

ANALOG MODULES, INC. (AMI) QUALITY ASSURANCE PROVISIONS

GENERAL PROVISIONS

I. **PURPOSE:** This document establishes the Quality requirements applicable to products and materials ordered and Purchase Orders issued by Analog Modules, Inc.

II. DEFINITIONS AND ABBREVIATIONS:

1. AMI – Analog Modules, Inc.
2. Product – The results of activities or processes. A product shall include, but not be limited to: service, hardware, software, processed material, or a combination thereof.
3. Contract – The Contract, Sub-contract, Purchase Order or other written agreement between AMI and the Supplier.
4. Supplier – The Person(s) and/or Company/ Corporation providing goods and/or services to AMI.

III. **GENERAL REQUIREMENTS:** Unless otherwise specified in the Purchase Order, all of the following general requirements apply.

1. **P.O. RECEIPT AND VERIFICATION** – The Supplier shall verify all purchase orders issued by AMI upon receipt. Any discrepancies in price, quantity, specifications, quality requirements, packaging or delivery requirements shall be communicated to and resolved with AMI Purchasing before taking action on the Purchase Order.
2. **AMI ACCEPTANCE AT DESTINATION** – The products and materials ordered under AMI Purchase Orders are subject to final acceptance at their destination.
3. **QUALITY PROGRAM REQUIREMENTS** – The Supplier shall establish and maintain a quality system to the requirements of ISO 9001 or an equivalent AMI approved quality system. The Supplier's Quality System shall be approved prior to commencing any work and is subject to review and approval at all times by AMI. The Supplier retains full responsibility for ensuring that all products, lower-tier suppliers, supplies used or services furnished, comply with all applicable requirements or ISO 9001 or equivalent.
4. **ACCESS TO SUPPLIER'S FACILITY** – During the performance of this purchase order, your Quality Assurance or Inspection and Manufacturing process are subject to review, verification and analysis by AMI and/or Government/Customer representative. This requirement is applicable to the supplier's facilities where AMI products and services are processed as well as the Supplier's sub-tiers.
5. **CONFLICTS** – In the event of conflicts between the requirements of the Purchase Order and applicable product specifications or drawings, the Purchase Order shall govern.
6. **SUBMITTAL OF DOCUMENTATION** – Adequate records of inspections, tests and certifications shall be maintained throughout the manufacturing process by means deemed suitable by the Supplier. The information shall be maintained on file and shall be supplied to AMI upon request. AMI may refuse to accept products if the Supplier fails to submit the documentations required by the Purchase Order Quality Assurance Provisions.

7. **REWORKED/REPLACED MATERIAL** - When returning previously rejected material to AMI, the supplier shall reference the rejection notice number on the shipping document, and shall state if the items have been replaced or reworked.

8. **SUPPLIER NON-CONFORMANCE APPROVAL REQUESTS** - Requests for any departures from drawings, specifications, or other purchase order requirements must be recorded and submitted for consideration by AMI. Material shipped on an approved non-conformance request must be accompanied by a signed, AMI approved copy of the request.

9. **NON-CONFORMING MATERIALS CORRECTIVE ACTION** - Upon notification from the buyer that material furnished by the supplier is found discrepant upon receipt at AMI, the supplier shall promptly notify the buyer, in writing, of adequate and acceptable corrective action taken to eliminate the cause of the discrepancy. The Suppliers response shall include; (a) Root Cause of Defect, (b) Corrective Action Taken, (c) Action to Prevent Recurrence, and (d) Effectivity Point of such Corrective Action. If Government Source Inspection is a requirement on the purchase order, the supplier shall notify the cognizant Government Representative, so that he/she may participate in the investigation and corrective action if they so desire.

10. **RECORDS RETENTION** - The Supplier shall maintain adequate records of all First Articles, In-process, Final Inspections, Tests, CSI/CAI part data history as imposed by PO. Inspection records shall indicate the nature and number of observations made the number and type of deficiencies found, the quantities approved and rejected, and the nature of corrective action taken, as appropriate. The First Article Inspection reports shall include all drawing dimensions, general notes, and tolerance range along with actual measurement results, AMI recommends and may impose FAI in accordance with AS9102 latest rev. Additional clause specific detail is found within the applicable clause. This information and all supporting documentation such as raw material certifications, special processing records and certifications, manufacturing records, i.e., route sheets and travelers, shall be retained by the Supplier in accordance with the terms of the purchase order. When the Purchase Order is complete, such records shall be maintained and available to the buyer on request for a period of not less than ten (10) years from the closing of the purchase order unless stated otherwise on the purchase order.

