

SUPPLIER QUALITY REQUIREMENTS



PREFACE

This Supplier Quality Requirements Guide has been developed to assist our suppliers in understanding the quality requirements and expectations for all products and services supplied to AMETEK Programmable Power.

Through compliance to these guidelines, AMETEK looks forward to a long and mutually beneficial relationship with our Suppliers.



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1. SCOPE

As stated in the preface, this guide has been developed to assist AMETEK suppliers in understanding the quality requirements and expectations for all products and/or services supplied to AMETEK Programmable Power. Adherence to these guidelines described is required by all suppliers.

2. PURPOSE

AMETEK is committed to delivering quality products and services on-time at satisfactory prices. AMETEK's ability to meet customer satisfaction requires suppliers to meet high standards of quality, cost, and on time delivery. AMETEK and its Supplier Partners both must strive for a quality system that provides for constant improvement in the quality and delivery of products and services. Our goals emphasize on defect prevention and elimination of waste throughout the entire supply chain. AMETEK wishes to form long term relationships with its supply base by sharing knowledge, ideas, and facts for the benefit of all involved.

3. REQUIREMENTS

3.1. General Requirements

- 3.1.1. Proof of financial stability may be requested.
- 3.1.2. Purchase Order acknowledgements are required.
- 3.1.3. Additional terms, conditions, and requirements are documented on the purchase order. Contact AMETEK Buyer for latest version of AMETEK's Terms and Conditions.
- 3.1.4. Suppliers are expected to comply with the Quality Clauses, shown in Appendix A at the end of this guide.
- 3.1.5. AMETEK expects suppliers to provide notification and information as soon as possible when issues arise that prevent compliance with any requirement of an order.

3.2. Engineering/Technical Support

- 3.2.1. AMETEK is committed to making the highest quality products. In order to achieve this, suppliers should offer engineering and technical support when requested.
- 3.2.2. The supplier is required to maintain a contact that can be readily available to help in solving problems relating to quality, delivery or any other issue.
- 3.2.3. Suppliers are not granted MRB authority for AMETEK Programmable Power products.

3.3. Manufacturing Capability

- 3.3.1. Suppliers are expected to have the resources (capacity, manpower, etc.) necessary to supply the products and/or services to accommodate AMETEK's schedule. The supplier should provide for fluctuations in requirements due to changes (up to 30%).
- 3.3.2. The supplier shall establish and implement an ESD Control Program that is compliant with the latest revision of MIL-STD-1686 and/or JESD625 for electrical and electronic parts, assemblies, and equipment, susceptible to damage from Electrostatic Discharge (ESD).
- 3.3.3. The supplier shall take the necessary precautions to ensure that static susceptible devices are adequately protected from ESD damage during manufacturing, test, inspection, packaging and shipping.
- 3.3.4. The supplier shall cease all work on ESD items when the relative humidity drops below the permitted lower limit of 30% until either of the conditions below are met:
 - 3.3.4.1. The relative humidity increases to at least the lower limit or,

3.3.4.2. Ionization equipment utilized at the ESD workstation is turned on and properly positioned with respect to the product and operated in accordance with the manufacturer's operating instructions.

3.3.5. Suppliers are expected to implement 6S or similar programs in their production area, to eliminate introduction of Foreign Object Debris or Damage (FOD) in the deliverable product.

3.4. Competitive Pricing

3.4.1. It is expected that all suppliers remain competitively priced in their respective industries. Cost reduction ideas should be shared with AMETEK. The global marketplace demands high quality at low prices, which places demand on all manufacturing enterprises. The mutual objective of all must be to strive for continuous improvement in manufacturing, quality, transportation, pricing, and communication.

3.4.2. Suppliers may be requested to participate in Value Analysis / Value Engineering (VAVE) activities. VAVE is a systematic process for mutually working together to take "cost" out of the product, while looking at the product's "function", relative to the product "cost".

3.5. Consistent Quality

3.5.1. 100% defect free product is required from all suppliers to AMETEK. Any deviation may result in rejection and return of product with subsequent charges. This is the industry standard that the market demands.

