Company Guideline

R04_0_ General requirements for board and panels

Index of changes: **02**		**Page 1 of 11**

	Created	Approved
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0. Index of Changes

Index	Date of change	Author	Description of change
00	22.11.2018	N. Schlothauer	Initial version
01	21.08.2019	D.Leder	Mark faulty plates
02	11.02.2026	D.Leder	add Tolerance, add V- Cut

1. Purpose

This document describes the general design requirements to design and produce a PCB panel for QUNDIS. This is only valid in the latest version. Latest version see 4.2

2. Scope of Application

All PCB Suppliers of the QUNDIS GmbH

3. Requirements

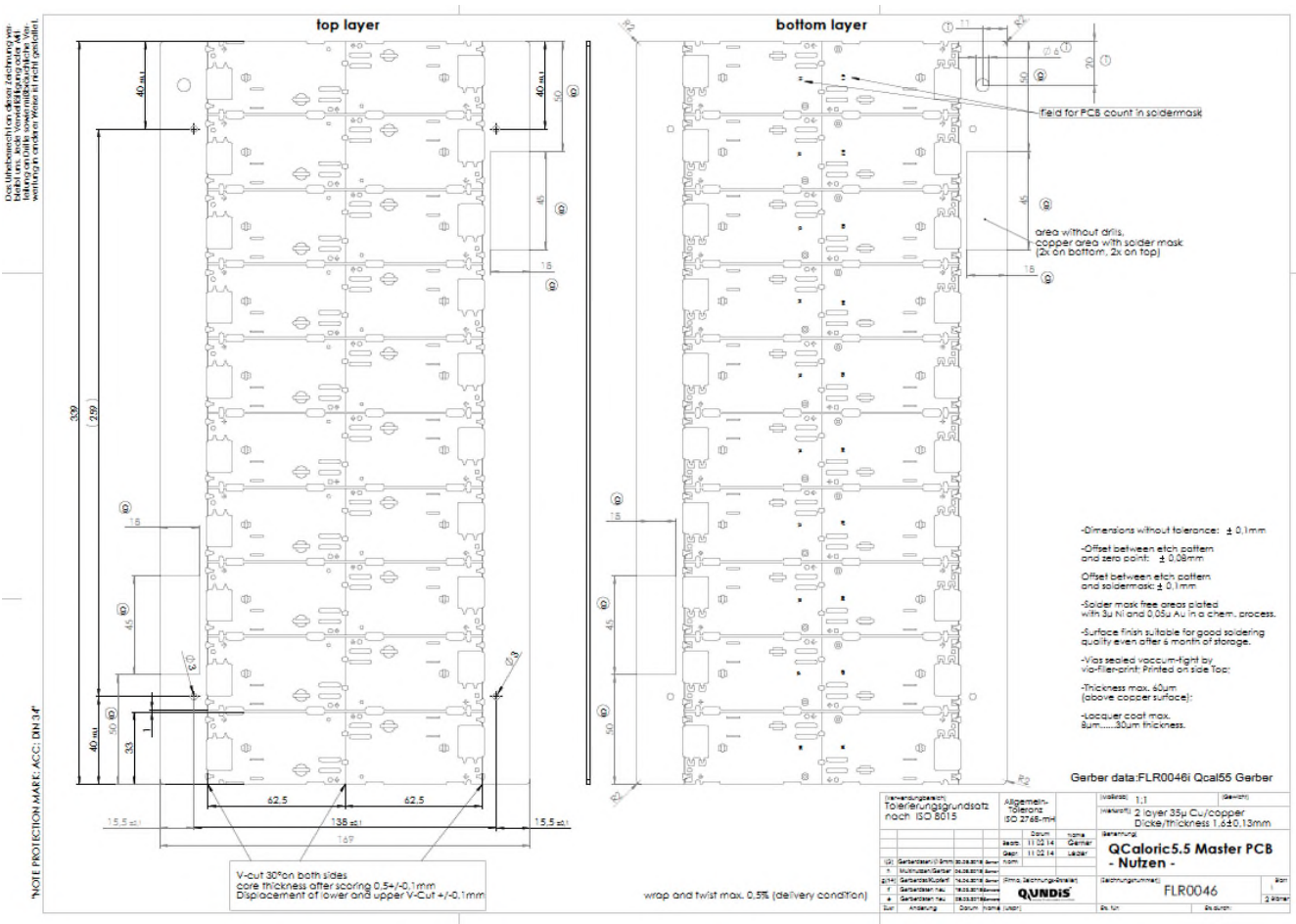
3.1 General Information

The dataset for manufacturer contains:
- gerber data of the PCB
- Mechanical drawing of a PCB and the Panel
- PCB Specification

Please read the *PCB Specification* carefully! You will find there all important parameters for the board.
After creating the Panel, you must send the working gerber data and paste layer to QUNDIS for confirmation.

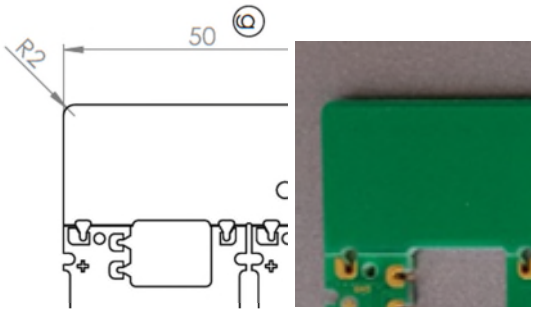
3.2 Panel design

Use the mechanical drawing from QUNDIS to create the panel design.
The picture below shows an example of the mechanical drawing for a Panel (e.g. Qcaloric FLR0046i below).

