

**L-3 Communications Corporation  
Link Simulation & Training Division  
Purchase Order Supplement No. 3  
Quality Assurance**

**Q10 QUALITY SYSTEM REQUIREMENTS**

- A. ISO 9001 – Seller’s quality system shall be in compliance with the requirements of ISO 9001, “Model for Quality Assurance in Design, Development, Production, Installation and Servicing.”
- B. ISO 9002 – Seller’s quality system shall be in compliance with the requirements of ISO 9002, “Model for Quality Assurance in Production, Installation and Servicing.”
- C. ISO 9003 – Seller’s quality system shall be in compliance with the requirements of ISO 9003, “Model for Quality Assurance in Final Inspection and Test.”
- D. ISO 9000-3 – Seller’s quality system shall be in compliance with the requirements of ISO 9000-3, “Guidelines for the Application of ISO 9001 to the Development, Supply, and Maintenance of Software.”
- E. Seller’s Documented Inspection System – Seller shall maintain a documented inspection system. Seller shall perform or have performed the inspections and tests required to substantiate product conformance to drawing, specification and purchase order requirements. Records of all inspections shall be maintained. Seller shall use calibrated equipment to assure that products conform to requirements. Seller shall maintain a positive system for identifying the inspection status of product.
- F. Calibration – Seller shall maintain a calibration system in compliance with the requirements of ANSI/NCSL Z540-1-1994, “Calibration Laboratories and Measuring and Test Equipment – General Requirements.”
- G. Special Quality Assurance Requirements per Statement of Work.

**Q20 INSPECTION AND IDENTIFICATION REQUIREMENTS**

- A. Source Inspection at the Seller’s Facility – Buyer inspection/test is required prior to shipment from the Seller’s facility. Seller shall have performed all evaluations necessary to verify that the product being supplied meets the purchase order requirements prior to notifying the Buyer of readiness for source inspection. Seller shall notify Buyer a minimum of five (5) working days in advance of the date when the material will be ready for Buyer inspection/test. Seller shall withhold shipment pending necessary action by the Buyer’s Quality organization. Seller shall provide and supply all records, facilities, personnel and assistance for the Buyer’s Quality organization to perform the following: (1) Review of all records relating to items supplied on the purchase order, (2) Workmanship and dimensional evaluation of items supplied on the purchase order, (3) Witnessing of testing required on the purchase order.

Source inspection shall not constitute final acceptance by the Buyer.

- B. First Article Configuration Inspection (FACI) – Buyer FACI is required prior to delivery of the first production unit. Notify Buyer five (5) working days in advance of the date when material is ready for FACI. This inspection will be accomplished with both Seller and Buyer participation on a unit accepted and ready for shipment. This inspection covers the item or assembly, including its component parts and associated software, drawings, operation sheets or any other data related to its conformance to workmanship standards and purchase order requirements.

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**Q20    INSPECTION AND IDENTIFICATION REQUIREMENTS (Continued)**

- C.    First Article Pieces to be Sent to Buyer's Facility – The first part fabricated to Buyer specification shall be given a complete inspection by the Seller for conformity to drawing and purchase order requirements. Seller shall prepare and complete an inspection check sheet listing every drawing or specification attribute, the actual measurement of each and the inspection media used. A copy of the completed inspection check sheet shall accompany the first article when delivered. The first article and check sheet shall be identified as first article items. Seller shall not ship any production units until the first article has been accepted by Buyer Quality Assurance. Written approval will be sent to the Seller, at which time, the production units may be shipped.
- D.    Functional Test/Inspection Results – Seller shall furnish with each shipment a report of all measurements and tests made during final product acceptance. Report shall include actual recorded readings on all electrical, dimensional, functional and visual examinations performed.
- E.    Certificate of Conformance – Each shipment made against this purchase order must contain a Certificate of Conformance by the Seller verifying that all applicable drawings, specifications and purchase document requirements have been met. The certificate must include the purchase order number, the part number and shall show the date of execution, the title of the authorized company representative and his/her signature.
- F.    Seller Certification of Conformance – Seller certifies that product submitted on this purchase order meets all form, fit and function requirements.
- G.    Final Acceptance – Final acceptance of all items furnished on this purchase order shall be at the Buyer's facility. Inspection at source by the Buyer or Buyer's Customer, including the Government, shall not constitute final acceptance, nor shall it relieve the Seller of the responsibility of furnishing acceptable products, documentation and/or services.
- H.    Identification of Parts – In the absence of specific drawing, specification or purchase order identification instructions, Seller shall individually identify materials, parts, or products furnished on this purchase order. If the materials, parts, or products have no suitable or adequate marking surfaces, identification shall be by means of a tag or identification on the container.
1.    Purchase order number
  2.    Purchase order part number
  3.    Quantity enclosed
- I.    Failure Reports – Seller shall provide a failure report with each shipment. The report shall identify the cause of the failure, document the action taken to correct the problem and include the actual results of examinations and tests to verify that the failure was corrected. The report shall further include the signature of an authorized company representative.
- J.    Government Furnished Equipment Repaired Parts – All parts removed as a result of rework/repair from the Government property supplied with this order must be returned to this facility. Seller does not have the authority to scrap or otherwise use such parts. Seller shall place an identifying tag on each removed part and identify it with the purchase order number. This requirement is considered void if the item is exchanged instead of reworked/repaired.