3.5.2. All shipments are subject to inspection. Payment by AMETEK shall not constitute acceptance. Even after acceptance of a shipment, AMETEK reserves the right to return any material that proves to be defective for full credit.

3.5.3. All shipments must meet or exceed Industry workmanship standards, as well as those referenced in AMETEK drawings, bill of material files, and / or Gerber files.

3.5.4. Defective material shall be returned at the supplier's expense and debited accordingly. Additional charges for sorting and rework, outside testing, or administrative costs may also be applied.

3.6. On Time Delivery

3.6.1. AMETEK requires that all suppliers provide 100% on-time delivery performance with the exact product and services promised with correct quantities and pricing as agreed upon.

3.6.2. Performance levels in this area shall be monitored, with formal reporting on a regular basis as part of AMETEK's supplier performance measurements.

3.6.3. Unauthorized early or late deliveries and partial or over shipments are unacceptable. The quantity shipped per order or release cannot vary from the specified quantity without written consent from AMETEK.

3.6.4. If AMETEK's production is shut down due to poor quality, late delivery, or incorrect quantity on any shipment by the supplier, the supplier may be responsible for any costs incurred including expedited freight, downtime, overtime, unfavorable Purchase Price Variance (PPV) charges by AMETEK's customers.

3.7. Transportation

3.7.1. Unless otherwise instructed, all products shall be shipped in a manner and by route providing the lowest transportation rate (Best Way). All purchase orders shall state the requested carrier. Excess transportation costs may be debited.

3.8. AMETEK Kanban System

3.8.1. AMETEK has developed a KANBAN system for inventory replenishment. This system has been designed to benefit both AMETEK and the supplier. Through in-depth inventory analysis, min/max quantities, trigger points, and lot/release quantities have been established. This analysis is performed on

a quarterly basis, and input from the supplier with respect to raw material and manufacture lead time is considered.

- 3.8.2. Kanban cards are utilized in support of the system and visual factory concepts. Signals are transmitted to suppliers via fax, email, or phone.
- 3.8.3. AMETEK's expectation under the KANBAN program is for the Supplier to maintain specified quantities per the stocking agreement.

3.9. Supplier Evaluation & Selection

- 3.9.1. The criteria for evaluation and selection of a supplier is based on the ability to consistently deliver defect free product or services, to meet or exceed our delivery requirements, be cost competitive, and responsive to our needs.
- 3.9.2. AMETEK may visit the supplier to evaluate and review quality systems and manufacturing capabilities, including audits as required.
- 3.9.3. AMETEK may request and review references, financial reports (D&B), public records.
- 3.9.4. AMETEK will review the responses in the Supplier Selection Packets prior to selecting potential suppliers. On-site Quality Management System (QMS) audits may be performed before a potential supplier is approved.

3.10. Supplier Monitoring

- 3.10.1. Performance shall be measured on the ability to meet AMETEK's expectations of quality, delivery, and responsiveness to Supplier Corrective Action Reports (SCAR) within the stipulated time.
- 3.10.2. In the event an issue or non-conformance arises that affects quality or delivery, AMETEK may issue a SCAR. This report is a document that will help all parties understand the root cause of the problem, and aid in the development of permanent corrective action to prevent the problem from recurring. Recorded on the report is a description of the problem, containment action, investigation results, root cause, corrective action taken, and its effectiveness.
- 3.10.3. Key AMETEK Suppliers will be provided Supplier Report Cards on a quarterly basis. Those suppliers may also be requested to participate in a Quarterly Business Review (QBR).

3.11. Product Traceability

- 3.11.1. All suppliers shall have a lot identification system that distinguishes one lot from another. Each lot should be clearly identified on the product (if possible), on the product packaging, Certificate of Conformance (C of C) and on the packing slip. All lots should be traceable to raw or component materials as identified by the supplier's vendor. This can be a date, work order number, serial number, etc.

