AMETEK PROGRAMMABLE POWER	Document Number **0530193** Quality Management System	Revision **E**	Page 1 of 9

Title

Supplier Requirements, Electronic Part Counterfeit Risk Mitigation

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A	EC-019651	Initial Release	3-5-2019	C. Kuzara
B	EC-020488	Revise for clarity	6-19-2019	C. Kuzara
C	EC-020882	Revise for clarity and typo error corrections	8-19-2019	C. Kuzara
D	EC-100158	Added para. 8.2.3. Revised Table 1.	3-8-2022	C. Kuzara
E	EC-100158	Fixed various typos.	3-14-2022	C. Kuzara

1. Purpose

The purpose of this document is to ensure AMETEK Programmable Power (APP) Electronic Parts suppliers and their sub-tier suppliers perform electronic part counterfeit risk mitigation.

2. Scope

The requirements set forth in this document apply to all AMETEK Electronic Parts suppliers and their sub tiers. This includes any supplier who furnishes turn-key product that includes electronic parts.

3. Applicable Revision

The applicable revision of this document is determined by

a) The revision specified on the purchase order, or
b) The revision in effect at the time the purchase order was issued if new revision is listed in the purchase order.

4. Responsibility

4.1. Purchasing Manager

It is the responsibility of the AMETEK Purchasing Manager to ensure that these requirements are communicated to all AMETEK suppliers who furnish electronic parts.

4.2. AMETEK Suppliers

It is the responsibility of all applicable AMETEK suppliers to conform to the requirements contained herein

5. Order of Precedence

The following order of precedence shall apply:

a) Purchase Order
b) OEM specification
c) This specification, latest revision
d) Documents and standards referenced in this specification

In case of any discrepancy among these documents, contact AMETEK Programmable Power for resolution.

6. Reference Documents

ISO 9001: 2015, Quality Management Systems, Requirements

AS5553, Counterfeit Electronic Parts Avoidance

AS6081, Fraudulent/Counterfeit Electronic Parts Avoidance - Distributors

AS671, Test Methods Standard, General Requirements Suspect/Counterfeit, EEE parts

IDEA-STD-1010 Acceptability of Electronic Components in the Open Market

IPC/EIA-J-STD-002 Solderability Tests for Component Leads, Terminations, Lugs, Terminals and Wires

MIL-STD-130 Identification Marking of U.S. Military Property

MIL-STD-883 Test Method Standard for Microcircuits

MIL-STD-750 Test Methods for Semiconductor Devices

ANSI/ESD S20.20 Protection of Electrical and Electronic Parts, Assemblies and Equipment (Excluding Electrically Initiated Explosive Devices)

0530193-01, Checklist, Electronic Part Inspection

0530193-02, Certificate of Test Completion (COTC)

7. Definitions

7.1. Counterfeit Part

An item which is purposely misrepresented to be one thing, but in fact is another. The distinction between a counterfeit and nonconforming product is the intent to deceive the user, instead of simply failing to meet stated requirements.

The Counterfeit Parts include but are not limited to:

a) Parts not containing the proper internal construction (die, manufacturer, wire bonding, etc.) consistent with the ordered part.
b) Used, refurbished, or reclaimed parts represented as new product.
c) Parts with a different package style, type, or surface plating/finish than the required or ordered product.
d) Parts not successfully completing the full production and/or test flow of the Original Component Manufacturer (OCM) that are represented as completed product.
e) Parts sold or delivered with modified labeling or markings intended to misrepresent the form, fit, function, or grade of the intended product

Both suspect material and material confirmed to be counterfeit are nonconforming material and shall be handled in accordance with the nonconforming material procedure.

7.2. Original Manufacturer (OM)

Also known as Original Component Manufacturer (OCM), Original Equipment Manufacturer (OEM) – Companies which design parts and products hold intellectual property rights, manufacture (or cosigns manufacturing) and may authorize or license the sale of the product to other companies, typically an Authorized Distributor. For the purposes of this procedure, the term Original Component Manufacturer (OM) is used interchangeably for all three.

7.3. Broker

A supplier which is not authorized or under the oversight of the part's OM. These companies typically do not offer an item with the full manufacturer's warranty. These companies are also referred to as Independent Distributors. Non-Authorized Distributors, Non-Franchised Distributors (NFD) or Non-Authorized Suppliers, but they will be referred to as Brokers within this procedure.

8. Requirements

8.1. General Requirements

8.1.1. The word "shall" invoke a binding requirement for the supplier to meet.

8.1.2. The supplier shall ensure the material supplied to AMETEK is procured from the Original Component/Equipment Manufacturer (OCM/OEM) referenced on the Purchase Order, or their Authorized distributor.

