1. ROHS
THE PCB SHALL BE COMPLIANT WITH THE EU ROHS2 DIRECTIVE 2011/65/EU. THIS SHALL INCLUDE, AT A MINIMUM, ALL THE CONSTITUENT MATERIALS AND ANY OTHER ADDITIVES THAT MAY BE INCLUDED OR TRANSFERRED INTO THE FINAL PRODUCT DURING THE MANUFACTURING PROCESS. THE SUPPLIER OF THIS PCB SHALL BE ABLE TO PROVIDE DOCUMENTATION UPON REQUEST DEMONSTRATING COMPLIANCE TO THE DIRECTIVE.

2. FLAMMABILITY
THE PCB MATERIALS AND CONSTRUCTION MUST MEET UL94V-0.

3. MATERIALS
SEE THE BOARD STACKUP TABLE FOR DETAILS.
FINISHED PCB THICKNESS TO BE WITHIN +/- 10% OF THE TOTAL OF THE STACKUP TABLE.

4. IMPEDANCE CONTROL
NOT REQUIRED.

5. PLATING
COPPER THICKNESSES STATED IN STACKUP TABLE ARE FINISHED PLATED WEIGHTS.
HOLES TO BE PLATED THRU 0.025 MM MINIMUM COPPER. ALL VIAS TO BE RESIN FILLED & PLATED SHUT.

6. LINE THICKNESS
FINISHED LINE THICKNESS TO BE WITHIN +/- 10% OF GERBER DATA.

7. DRILLING
SEE DRILL TABLE. SIZES SHOWN ARE FINISHED HOLE SIZES.
MINIMUM ANNULAR RING REQUIREMENT IS 0.05 MM.
DRILL HOLE TANGENCY IS ACCEPTABLE BUT HOLE BREAK OUT SHALL NOT BE ACCEPTABLE.
HOLE LOCATION AND TOLERANCES ARE TO BE +/- 0.076 MM FROM DATUM (0.0-0.0).

8. QUALITY
BOARDS SHALL BE ACCEPTABLE AND REJECTABLE PER IPC-A-600 CLASS 2.

9. SOLDER MASK
CONSTRUCTION TO BE SOLDERMASK OVER BARE COPPER (SMOBC), USING LIQUID PHOTO-IMAGEABLE (LPI) SOLDERMASK TO MEET QUALIFICATIONS OF IPC-SM-840.
SOLDER MASK TO BE GREEN UNLESS OTHERWISE SPECIFIED ON PO.