3.12. Packaging & Shipping Requirements

- 3.12.1. The supplier shall package and ship product in a manner that provides for protection against shipping damage, ESD damage, rust, corrosion, contamination, Foreign Object Debris/Damage (FOD), or anything that would render the product unfit for its intended use.
- 3.12.2. The supplier shall mark packaging for electrical and electronic parts, assemblies, and equipment, susceptible to damage from Electrostatic Discharge with an ESD cautionary note or symbol.
- 3.12.3. The use of a commercial carrier does not relieve the supplier of their responsibility to package the shipment properly ensuring acceptance at the point of delivery.
- 3.12.4. Product should be packaged so that its weight or size does not impact the mode of transportation used.
- 3.12.5. All products should be marked with the AMETEK part number.
- 3.12.6. All packing slips must contain the AMETEK purchase order number, AMETEK part number, lot/serial number, quantity and description.

3.12.7. In the event of a drop shipment an ASN (advanced shipment notice) is required to be transmitted to the AMETEK Planner/Buyer.

3.13. Cooperative Management

3.13.1. AMETEK expects our suppliers to share our commitment to meet or exceed the customer's expectations through continuous improvement. It is also expected that they will give their full support to the relationship that exists between our companies, and to demonstrate flexibility in assisting AMETEK in meeting all our customer requirements.

Appendix A

QUALITY CLAUSES AMETEK Programmable Power, Inc.

1. COMMUNICATION REQUIREMENTS

Supplier shall only accept agreements and instructions in writing (e.g. Purchase Order, Purchase Order supplements/amendments etc.). Verbal agreements and instructions shall not be construed as AMETEK approval or authorization.

2. CERTIFICATIONS

Supplier shall provide a “Certification of Compliance” that material and/or articles meet all provisions of the Purchase Order. Certifications must accompany each production release delivered against this purchase order and must contain as a minimum the following:

- Purchase Order Number.
- Part number (must include the part’s drawing number), and revision level.
- A statement that the material conforms to the applicable specifications.
- A statement that conformance test reports and/or inspection records are on file, subject to examination at supplier’s facility or at the point of manufacture.
- Signature of authorized agent, and title.

3. INSPECTION SYSTEM

Unless otherwise specified on the face of the purchase order, the Supplier shall have an adequate inspection system for maintaining control of materials/products fabricated/manufactured in their facility. Calibration procedures must meet, as a minimum, the requirements of ISO 17025 or ANSI Z-540. Supplier’s inspection system may be periodically audited by AMETEK Programmable Power personnel and/or by its customers. Suppliers must flow-down all purchase order’s customer requirements to sub-tier suppliers.

4. COUNTERFEIT PARTS RISK MITIGATION AND CONTROL

The supplier shall notify AMETEK Programmable Power when suspected counterfeit parts are received or have been utilized for production. Seller shall also notify ERAI and Government Industry Data Exchange Program (GIDEP) any evidence of counterfeit parts encountered. Seller shall establish and maintain a Counterfeit Parts Prevention and Control plan using Industry Standards AS5553, AS6081 and/or AS6174 as a guideline. The purpose of this plan shall be to prevent the delivery of counterfeit parts and control parts identified as counterfeit. This requirement must be flowed down to their sub-tier suppliers.

5. DELIVERABLE ITEMS

Articles or materials shall be manufactured or produced in accordance with applicable blueprints and/or specifications. Deviations may be made only by written amendment to the purchase order when authorized by AMETEK Programmable Power. Existing deviated material may only be shipped after receiving written authorization from AMETEK Programmable Power. A copy of the authorization must be attached to the shipment.

6. ESCAPE NOTIFICATION

Supplier shall immediately notify AMETEK Programmable Power of any nonconforming product when detected after being shipped.

7. APPROVED FACILITIES

It is the Supplier's responsibility to utilize only NADCAP approved facilities for processing (such as Magnetic, X-ray or Zygllo Inspection, heat treating, plating, anodizing, etc.) used in performance of work relating to this order. Work performed by non-approved facilities is subject to rejection.