11. **MERCURY FREE** - The use of mercury bearing instruments or equipment is prohibited during the fabrication assembly, testing or any phase of manufacture of any material furnished to AMI.

12. **INSPECTION SAMPLING** - Unless otherwise specified in the Purchase Order, the Supplier may use sampling procedures when tests are destructive or when quality history, inherent characteristics, statistically controlled processes or operation repeatability due to numerically controlled machines justify less than 100% inspection.

Sampling plans shall be in accordance ANSI Z1.4, with the exception that lot acceptance will always be: "accept on zero, reject on one". Suppliers shall submit their sampling plan as part of the First Article Inspection package for the product delivered. Sampling plans other than ANSI Z1.4 must be approved in writing by AMI for usage on AMI products. AMI will not approve any sampling plan which permits lot acceptance with defectives in the population sample.

13. **FOREIGN OBJECT PREVENTION, DETECTION AND REMOVAL** - The supplier shall maintain a FOD (Foreign Object Damage/Debris) control program assuring work is accomplished in a manner preventing foreign objects or material from entering and remaining in deliverable items. Maintenance of the work area and control of tools, parts, and material shall preclude the risk of FOD incidents. The supplier shall document and investigate all FOD incidents assuring elimination of the root cause. The Company shall have the right to perform inspection and/or audits as a method of verification that the supplier's FOD control program is functional, documented, and effective. The supplier shall identify a FOD control person responsible for implementing FOD prevention awareness and training.

Prior to closing inaccessible or obscured areas or compartments during assembly the supplier shall inspect for foreign objects/materials. Tooling, jigs, fixtures, test equipment, and handling devices shall be maintained in a state of cleanliness and repair to prevent FOD. Supplier shall provide a statement of certification that deliverable products are free of any foreign materials that could cause damage to the product or to the components/systems of which the product is a part or to which the product is attached.

QUALITY ASSURANCE PROVISIONS

One or more of the following Quality Assurance Provisions (QAPs) are a requirement of the contract when specified by code number in the contract.

- Q1 CERTIFICATE OF COMPLIANCE** – The supplier shall provide certification with each shipment that all quality assurance provisions, and other applicable requirements have been met in accordance with the specifications stated in the item description/part number appearing on the Purchase Order. This certification shall be signed by a company officer or other designated responsible individual. The following information is required on the conformance certification.

AMI Purchase Order Number
Part Number and revision
Inspection Date
Quantity and Serial Number(s) (if applicable)
Supplier Name
Authorized Signature

- Q2 ELECTROSTATIC DISCHARGE SENSITIVE (ESDS) PRODUCTS** – This product is considered to be susceptible to electrostatic discharge. The Supplier is responsible for ensuring that the product is manufactured, tested, identified and handled in accordance with MIL-STD-1686, MIL-HDBK-263 or equivalent and shall include procedures, personnel training records and calibration of ESDS testing equipment. The Supplier's ESDS program is subject to review by AMI.

- Q3 SERIALIZATION** – Each product furnished on this Purchase Order shall be identified by a unique serial number. When specific serial numbers are required, they shall be identified by AMI.

- Q4 PACKAGING** – Unless otherwise specified, packaging shall be adequate to ensure safe delivery to destination. QAP Q2 applies to ESDS materials.

- Q5 SOURCE INSPECTION** – AMI will perform Final Inspection and/or witness acceptance tests at the Supplier's facility prior to shipment of product under this Purchase Order. The Supplier will notify AMI Purchasing at least 5 working days prior to the date that Source Inspection is required.

- Q6 SUBCONTRACTING** – None of this Purchase Order may be sub-contracted by the Supplier without written approval from AMI.

- Q6.1 SUB-TIER CONTROL** – With subcontracting approval, the supplier shall be responsible for flow down of all the requirements and provisions of the AMI purchase order applicable to the supplier's sub-contractors. Additionally, the supplier shall comply with special processor requirements when imposed.

