



thin gap

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Standard deliverables and quality policy

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Wasi Khursheed

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ThinGap, Inc.

Standard Quality and Deliverables Policy

Revision History

Author	Description	Date	Revision
J. Williamson	Initial release	4/22/2020	A
W. Khursheed	Amendment	5/16/2024	B
W. Khursheed	Added cosmetic standard text and other small edits	7/9/2024	C

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1.0 Purpose & Scope

- 1.1 ThinGap is a leading developer and seller of high-performance motor kits for use in a range of end applications. In selling standard and modified Commercially Off-the-Shelf products, ThinGap provides certain Quality Deliverables with each order by default, unless otherwise agreed to with its customer.
- 1.2 Outlined in this Policy are those steps, actions and deliverables deemed “standard”. Also describe within are additional requirements that may be requested by customers subject to agreement prior to order acceptance and subject to additional charges.

2.0 Definitions


ASL	Approved Supplier List
COC	Certificate of Conformity
BEMF	Back Electro Magnetic Feedback
PLM	Product Lifecycle Management software (Quadrite RitePro)
QMS	Quality Management System
MRP	Material Resource Planning software (Expandable)
ESD	Electro-Static Discharge
COTS	Commercial Off the Shelf
PCB	Printed Circuit Board
FAIR	First Article Inspection Report

3.0 Operations and Workmanship

- 3.1 Standard operating procedures revision controlled and managed by PLM
- 3.2 Manufacturing quality processes per ISO9001:2015
- 3.3 Solder workmanship per IPC-610 Class 2
- 3.4 Control of ESD sensitive materials per ANSI S20.20
- 3.5 Order of precedence- 1. ThinGap product print, 2. Purchase order, 3. Contract attachments
- 3.6 Design standards ensure form, fit, and function while allowing for any potential cosmetic variance typical of industry standard manufacturing processes.

4.0 Equipment & Materials

- 4.1 Personal computer at all user locations, loaded with MRP software, and the appropriate user account privileges with access to controlled documentation
- 4.2 Annual and bi-annual calibration of final test and measurement equipment
- 4.3 Use of ThinGap approved supplier list (ASL)
- 4.4 PO flow down of material, process and inspection requirements with required acknowledgement
- 4.5 Original raw material certifications will be used to confirm material specifications
- 4.6 Use of licensed and/or franchised distributors unless otherwise specified in writing
- 4.7 Counterfeit parts prevention: Use of OCM, OEM or authorized supplier/distributor with full traceability, risk assessment for any deviations.
- 4.8 PCB's are built to IPC-A-6012, CLASS 2; RoHS compliant (unleaded solder) and surface finish: HASL Unleaded

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5.0 Test and Inspection

- 5.1 In process checks of setups and features that affect final fit/form/function
- 5.2 100% inspection of part registration features and/or datums

- 5.3 Inspection of resistance, inductance and BEMF of each stator and/or motor
- 5.4 Spins test and/or adhesive load test of each rotor
- 5.5 Verification of minimum designed airgap

6.0 Records Retention

- 6.1 Paper copies of printouts are retained by Customer Service for a minimum of 3 years
- 6.2 Electronic records are kept in the Expandable database for a minimum of 1 year
- 6.3 Part inspection and performance records retained for a minimum of 3 years
- 6.4 Material purchase records retained for a minimum of 3 years

7.0 Non-Standard Options (Additional time and expense)

- 7.1 Must be requested and acknowledged as individual purchase order line
- 7.2 Test and inspection report output- mechanical datums, resistance, inductance, BEMF
- 7.3 FAIR on all mechanical features of first article
- 7.4 Raw materials and processes certification package
- 7.5 AS9102 FAIR- complete bubble drawing of each print item, raw materials and processes certifications package, detailed inspection report
- 7.6 PCBs for space applications; build to IPC-A-6012, CLASS 3, non-RoHS compliant (lead solder) and surface finish: HASL leaded
- 7.7 PCBs for high-end standard for medical; build to IPC-A-6012, CLASS 3, RoHS compliant, and surface finish: HASL Unleaded
- 7.8 Class 3 solder workmanship (IPC-610- or J-STD-001)
- 7.9 Manufacturing readiness review
- 7.10 Customer defined test and inspection plans
- 7.11 Process map and fixed process
- 7.12 Government priority rating
- 7.13 Source inspections