10. SILKSCREEN LEGEND
WHITE.

11. FINISH
IMMERSION GOLD OVER ELECTROLESS NICKEL (ENIG).
COVERAGE AND SOLDERABILITY SHALL MEET IPC-4552.

12. MARKING
UL LOGO, UL94 V-0 TEXT, MANUFACTURER CODE AND DATE LEGEND TO BE ADDED IN POSITION INDICATED.

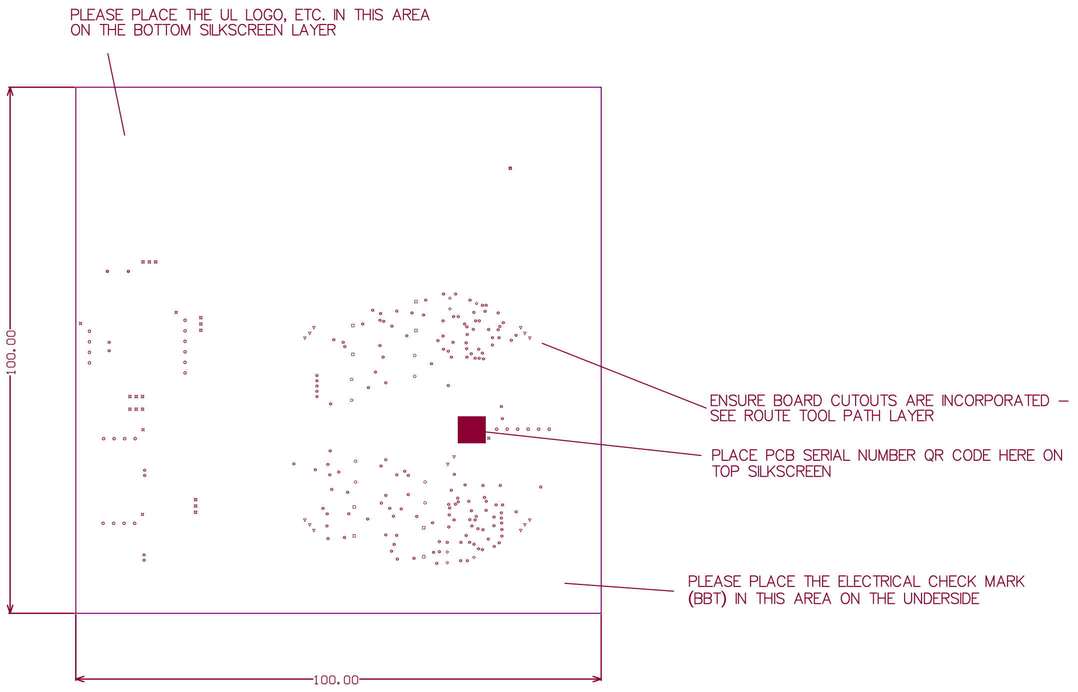
13. ROUTING
PCB WILL HAVE ROUTED EDGE; V-SCORING NOT ALLOWED.
MINIMUM ROUTING RADIUS TO BE 0.75 MM.
BOARD ROUTING TOLERANCE TO BE +/- 0.2 MM.

14. ELECTRICAL TESTING
BARE BOARDS SHALL BE 100% ELECTRICAL TESTED FOR RESISTANCE AT 100 VOLTS MINIMUM, AND FOR AND CONTINUITY USING GERBER GENERATED NET LIST DATA.
BBT (BARE BOARD TESTED) TO BE ADDED BY THE MANUFACTURER IN AREA INDICATED TO CERTIFY THAT THE BOARDS HAVE BEEN TESTED.

15. PACKAGING
BOARD TO BE VACUUM PACKED, SHIPPED AND IDENTIFIED WITH PART NUMBER, REVISION, AND DATE CODE MARKED ON THE PACKAGING.

16. PANELISATION
PANEL SIZE, BOARDS PER PANEL AND TOOLING RAILS / HOLES TO BE SPECIFIED BY PCB ASSEMBLER ON PURCHASE ORDER.

17. SOLDER PASTE STENCIL DATA
PLEASE SEND BACK TO US THE STEP AND REPEATED DATA FOR THE SOLDER PASTE STENCIL.



Symbol	Count	Hole Size	Plated	Hole Type	Drill Layer Pair	Via/Pad	Pad Shape	Template	Description	Hole Tolerance (+)	Hole Tolerance (-)
⊡	1	4.000mm (157.48mil)	PTH	Round	Top Layer - Bottom Layer	Pad	Rounded	c0h400			
◎	2	1.016mm (40.00mil)	PTH	Round	Top Layer - Bottom Layer	Pad	Rounded	c178h102			
⌘	5	1.100mm (43.31mil)	NPTH	Round	Top Layer - Bottom Layer	Pad	Rounded	c0hn110			
◇	6	0.995mm (39.17mil)	PTH	Round	Top Layer - Bottom Layer	Pad	Rounded	c90h100			
□	8	1.400mm (55.12mil)	PTH	Round	Top Layer - Bottom Layer	Pad	Rounded	c240h140			
○	8	1.650mm (64.96mil)	PTH	Round	Top Layer - Bottom Layer	Pad	(Mixed)	(Mixed)			
▽	14	0.800mm (31.50mil)	PTH	Round	Top Layer - Bottom Layer	Pad	Rounded	(Mixed)			
⊠	15	0.800mm (31.50mil)	NPTH	Round	Top Layer - Bottom Layer	Pad	Rounded	c0hn80			
✚	24	0.870mm (34.25mil)	PTH	Round	Top Layer - Bottom Layer	Pad	Rounded	c160h87			
✡	161	0.300mm (11.81mil)	PTH	Round	Top Layer - Bottom Layer	Via	Rounded	(Mixed)			
	244 Total										