Q7 SOLDERING AND WORKMANSHIP –

- Q7.1 IPC-A-610, Class 2, Acceptability of Electronic Assemblies
Q7.2 IPC-A-610, Class 3, Acceptability of Electronic Assemblies
Q7.3 IPC/WHMA-A-620, Requirements and Acceptance for Cable and Wire Harness Assemblies

- Q8 FIRST ARTICLE INSPECTION (SUPPLIER)** – When a First Article is required, compliance to requirements must be demonstrated by submitting a first article inspection report with the first lot shipment of product and with the first lot shipment of each subsequent revision. First article inspection reports must include serial numbers (when applicable), all dimensions, general notes, tolerance ranges, actual measurements, and where physical testing is required the results of the tests. First article parts must be identified as "First Article" by tagging, special packaging, or other suitable means of identification. AMI recommends suppliers adopt the AS9102 format as the foundation of First Article reporting.

Additional first article inspection shall be performed when:

1. Either new manufacturing processes or new methods are used that could affect compliance to drawing requirements; or,
2. New, reworked or transferred tooling is used; or,
3. A drawing revision effects the operation(s) performed by the supplier.
4. The previous first article date exceeds three years.
5. The name or location of the supplier has changed.

- Q9 CALIBRATION SYSTEM** – The Supplier's calibration system for measuring and test equipment shall be in accordance with the requirements of ISO10012, ANSI-NCSL Z540-1-1994 or equivalent approved calibration system. The Supplier retains full responsibility for ensuring that all products, lower-tier suppliers, supplies used, and services furnished comply with all calibration requirements.

Q10 SHELF LIFE – Materials such as paints, glues, adhesives, fluxes and similar age sensitive material shall arrive at AMI with at least 75% of shelf life remaining. Shelf life expiration information shall be identified on the product container or the shipping documents. Chemicals shall be shipped with the MSDS sheets.

Q11 UNAUTHORIZED REPAIRS – Supplier shall not repair products or materials found to be faulty during fabrication unless authorized in writing by AMI.

Q12 NOTIFICATION OF CHANGE – The Supplier shall not change the process, design, fabrication, testing, facilities and material affecting the fit, form, function, reliability, or interchangeability of end item specifications or drawing requirements without receiving prior written approval from AMI. The Supplier shall allow AMI an opportunity to review such changes to the contractual QA provisions, including any approvals.

Q13 AUTHORIZED DISTRIBUTION – AMI is committed to eliminating the entry of counterfeit electronic components into our product by using factory-direct or their authorized distributors as approved vendors for component procurement only. No components from brokers or non-authorized distributors can be used in AMI product without prior written approval from AMI with the needed additional documentation and precautions added to the process for each approved use.

Q14 CLEANLINESS ACCEPTABILITY REQUIREMENTS – Requirements for electronic assemblies is C20 unless otherwise specified.

CXX- First digit - surface to be cleaned,
second digit identifies testing requirements

CXX First digit

- 0 No surface to be cleaned
- 1 One side (solder side) to be cleaned
- 2 Both sides to be cleaned

CXX Second digit

- 0 No test required
- 1 Test for ionic residues-IPC-TM-650 TM 2.3.27
- 2 Test for ionic residues-IPC-TM-650 TM 2.3.25 and 2.3.25c
- 3 Test for surface insulation resistance - Documented procedure
- 4 Test for other surface organic contaminants – IPC-TM-650 TM 2.3.39
- 5 Other test as defined by the user/mfr agreement

Q15 FEDERAL ACQUISITION REGULATIONS – The following clauses set forth in the FAR/DFARS as in effect on the date of this purchase order are incorporated herein by reference.

a) All Orders:

- 52.222-26 Equal Opportunity
- 52.222-50 Combating Trafficking in Persons
- 52.247-64 Preference for Privately Owned US-Flag Commercial Vessels
- 252.225-7014 Preference for Domestic Specialty Metals, Alternate 1
- 252.236-7013 Requirement for Competition Opportunity for American Steel Producers, Fabricators, and Manufacturers

- 252.246-7003 Notification of Transportation Safety Issues
- 252.247.7023 Transportation of Supplies by Sea
- 252.247.7024 Notification of Transportation of Supplies by Sea

b) Orders of \$3,000 and Greater:

- 52.222-54 Employment Eligibility Verification

c) Orders of \$10,000 and Greater:

- 52.222-36 Affirmative Action for Workers with Disabilities

d) Orders of \$100,000 and Greater:

- 52.222-35 Equal Opportunity for Special Disabled Veterans, Veterans of the Vietnam Era, and Other Eligible Veterans
- 52.222-39 Notification of Employee Rights Concerning Payment of Union Dues or Fees

e) Orders of \$550,000 and Greater:

- 52.219-8 Utilization of Small Business Concerns