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**Q20 INSPECTION AND IDENTIFICATION REQUIREMENTS (Continued)**

- K. Buyer-Furnished Material – Seller shall inspect, upon receipt, all materials or parts furnished to Seller on this purchase order. Inspection, as a minimum, shall include quantity, damage, corrosion, deterioration and compliance to any applicable purchase order requirements. Seller shall provide written notification to Buyer through the Buyer's Procurement Organization of any discrepancies pending written disposition by the Buyer's Quality Organization.

**Q30 WORKMANSHIP REQUIREMENTS**

- A. Workmanship per MIL-STD-454 - Seller shall comply with the workmanship criteria of the applicable requirements of the latest revision of MIL-STD-454.
- B. Workmanship per IPC-A-610 - Where Seller's documentation references the Buyer's Logical Manufacturing Standards (LMS), or any other specification not addressed herein, Seller shall comply. Where a conflict exists, this requirement clause shall take precedence.

Seller shall implement and maintain IPC-A-610 compliant processes for electronic assemblies provided to the Buyer. Where class acceptance criteria exists (Class 1, 2 or 3), Seller shall comply with Class 3 requirements. Where crimped connections are necessary, Seller shall comply with LMS 11-9. Where cables are necessary, Seller shall comply with MIL-T-23991 for the assembly and identification of same.

If Buyer's documentation (e.g. drawing, parts list, specification etc.) does not specify part numbers or quantities, Seller shall select, procure and use commercially available adhesive-based products to mechanically fasten cable lays (bundles) and produce a neat and orderly cable routing. Where part numbers and quantities are specified, the Seller shall not make any substitutions without written permission from the Buyer. Continuous cables greater than 20 inches in length, which terminate in other than RJ-45 connectors, shall be mechanically fastened at eight (8) inch minimum to ten (10) inch maximum intervals. This is not required for RJ-45 type cables. Strain relief and chafing shields shall be provided for the finished cable lays and associated wiring at all bends and termination points.

Neatness and thoroughness of soldering, wiring, welding, machining and assembly of parts, subassemblies and assemblies shall be maintained. All components shall be free of loose, spattered or excess solder. Surfaces shall be clean and free of smudges, scratches or other marks detracting from a "new " appearance. Touchup of minor imperfections shall be accomplished prior to acceptance. Screw assemblies and bolts shall be fastened using applicable ANSI or MS standards including applicable torque requirements.

**Q40 RESERVED**

**Q50 MATERIAL, TOOLING, CALIBRATION AND PROCESS CONTROLS**

- A. Age Sensitive/Shelf Life Material – Material identified on this purchase order is considered to be age sensitive. Seller shall provide the following data upon delivery: (1) Manufacturing date, (2) Shelf life and/or expiration date and (3) Cure date for rubber products.

Material must have at least 75% of its shelf life remaining at the time of shipment.

- B. Material Safety Data Sheet – Material Safety Data Sheets (MSDS) are required for each shipment on this purchase order.