LAYER STACK TABLE FOR FINISHED BOARD THICKNESSES

Layer	Name	Material	Thickness	Constant	Board Layer Stack
	Top Overlay				▨
	Top Solder	Solder Resist	0.010mm	3.5	▨
	Top Surface Finish	Nickel, Gold	0.002mm		▨
1	Top Layer		0.070mm		▨
	Dielectric 2	3313*1	0.099mm	4.1	▨
2	GND (Top)	CF-004	0.015mm		▨
	Dielectric 4	Core-009	0.550mm	4.5	▨
3	X	CF-004	0.015mm		▨
	Dielectric 1	3313*1	0.099mm	4.8	▨
4	Y	CF-004	0.015mm		▨
	Dielectric 5	Core-009	0.550mm	4.5	▨
5	GND (Bot)	CF-004	0.015mm		▨
	Dielectric 3	3313*1	0.099mm	4.1	▨
6	Bottom Layer		0.070mm		▨
	Bottom Surface Finish	Nickel, Gold	0.002mm		▨
	Bottom Solder	Solder Resist	0.010mm	3.5	▨
	Bottom Overlay				▨

Total board thickness: 1.623mm

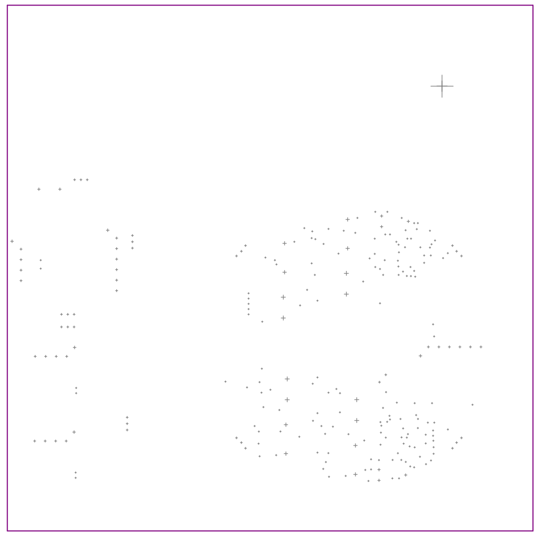
sunride

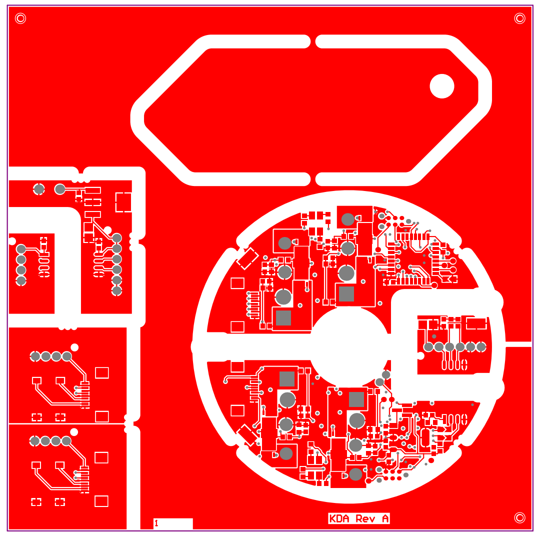
Project Sunride
The Diamond
32 Leavygreave Rd
Broomhall, Sheffield
United Kingdom
S3 7RD