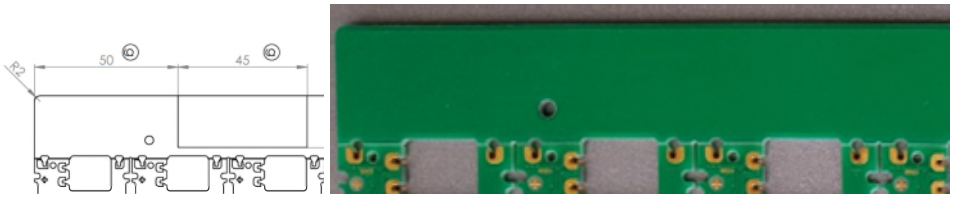

top layer
bottom layer
field for PCB count in soldermask
area without drills,
copper area with solder mask
(2x on bottom, 2x on top)
V-cut 30°on both sides
core thickness after scoring 0.5+/-0.1mm
Displacement of lower and upper V-Cut +/-0.1mm
wrap and twist max. 0,5% (delivery condition)
-Dimensions without tolerance: ± 0,1mm
-Offset between etch pattern and zero point: ± 0,08mm
Offset between etch pattern and soldermask: ± 0,1mm
-Solder mask free areas plated with 3µ Ni and 0,05µ Au in a chem. process.
-Surface finish suitable for good soldering quality even after 6 month of storage.
-Vias sealed vaccum-tight by via-filler-print. Printed on side Toc:
-Thickness max. 60µm (above coppder surface):
-Lacquer coat max. 8µm.....30µm thickness.
Gerber data:FLR0046i Qcal55 Gerber
Toleranzangaben: Toleranzgrundsatz nach ISO 8015
Allgemeintoleranz ISO 2768-mH
Maßstab: 1:1
Werkstoff: 2 layer 35µ Cu/copper Dicke/thickness 1.6±0.13mm
Bezeichnung: QCaloric5.5 Master PCB - Nutzen -
Zeichnungsnummer: FLR0046
"NOTE PROTECTION MARK ACC.: DIN 34"

The following points are necessary for creating each of the Panels.

1) Round corners, radius 2mm



2) Generally, the area for laser description must be without holes. Full copper and lacquer is also required in this area.