8. PRESERVATION, AND PACKAGING REQUIREMENTS

Unless otherwise specified, the Supplier shall maintain controls to assure the accomplishment of preservation, packaging, and shipping requirements of this order. The use of best commercial practices shall not relieve the Supplier of responsibility for packaging in a manner that will insure receipt at AMETEK Programmable Power in an acceptable condition.

Supplier shall exercise due care in the handling, storage, repackaging and shipping of electronic components to insure they are not damaged when received at AMETEK Programmable Power. Every effort should be made to follow component manufacturer's recommendation

9. AMETEK FURNISHED MATERIALS FOR CONTRACT MANUFACTURING

Unless otherwise specified, all materials furnished for special processing or contract manufacturing shall not be under shipped. Rejected materials shall be identified and segregated from acceptable materials. Rejected materials shall be returned to AMETEK Programmable Power for disposition.

9. AMETEK FURNISHED MATERIAL

Unless otherwise specified, materials furnished to Supplier's shall be used in the manufacture of articles specified in this order. Materials scrapped in excess of allowable tolerance, shall be (at AMETEK's option) replaced by vendor or purchased from AMETEK Programmable Power at its cost plus any special charges.

10. AMETEK FURNISHED TOOLING/EQUIPMENT

Unless otherwise specified, all tooling and equipment furnished for this order shall be maintained in good condition and used for the manufacture of articles for AMETEK Programmable Power. Tooling/equipment shall be available for examination by AMETEK's personnel and/or returned to AMETEK Programmable Power upon request or termination of this order. Supplier is responsible for timely calibration of all such tools.

11. RECORDS

Supplier shall maintain all manufacturing, inspection and test records for at least minimum of (10) years after the date of shipment to AMETEK Programmable Power. These records must be legible, readily identifiable, easily retrievable and stored in a manner to protect them from any potential damage. Supplier shall also establish the means to dispose any non-conforming records. AMETEK Programmable Power personnel, their customer, and regulatory authorities will have the right of access to all facilities involved in the order and to all applicable records.

12. CHANGE CONTROL:

AMETEK Programmable Power must be notified of any changes that affect an approved part or process, prior to the implementation of the change. The approval process shall be as follows:

Class I: A "Major change" that has appreciable effect on the weight, balance, structural strength, reliability, operational characteristics, or other characteristics affecting the form, fit or function of the part must be submitted to AMETEK Programmable Power for review and approval.

Class II: AMETEK Programmable Power must be notified in writing of any class II (Minor) changes for review.

13. CHANGE OF OWNERSHIP, LOCATION AND/OR QUALITY SYSTEM

Supplier shall notify AMETEK Programmable Power in writing, if there is a change of ownership, location and/or quality system. This notification should be given as early as possible, before the changes are implemented.

14. MATERIAL CONTROL

Supplier shall furnish the shelf life of material and current expiration date of shipment lot/batch on the material certification. All material supplied to AMETEK Programmable Power must have, at least, 80% of shelf life remaining.

15. SUPPLIER QUALITY PROGRAM

Supplier shall have an established Quality program or Inspection system in accordance or compliant with:

- A. ISO 9001/AS 9100
- B. ISO 9004
- C. AS5553, AS6174 and/or AS6081

16. SUPPLIER FIRST ARTICLE

Supplier shall perform First Article Inspection (FAI) per the requirements of AS9102 as it pertains to "Purchased Parts", or equivalent (as approved by AMETEK). FAI report to accompany first shipment of parts. When specified on Purchase Order, supplier shall be responsible to furnish FAI report per AS9102 requirement. FAI reports must meet one of the following requirements:

- A. For new or first-time production parts, built in accordance to AMETEK Programmable Power drawings, complete FAIR must be submitted. This requirement also applies, if new manufacturing tools are used for producing the parts.
- B. Delta FAI report must be completed to confirm adherence to AMETEK Programmable Power drawing revision changes.

17. AMETEK PROGRAMMABLE POWER SOURCE INSPECTION REQUIRED

If required, Supplier shall request AMETEK Programmable Power Source Inspection for product verification prior to shipment from its facility. Acceptance of units shall not relieve the supplier of the responsibility for manufacturing units as defined in this purchase order. Notice of 48 hours minimum shall be required for scheduling purposes.