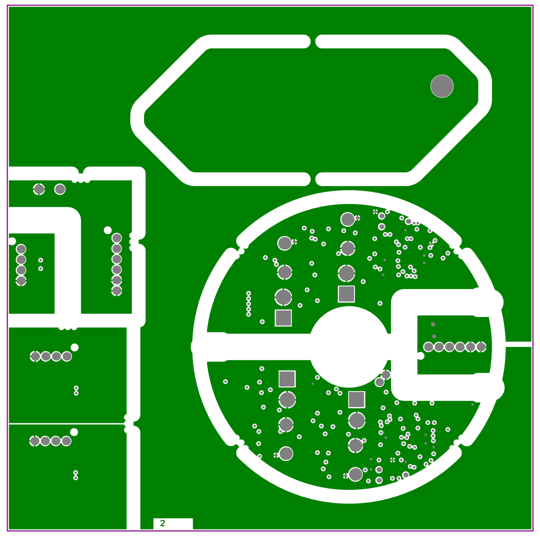
UNLESS OTHERWISE SPECIFIED
DIMENSONS AND TOLLERANCES ARE IN
mm AND APPLY TO FINISHED PART
TOLLERANCES ON:

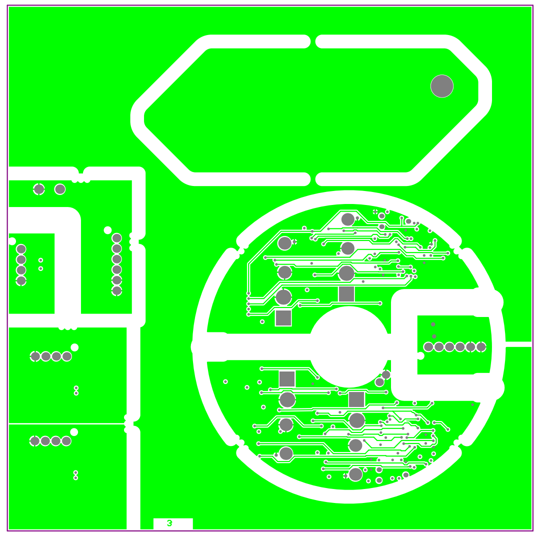
1 PLACE DEC.	2 PLACE DEC.	ANGLES
+/- 0.15	+/- 0.05	+/- 0.5 DEG.

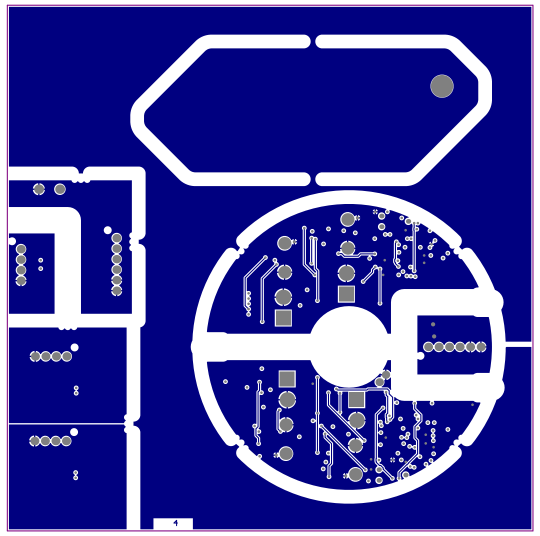
Copyright 2025	Drawing No: **KDA Rev A**		Title: **Karman Delta V.E.C.T.O.R. Board**
Altium Designer 25.8	Changed by: **Nick Angelov**	Change Date: 7 Nov 2025	**Drill Drawing**
Size A2	Change Reason: ******	Sheet 1 of 1	