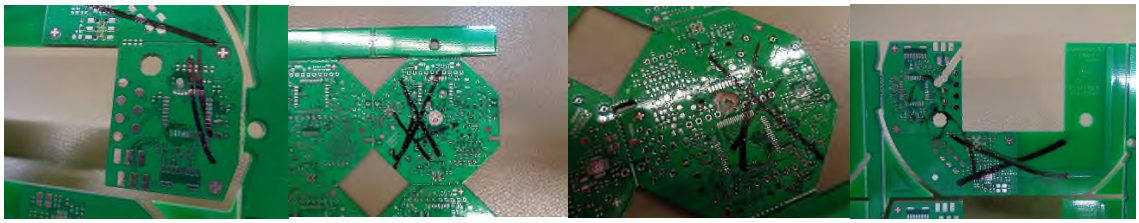
3.3 Solder mask

Read the *PCB Specification* to use the right solder mask material. In general, the solder mask material must be green glossy and laser printable. You must inform QUNDIS, in case of changing the solder mask material. QUNDIS will test some samples and approve the material for the production.

Furthermore, QUNDIS requires a full ROHS and Reach compliant material. The documents for the proof of compliance of the material are required before material release.

3.4 Marking a faulty board in the panel and packaging

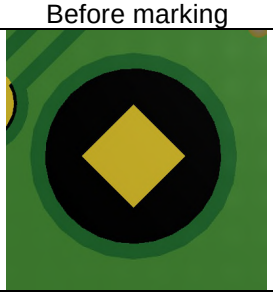
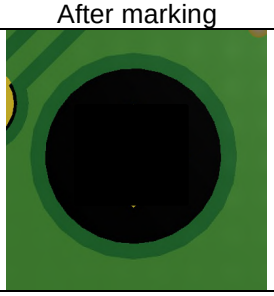
You must mark all faulty boards in a panel. No cut-out.
Don't drill or mill the surface of the faulty boards. That causes big trouble in our factory by printing the solder paste.
The pictures below shows some faulty boards with wrong marking.



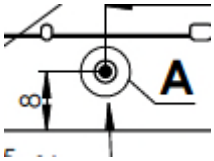
Don't do this in this way!! No drilling or milling!!!

In case of no skip point on PCB:
Mark the faulty board by pen with a black “X”.

In case of boards with a skip point (see picture below):
Use the skip point to mark the faulty board. The skip point must be coloured by pen in black.

Before marking	After marking
	

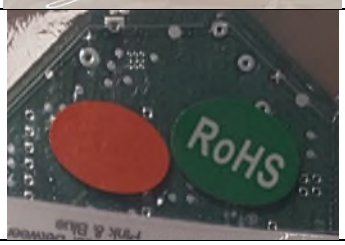
In case of boards with a mark point in waste area, (see picture below):
Use the mark point to mark the faulty board. The mark point must be coloured by pen in black.
Follow the instructions in the drawing!



Please read the *PCB Specification* for the details to marking. E.g. only top side or top and bottom sides to mark.

Use a black waterproof pen to mark the boards.

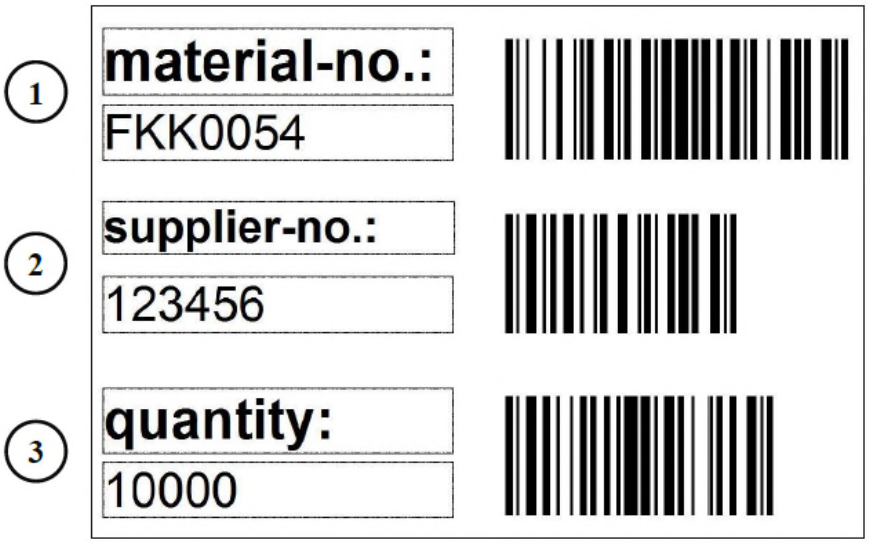
All faulty boards/ panels must be delivered in separate packing units, protected against humidity (vacuum) and boxes.

