

PCB SPEC. UPDATED 2022-09

Demands built on experience



When you order PCBs from NCAB Group, you are buying quality that pays for itself over time. This is guaranteed through a product specification and quality control that is far more stringent than other suppliers, and ensures that the product delivers what it promises. Furthermore, thanks to NCAB's considerable purchasing power, the factories are willing to adapt to our requirements.

QUALITY PAYS FOR ITSELF IN THE LONG RUN EVEN IF NOT APPARENT AT FIRST SIGHT

At first sight, PCBs differ little in appearance, irrespective of their inherent quality. It is under the surface that we focus on the differences so critical to the PCBs' durability and functionality. Customers cannot always see the difference, but they can rest assured that NCAB puts a great deal of effort into ensuring that in turn, their customers are also supplied with PCBs that meet the most stringent quality standards.

It is vital that PCBs function reliably both during the manufacturing assembly process and, out in the field. Apart from the costs involved,

faults during assembly can end up being built into the final product via the PCBs, with possible failure in the field resulting in compensation claims. Relative to that, in our opinion, the cost of a premium quality PCB is negligible. In all market sectors, particularly those producing products with critical applications, the consequences of such failures could be devastating.

Such aspects must be considered when comparing PCB prices. Reliability and a guaranteed long life cycle involve an initially higher outlay, but will pay for themselves in the long run.



NCAB GROUP PCB SPECIFICATION, BEYOND IPC CLASS 2

The 14 most important features for a durable PCB

NCAB unique

25 micron nominal hole plating as per IPC class 3

BENEFITS

Increased reliability including improved z-axis expansion resistance.

RISK OF NOT HAVING

Blow holes or outgassing, electrical continuity problems (inner layer separation, barrel cracking) during assembly or risk of field failures under load conditions. IPC Class 2 (standard for most factories) provides 20% less copper.

Reliability through perfect circuitry and security

Poor repair can actually lead to open circuits

being supplied. Even a 'good' repair has a risk

of failure under load conditions (vibration etc.)

Cleanliness requirements beyond those of IPC

IPC

BENEFITS

Improved cleanliess of the PCB influences increased reliability.

RISK OF NOT HAVING

Residues on the boards, solder pick up, risk of conformal coating problems, ionic residues leading to risk of corrosion and contamination of the surfaces which are used for soldering - both potentially leading to reliability issues (poor solder joint / electrical failures) and ultimately increased potential for field failures.

No track welding or open circuit repair

as no repair = no risk.

RISK OF NOT HAVING

leading to potential field failures.

BENEFITS



Tight control on age of specific finishes

BENEFITS

Solderability, reliability and less risk of moisture ingression.

RISK OF NOT HAVING

Solderability problems can occur as a result of metallurgical changes within the finish of old boards, whilst moisture ingression can lead to delamination, inner layer separation (open circuits) during assembly and/or when in the field.



NCAE



5 Internationally known base materials used - no 'local' or unknown brands allowed

BENEFITS

Increased reliability and known performance.

RISK OF NOT HAVING

Poor mechanical properties mean the board doesn't behave as expected during assembly conditions - for example: higher expansion properties leading to delamination / open circuits and also warpage problems. Reduced electrical characteristics can lead to poor impedance performance.

beyond IPC

NCAB unique



Defined tolerances for profile, holes and other mechanical features

BENEFITS

Tighter tolerances means improved dimensional quality of the product - better fit, form and function.

RISK OF NOT HAVING

Problems during assembly such as alignment / fit (press fit pin problems that are only found when the unit is fully assembled). Also problems with assembly into any housing due to increased deviation in dimensions.

Tolerance for copper clad laminate is IPC4101 class B/L

BENEFITS

Tighter control of dielectric spacing provides less deviation in electrical performance expectations.

RISK OF NOT HAVING

Electrical characteristics may not be exactly as planned and units within the same batch can demonstrate greater variation in output / performance.



NCAB Group specifies soldermask thickness - IPC does not

BENEFITS

Better electrical insulation, less risk of flaking or loss adhesion and greater resilient to mechanical impact - wherever that may happen!

RISK OF NOT HAVING

Thin deposits of soldermask can lead to problems with adhesion, resistance to solvents and hardness - all of which can see soldermask coming away from the board ultimately leading to corrosion of copper circuitry. Poor insulation characteristics due to the thin deposit can lead to short circuits through unwanted electrical continuity / arcing.

Defined soldermasks and ensuring accordance to IPC-SM-840 class T

BENEFITS

NCAB Group approves 'good' materials to provide security in the ink and in knowing the soldermasks are covered within UL approvals.

RISK OF NOT HAVING

Poor inks can lead to problems with adhesion, resistance to solvents and hardness - all of which can see soldermask coming away from the board ultimately leading to corrosion of the copper circuitry. Poor insulation characteristics can lead to short circuits through unwanted electrical continuity / arcing.

NCAB Group defines cosmetic and repair requirements – IPC does not

RENEEITS

Security as a result of love and care during the manufacturing process.

RISK OF NOT HAVING

Multiple scratches, minor damage, touch ups and repairs - a functional but perhaps unsightly board. If concerned over what can be seen, then what risks are involved with what cannot be seen, and the potential impact on assembly or risk when in the field?





Specific requirements of depth of via fill BENEFITS

A good quality filled via hole will provide less risk of rejection during the assembly process.

RISK OF NOT HAVING

Half filled via holes may trap chemical residues from the ENIG process which can cause problems such as solderability. Such via holes can also trap solderballs within the hole which can escape and cause short circuits either during assembly or in the field.

12 Peters SD2955 peelable as standard

BENEFITS

The benchmark for peelable mask – no 'local' or cheap brands.

RISK OF NOT HAVING

Poor or cheap peelable can blister, melt, tear or simply set like concrete during assembly so that the peelable does not peel / does not work. NCAB unique beyond IPC

NCAB Group specific qualification and release process for every purchase order

BENEFITS

Security in knowing that through the release process, all of the specifications have been verified.

RISK OF NOT HAVING

Risk that the product received will not be validated adequately and that any deviations to specification may not be spotted until assembly or final box build.... when it is too late.



BENEFITS

No partial assembly means improved efficiency for the customer.

RISK OF NOT HAVING

Special set-ups are necessary for each panel with a defect, and if the x-outs are not clearly marked or not segregated from the main delivery, there is a risk of assembling a known bad board; waste of components and time.