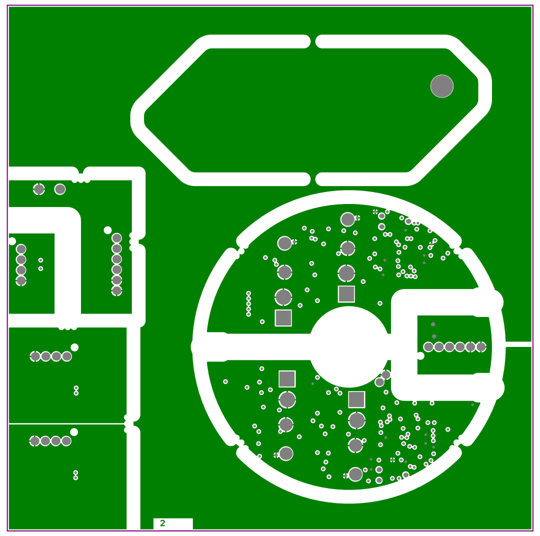


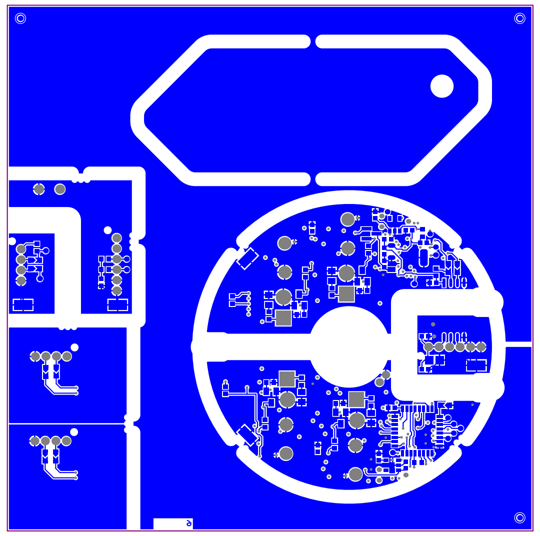

1
KDA Rev A

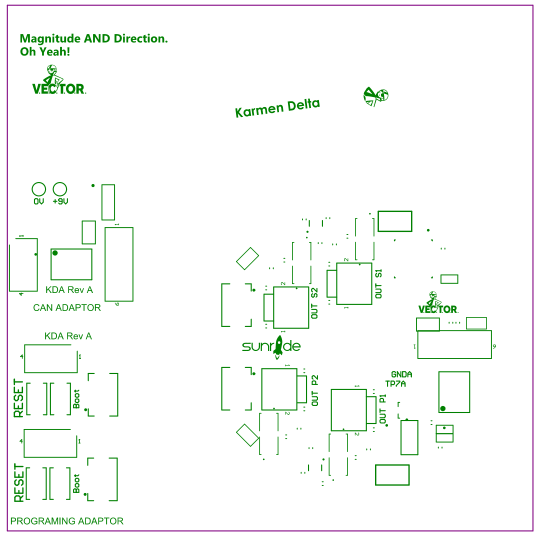

2

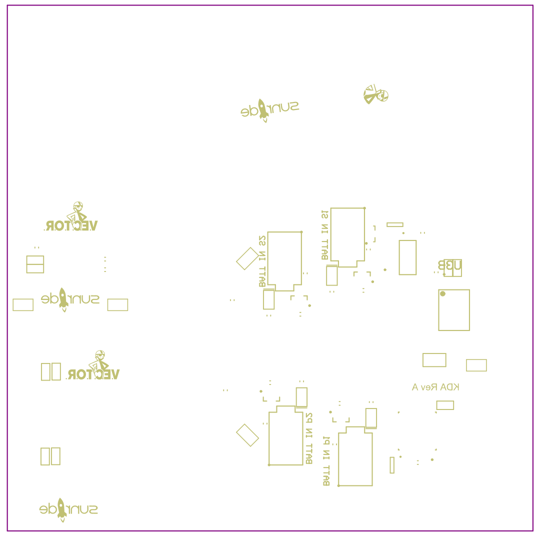

3


4


2




Magnitude AND Direction.
Oh Yeah!
VECTOR.
Karmen Delta
0V
+9V
1
4
9
KDA Rev A
CAN ADAPTOR
KDA Rev A
4
1
RESET
Boot
4
1
RESET
Boot
PROGRAMING ADAPTOR
OUT S2
OUT S1
VECTOR.
sunride
OUT P2
OUT P1
GNDA
TP7A
1
9


sunride
VECTOR
sunride
VECTOR
sunride
sunride
BATT IN S1
BATT IN S2
BATT IN P1
BATT IN P2
KDA Rev A