All outer packing units must be marked with a coloured sticker if box contains X-out Panels.	
The vacuum bag with faulty boards / panels must be marked with a red coloured sticker.	

Please pack all the Panels with faulty parts separately!

3.5 Labelling of outer packages and inner bags

Generally, the label for the outer packages must contain the following information:

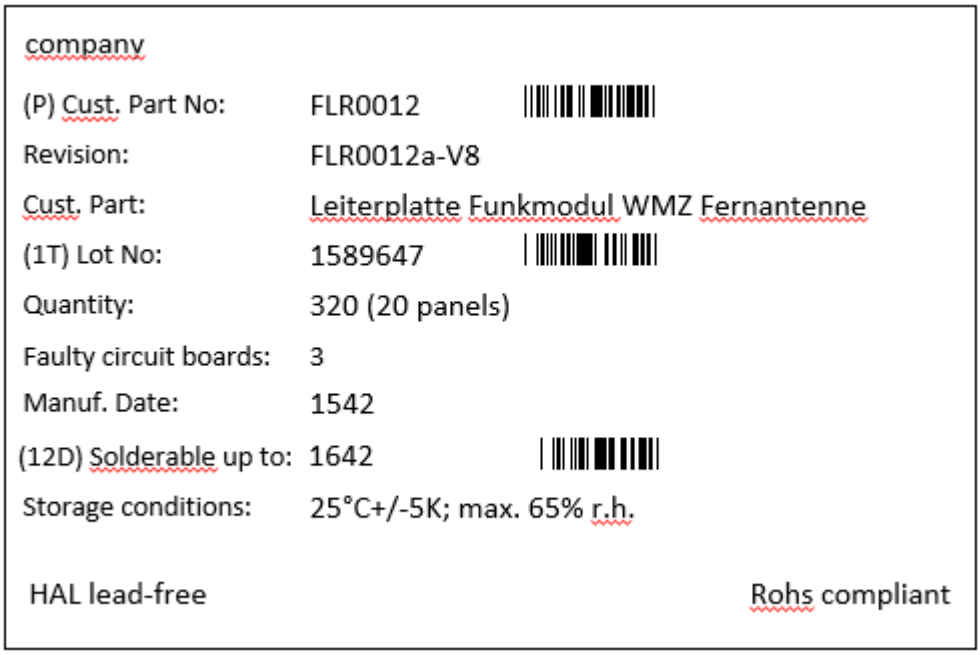


1 – QUNDIS material number as text and barcode (128)
2 – QUNDIS supplier number as text and barcode (128)
3 – Package unit quantity as text and barcode (128)

Size of label:
- min. 80 x 50 mm
- clearly readable

Position of label:
- placed in the upper area of the shorter side of each packaging unit
- facing outwards on each pallet for easy recognition
- outer or secondary packaging has to be labelled with the total quantity also

Generally, the label for inner bags must contain the following information. Variation needs to be confirmed with QUNDIS before the first shipment was sent out.



Note:
- Size: free
- Quantity: only good PCB‘s
- Date format (YYWW)
- Data Identifier in barcode as prefix

3.6 Packaging

- No paper between panels
- Vacuum-packed with humidity indicator
- Not more than 20 circuit board panels per packing unit
- Defective panels must be delivered in separate packing units.
- Max. weight per PU: 10 kg

Generally, all PCB’s must be shrink wrapped in ESD-foil or aluminium foil and must contain a humidity indicator.
An exception to this requirement is the transport from PCB’s directly in Europe. Inner-European transport can be done in needled shrink wrap foil without humidity indicator.