8.1.3. The manufacturer's original Certificate of Conformance shall be retained by the supplier for a minimum of 5 years. A copy of the original Certificate of Conformance shall be made available to AMETEK upon request.

8.1.4. The supplier shall mark the material in accordance with the applicable procurement document, whether it is a Military Specification Standard Microcircuit Drawing (SMD), AMETEK Control Drawing, or Manufacturer's Data Sheet. Any unauthorized marking or remarking of electronic components is prohibited.

8.1.5. Occasionally, procurement of the electronic part from the OCM/OEM or Authorized Distributor may not be possible, either because of obsolescence or long lead-times. Under such circumstances procurement through a broker may be necessary. Supplier requirements for Electronic Parts procured through a Broker are set forth in section 8.2.

8.2. Broker Requirements

8.2.1. The Seller shall notify the AMETEK buyer in writing when a broker sourced part is included or suspected. Shipment to AMETEK by the Seller of any part including or suspected of including broker sourced parts must be authorized by the AMETEK buyer in writing, prior to the Seller's release of product.

8.2.2. The Seller shall use the inspections and tests contained in Table 1 to verify that the material conforms to the requirements of the purchase order.

8.2.3. When the broker has obtained the electronic component from a Franchised Distributor (i.e. evidence of an unbroken chain of custody between the OEM and AMETEK exists) the broker shall utilize their standard inspections and include these inspection results and traceability documents in lieu of the inspection and tests defined in Table 1.

8.2.4. The Seller shall utilize a test and inspection laboratory capable of performing the required inspections and tests and shall have AMETEK's concurrence in writing.

8.2.5. The Seller shall ensure that the inspections and tests meet the requirements listed in this document.

8.2.6. The Seller shall provide separate inspection data reports for each component Date/Lot Code.

8.2.7. The Seller's inspection data reports shall include the following:

a) Original manufacturer's name.

b) AMETEK purchase order number.

c) AMETEK part number as specified on the purchase order

1 If no AMETEK part number is specified on the purchase order, the Seller's part number shall be used.

2 If no Seller's part number is specified on the purchase order, the material descriptor shall be used.

d) AMETEK drawing revision (including change notices, if not part of revision level) when specified on the purchase order

1 If no AMETEK drawing revision is specified on the purchase order, then no drawing revision is required.

i. Component Date/Lot Code
ii. Test/Inspection results, conditions, and parameters
iii. Quantity of parts tested
iv. Serial numbers (where applicable)
v. Date of test/inspection
vi. Inspector identification
vii. Seller's authorized agent's name, position, and date. Note: Electronic signature is acceptable.

8.2.8. The Seller shall report any evidence of confirmed counterfeit parts encountered during Inspection or Test to AMETEK, Electronic Resellers Association International (ERAI), and the Government Industry Data Exchange Program (GIDEP).

8.2.9. If multiple Date/Lot Codes are shipped in the same container, the Seller shall place each Date/Lot Code in separate packages marked with the Date/Lot Code.

8.2.10. The Seller shall retain test samples as part of the quality record associated with the purchase order.

8.2.11. The Seller shall have destruct test samples made available to the AMETEK buyer upon request.

8.2.12. The Seller shall provide the name and location of the 1st tier supplier providing the material to the Seller.

8.2.13. The Seller shall address all correspondence to the AMETEK buyer.

8.2.14. The Seller shall retain the test data for a minimum of 5 years from the completion of relevant Purchase Order unless otherwise specified.

8.2.15. Data Submission

a) Seller shall deliver to AMETEK the following data for AMETEK Approval

1. Inspection data reports for each component Date/Lot Code per section 8.2.7.
2. Certificate of Test Completion per Table 1.