18. GOVERNMENT INSPECTION AT SOURCE

If Government inspection is required prior to shipment from supplier's plant, promptly notify the Government Representative who normally services the plant location, so that appropriate planning for Government inspection can be accomplished. On receipt of this order, promptly furnish a copy to the Government Representative who normally services your plant or, if none, to the nearest Army, Navy, Air Force, or Defense Supply Agency inspection office. In the event the representative or office cannot be located, AMETEK purchasing agent should be notified immediately.

19. GOVERNMENT INSPECTION AT DESTINATION

Material subject to Government Inspection at AMETEK Programmable Power.

20. AMETEK PROGRAMMABLE POWER CUSTOMER SOURCE INSPECTION

Request shall be made per item #16.

21. TEST REPORTS

Test reports shall be submitted containing the results of tests with indicated conformance to applicable specifications. These reports must be identifiable with the materials furnished. AMETEK Programmable Power Purchase Order number must be typed on all copies.

- A. Chemical Test Report as noted.
- B. Physical Test Report as noted.
- C. Functional Test Report as noted.
- D. Counterfeit Material Test Report as noted.

22. TOOLING PROCUREMENT:

Title to all tooling covered by this order shall be the property of AMETEK Programmable Power (free of all liens, and encumbrances) upon acceptance by AMETEK Tool inspector and/or acceptance by tool try. Unless otherwise specified:

- The supplier shall permanently identify each tool subject to this order with AMETEK Programmable Power part number, tool number, date of manufacture, and the unit number.
- The unit number shall be organized by the Supplier. (Example: Unit 1 of 5, 2 of 5, etc.).
- The supplier shall provide a certified tool list that contains a description of each tool, and information specified above.
- All tooling manufactured for this order that is used in the suppliers' facility for manufacture of article, shall be the responsibility of the supplier for maintenance and storage. Tooling shall be the property of and for exclusive use of AMETEK Programmable Power, and subject to examination

23. AMETEK PROGRAMMABLE POWER TOOL SOURCE INSPECTION REQUIRED

Inspection of tooling shall be accomplished by AMETEK Programmable Power Inspection personnel at intervals of fabrication and/or completion of work prior to shipment to AMETEK. Acceptance is subject to compliance of design requirements and/or tool try acceptance. Request for source inspection shall be made according to item #16.

24. REGISTERED COMPONENTS/PARTS CONTROL PLAN

Supplier is required to submit in detail the critical method and processes that will be used in the manufacture/fabrication of the component or part specified in the purchase order. The plan must be submitted to AMETEK Programmable Power for analysis and acceptance prior to beginning production on this order. The plan shall contain the following information:

- A. The methods and the type of critical processing to be used (subject to limitations imposed because of propriety information).
- B. The location within the processing cycle where inspections will take place.
- C. The attributes of the product, which will be inspected at each inspection point.
- D. The materials and methods of preservation and packaging to be used to protect the product.
- E. The handling and transportation precautions necessary to protect the product.

Revisions or variations to any of the above listed controls shall not take place until AMETEK Programmable Power has accepted the revision.

25. STATISTICAL PROCESS CONTROL SYSTEM

If specified on the face of this purchase order, the Supplier shall have an adequate statistical process control (SPC) system for maintaining acceptable Cp and Cpk levels on specific "Key Characteristics" of its products. Supplier's SPC system may be periodically audited by AMETEK Programmable Power personnel and/or by its customers.

26. PRODUCTION SAMPLES

Supplier shall provide the following samples with each lot/batch of materials/components:

- For Printed Circuit Board: One (1) piece (design thickness X 12" X 12") minimum.

Note: All samples must consist of original parent material to be supplied, complete with all required design coatings. All samples must be processed through all process stages along with the lot/batch of production materials that samples represent. Certification of Compliance/Conformance must state that samples are representative of production materials/components and were processed through all production processes with the lot/batch of production material.