3.7 Certificates / Documentary Proof

- electrical test
- In-process inspection / outgoing inspection
- documentation of tests, these must be made available within 3 working days on request

3.8 Delivery Quality

Delivery Quality must be according to our PCB dataset, Ordering Terms and Conditions and information according to our Purchase Order.

Furthermore we accept max. 5% of panels in order quantity with defect units.
On Panels we accept the following defect PCB's:

circuit boards/ panel	**max. count of defective circuit boards/ panel**
1 to2	**0**
3 to 10	**2**
>11	**3**

It is strictly forbidden to change defect single PCB in a panel!

3.9 Limit Values

- Storage temperature range: -40°C to 60°C at a relative humidity of less than 60 %
- Operating temperature range: -40°C to 90°C
- Minimum processability: HAL- 6 month; NiAu - 1 year

3.10 Changes

In the event of new boards and new boards revision, QUNDIS will check and confirm the working gerber data.
COC is required with the first shipment from mass production factory.
PCN is required for any change in mass production process at production factory.

3.11 Tolerances

Dimension Categorie	Tolerance [mm]
Tolerance PCB 2Layer 1,6 thick	+/-0,13
Tolerance Multilayer ≥0.8mm	+/-10%
Distance of drill holes	+/- 0,13
Distance between 2 scorings	+/- 0,1
Ouitline after board separation V- Cut	+/- 0,2
Outline (milled) <300mm length	+/-0.1
Outline (milled) ≥300mm length	+/-0.15
Hole drilled PTH >0.2≤0.8mm	+0.1mm -0.05mm
Hole drilled PTH >0.8≤6.9mm	+0.15mm
Hole drilled PTH >7.0mm	±0.1mm
Hole drilled NPTH >0.2≤0.8mm	±0.05mm
Hole drilled NPTH >0.8≤6.0mm	+0.1mm
Hole drilled NPTH >6.0≤7.0mm	±0.1mm
Hole drilled NPTH >7.0mm	±0.2mm
Dimensions without tolerances <300mm length	+/- 0,1
Dimensions without tolerances ≥300mm length	+/- 0,15
Core thickness V-Cut	+/- 0,1
Solder Mask	+/- 0.1

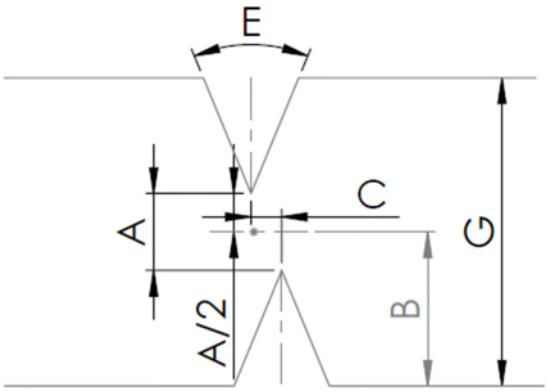
3.12 V- Cut

V- Cut for 2 and 4 Layer PCB 1.6mm thick

Detail	Designation	Nominal value	Tolerance (+/-)
A	core thickness	0.45 mm	0.1 mm
B	centrality	0.8 mm	0.1 mm
C	center offset	0 mm	0.1 mm
E	score angle	60°	2°
G	pcb thickness	1.6 mm	10%

V- Cut for 4 Layer PCB 1mm thick

Detail	Designation	Nominal value	Tolerance (+/-)
A	core thickness	0.45 mm	0.1 mm
B	centrality	0.5 mm	0.1 mm
C	center offset	0 mm	0.1 mm
E	score angle	60°	2°
G	pcb thickness	1 mm	0.16 mm



4. General information

4.1 Uncertainty

In the event of any uncertainty in requirements, please contact QUNDIS urgently.

4.2 Business Data

Please use the following site at the QUNDIS Homepage for more important information about:

- QUNDIS Packaging and delivery instructions
- QUNDIS R17_0_Dealing with substances and products (Prohibitions on substances)

https://qundis.com/company/information-for-suppliers/