Table 1

Inspection/Test	**Requirement**	**Lot Sampling Plan** *See notes 2 & 4*
Component marking inspection and OEM/OCM history investigation	Verification that component marking is consistent with OEM/OCM marking and the date code/lot code is not later than the last production date.	3 parts from each Date/Lot Code.
General External Visual Inspection	IDEA-STD-1010 paras. 7.3.1, 10.1, 10.2 SAE AS6171/2	Inspect all devices in Lot
Detailed External Visual Inspection	IDEA-STD-1010 para. 10.3 SAE AS6171/2	119 devices, c=0
Mechanical Inspection	IDEA-STD-1010 paragraph 10.3.3	3 parts from each Date/Lot Code, c=0
Marking Permanency *See note 2*	IDEA-STD-1010 paragraph 10.3.2.1 SAE AS6171/2	3 parts from each Date/Lot Code c=0 *See note 1.*
Blacktop Testing *See note*	1) 1-Methyl 2-Pyrrolidone (AS6081), 2) Dynasolve 750 solution (AS6081), 3) Scrape Test (IDEA 1010-3.2.3).	3 parts from each Date/Lot Code, c=0 *See note 1.*
Delid/Decapsulation	Component Decap (cavity devices only) and die photograph to compare die marking to external part marking, OEM/OCM die maps or datasheet or known good die, if available (IDEA 1010-11.7).	3 parts from each Date/Lot Code, c=0 *See note 1*
Solderability	per IPC/EIA-J-STD-002	3 parts from each Date/Lot Code *See note 1*
X-Ray Fluorescence (XRF)	Termination finish composition	3 parts from each Date/Lot Code *See note 1*
Electrical	Test in accordance with commodity matrix in Appendix A herein. SAE AS6171/2	116 devices, c=0
Radiographic Inspection	Radiographic Inspection of the die and internal construction of the product. SAE AS6171/2	45 devices, c=0

Inspection/Test	Requirement	Sample Size
Test Inspection Data	The Seller shall submit a test and inspection data report to AMETEK for review, approval and disposition prior to shipping the part. The electrical test data requirements are contained in the checklist 0530193-01. *See note 3* The Seller or the Seller's test laboratory shall complete the checklist 0530193-01, which will serve as a summary cover sheet that is supported by all additional detailed test data, results, images, and photographs. No shipments of material can be made without report review and written confirmation of approval by AMETEK's buyer via a COTC	
Certificate of Test completion (COTC) *See note 3*	The Seller shall submit an approved COTC, 0530193-02, with each shipment of material to AMETEK. *See note 3*	

Note 1: Performance of multiple tests on the same samples is allowed to maximize yield.

Note 2: Lot Sample size in Table 1 assumes lots of 200 pieces or greater. For small lot sample sizes, refer to AS6171 Table 10.

Note 3: Supplier's checklist COTC may be substituted with prior approval from AMETEK.

Note 4: Sample sizes shown in Table 1 may vary, if required by the end customer.

Appendix A

Note: If required, electrical test at temperature extremes will be specified by purchase order

Commodity Type	Electrical Test Requirement
Electrical items	All Electrical parameters at room temperature as specified in the AMETEK drawing, military drawing, manufacturer's data sheet or other specific tests required by the purchase order.
Magnetics (Inductors, Coils, Ferrites, Transformers, Transducers)	All Electrical parameters at room temperature as specified in the AMETEK drawing, military drawing, manufacturer's data sheet or other specific tests required by the purchase order.
Batteries	All Electrical parameters at room temperature as specified in the AMETEK drawing, military drawing, manufacturer's data sheet or other specific tests required by the purchase order.
Semiconductors (Microcircuits including programmable memory, Discretes)	All DC, Functional, Switching/AC parameters at room temperature as specified in the AMETEK drawing, military drawing, manufacturer's data sheet or other specific tests required by the purchase order. All programmable devices must be free from embedded software/firmware and shall be confirmed as blank.
ASICs & PASICs (ASICs, PALs, FPGAs, CPLDs)	All DC, Functional, Switching/AC parameters at room temperature as specified in the AMETEK drawing, military drawing, manufacturer's data sheet or other specific tests required by the purchase order. All programmable devices must be free from embedded software/firmware and shall be confirmed as blank.
Hybrids	All DC, Functional, Switching/AC parameters at room temperature as specified in the AMETEK drawing, military drawing, manufacturer's data sheet or other specific tests required by the purchase order
Capacitors	Test parameters (Capacitance, Dissipation factor, DWV, IR, DC leakage, ESR) at room temperature as specified in the AMETEK drawing, military drawing, manufacturer's data sheet or other specific tests required by the purchase order
Resistors	Test parameters (Resistance, DWV, IR) at room temperature as specified in the AMETEK drawing, military drawing, manufacturer's data sheet or other specific tests required by the purchase order
Switches and Relays	All Electrical parameters at room temperature as specified in the AMETEK drawing, military drawing, manufacturer's data sheet or other specific tests required by the purchase order.
Connectors	Test parameters (Contact & Insulation resistance, contact retention, DWV, Shell to shell conductivity, Electrical engagement) at room temperature as specified in the AMETEK drawing, military drawing, manufacturer's data sheet or other specific tests required by the purchase order.

RF/Microwave Devices	All DC, Functional, Switching/AC parameters at room temperature as specified in the AMETEK drawing, military drawing, manufacturer's data sheet or other specific tests required by the purchase order