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**Q50 MATERIAL, TOOLING, CALIBRATION AND PROCESS CONTROLS (Continued)**

- C. Chemical and Physical Test Reports – Seller must have on file, at his plant or his supplier's plant, physical and chemical test reports of raw material used on this order. Processes such as welding, x-ray, magnetic particle inspection, heat treating, plating anodizing etc. must satisfy the requirements of applicable specifications (including, where applicable, certification of process personnel). Records substantiating the foregoing shall be available for examination by Buyer Quality Assurance.
- D. Reserved
- E. Component Solderability – All electronic components supplied on this purchase order shall meet the requirements of MIL-STD-202, Method 208, for component solderability.
- F. Tool Control – Buyer-supplied inspection tooling and/or gages shall be periodically proved for accuracy. This action shall occur at the Buyer's plant or at a Buyer-approved facility. If an outside lab is used, a certified report of each tool and/or gage shall be sent to the Buyer's Procurement Organization. Any tooling or gage furnished to the Seller by the Buyer shall not be altered, reworked or modified without written approval of the Buyer. Buyer shall be immediately notified of damage or loss.
- G. Calibration – A certificate, report, or data sheet attesting to the date, accuracy of the standards used, and the environmental condition under which the results furnished were obtained must be supplied for each item calibrated under this purchase order. This report or certificate must attest to the fact that the accuracy of the standards used in obtaining the results has been compared at planned intervals with the NIST, WWVB, has been derived from accepted valued of Natural Physical Constants, or has been derived by the ratio-type of self-calibration techniques. The accuracy of the standards must be at least four times the accuracy of the equipment being calibrated.
- H. Special Process Control Qualification/Records Maintained by Seller– Seller and any subtier supplier using special processes (heat treating, welding, painting, plating, nondestructive testing etc.) shall ensure that the facility performing the special process operation is both qualified to perform and that records of the special process operations are maintained.
- I. Special Process Control Approval by Buyer – Seller and any subtier supplier using special processes (heat treating, welding, painting, plating, nondestructive testing etc.) must have these special processes approved by the Buyer. Seller shall prepare and present special process procedures for Buyer's Quality Organization approval prior to performing any special processes on items to be supplied on this purchase order and no later than sixty (60) days after receipt of this purchase order. Special process procedures shall be in accordance with the appropriate specification as defined by the purchase order, drawing or specification. Seller shall maintain records verifying that special processes and personnel are certified, or if the Seller is purchasing special processes, subcontractor records are available to ensure that the subcontractor is certified to the applicable specification.

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**Q60 MATERIAL REVIEW AUTHORITY**

- A. Material Review Board (MRB) Authority – Only shipments of supplies and/or services that conform with all requirements will be accepted unless authorized in writing by the Buyer's Quality Organization. Any nonconforming materials, parts or products that affect specific Buyer requirements imposed by the purchase order, Buyer's drawing, or any other applicable specification shall be submitted to the Buyer for Buyer's MRB disposition. This task shall be accomplished at the earliest possible time and must be prior to shipment. Seller shall include the description of the nonconformance, the root cause of the nonconformance and the corrective action taken to prevent its recurrence. If the Seller is uncertain as to the affect of the nonconformance on specific requirements, the concurrence of a representative of the Buyer's Quality Organization shall be obtained.

Note: Nonconformances that do not affect specific Buyer requirements may be dispositioned by the Seller through the Seller's normal MRB procedures.

**Q70 MILITARY STANDARD HARDWARE**

- A. Military Hardware - Seller expressly warrants that parts furnished on this purchase order conform to the applicable military part specification (AN, MS, NAS etc.) Seller shall provide copies of acceptance data from the original manufacturer with each shipment.
- B. Military Hardware - Seller expressly warrants that parts furnished on this purchase order conform to the applicable military part specification (AN, MS, NAS etc.) Seller shall maintain copies of acceptance data from the original manufacturer on file.

**Q80 PACKAGING REQUIREMENTS**

- A. Cable, Conduit and Harness Packaging – All cable assemblies, conduits, and harness assemblies shall be packaged to prevent deformation of conductor insulation and damage to connectors and connector pins. All connectors shall be individually wrapped.
- B. Board Preservation and Packaging – Seller shall individually package each printed circuit, printed wiring, multi-wire or wire wrap board furnished on this purchase order in an ESD shielded bag.