminal blocks, fuses and other components
- Improved diagnostics by adding blown fuse indicators, LEDs showing relay, or switch activation

### Conventional Rigid Printed Circuit Board

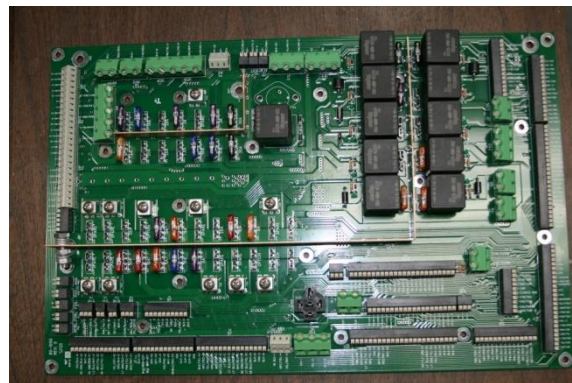
- Traces can carry up to 30Amps
- Copper buss bars can be soldered onto the PCB to achieve very high current ratings
- Relays, Switches, LEDs and other non logical components can be soldered directly to the PCB
- Many PCB mount components can be installed in sockets soldered to the pcb to improve repair / service time
- High Voltage trace separation per industry standards (UL / CE – see back)
- Low quantity (as few as 2-3 pcb's) is no problem,
- Integrate Power Supplies on the PCB to replace expensive off-the-shelf units.

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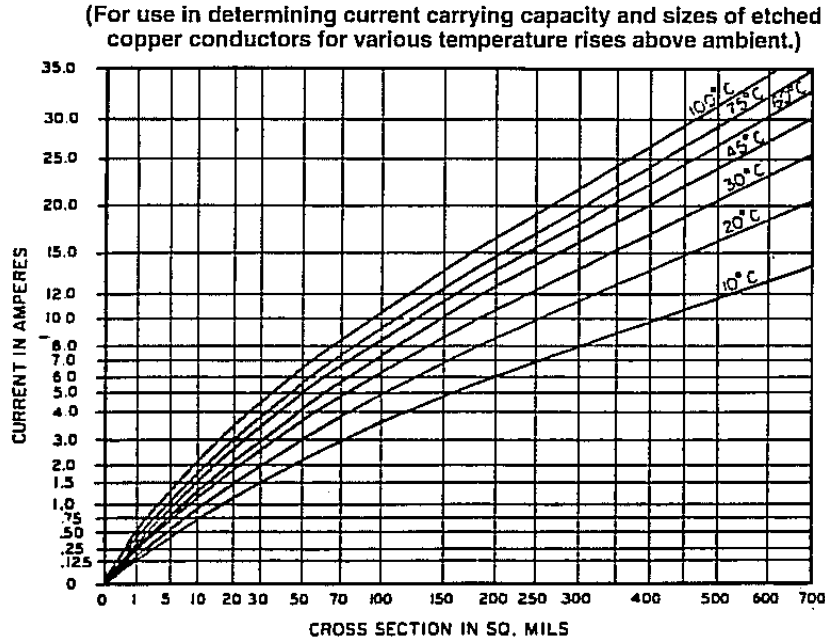
**BEFORE**



**AFTER**



## IPC chart showing current carrying capacity



**Figure A External Conductors**

## IPC chart showing voltage separation

May 2003

IPC-2221A

Table 6-1 Electrical Conductor Spacing

Voltage Between Conductors (DC or AC Peaks)	Minimum Spacing						
	Bare Board				Assembly		
	B1	B2	B3	B4	A5	A6	A7
0-15	0.05 mm [0.00197 in]	0.1 mm [0.0039 in]	0.1 mm [0.0039 in]	0.05 mm [0.00197 in]	0.13 mm [0.00512 in]	0.13 mm [0.00512 in]	0.13 mm [0.00512 in]
16-30	0.05 mm [0.00197 in]	0.1 mm [0.0039 in]	0.1 mm [0.0039 in]	0.05 mm [0.00197 in]	0.13 mm [0.00512 in]	0.25 mm [0.00984 in]	0.13 mm [0.00512 in]
31-50	0.1 mm [0.0039 in]	0.6 mm [0.024 in]	0.6 mm [0.024 in]	0.13 mm [0.00512 in]	0.13 mm [0.00512 in]	0.4 mm [0.016 in]	0.13 mm [0.00512 in]
51-100	0.1 mm [0.0039 in]	0.6 mm [0.024 in]	1.5 mm [0.0591 in]	0.13 mm [0.00512 in]	0.13 mm [0.00512 in]	0.5 mm [0.020 in]	0.13 mm [0.00512 in]
101-150	0.2 mm [0.0079 in]	0.6 mm [0.024 in]	3.2 mm [0.126 in]	0.4 mm [0.016 in]	0.4 mm [0.016 in]	0.8 mm [0.031 in]	0.4 mm [0.016 in]
151-170	0.2 mm [0.0079 in]	1.25 mm [0.0492 in]	3.2 mm [0.126 in]	0.4 mm [0.016 in]	0.4 mm [0.016 in]	0.8 mm [0.031 in]	0.4 mm [0.016 in]
171-250	0.2 mm [0.0079 in]	1.25 mm [0.0492 in]	6.4 mm [0.252 in]	0.4 mm [0.016 in]	0.4 mm [0.016 in]	0.8 mm [0.031 in]	0.4 mm [0.016 in]
251-300	0.2 mm [0.0079 in]	1.25 mm [0.0492 in]	12.5 mm [0.4921 in]	0.4 mm [0.016 in]	0.4 mm [0.016 in]	0.8 mm [0.031 in]	0.8 mm [0.031 in]
301-500	0.25 mm [0.00984 in]	2.5 mm [0.0984 in]	12.5 mm [0.4921 in]	0.8 mm [0.031 in]	0.8 mm [0.031 in]	1.5 mm [0.0591 in]	0.8 mm [0.031 in]
> 500 See para. 6.3 for calc.	0.0025 mm /volt	0.005 mm /volt	0.025 mm /volt	0.00305 mm /volt	0.00305 mm /volt	0.00305 mm /volt	0.00305 mm /volt

B1 - Internal Conductors  
 B2 - External Conductors, uncoated, sea level to 3050 m [10,007 feet]  
 B3 - External Conductors, uncoated, over 3050 m [10,007 feet]  
 B4 - External Conductors, with permanent polymer coating (any elevation)  
 A5 - External Conductors, with conformal coating over assembly (any elevation)  
 A6 - External Component lead/termination, uncoated, sea level to 3050 m [10,007 feet]