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Supplier Quality Manual

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1 Introduction

The purpose of this document is to define the expectations and requirements when supplying goods or services to Lake Shore Cryotronics, Inc. (hereinafter referred to as “Lake Shore”). This document is part of the Purchase Order (PO) and contains both general information and specific quality requirements that shall be met by Lake Shore Suppliers. Where there is a conflict between this document and the PO, the requirements of the PO shall take precedence.

The scope of this document is to include general requirements for Suppliers. In addition, there are product-specific resources posted on the Lake Shore website. A list of these products is provided in Section 9.

1.1 Definitions

Abbreviations and acronyms used in this document are defined as follows:

AM.....	Aftermarket Manufacturer
CAPA	Corrective Action/Preventive Action
DFAR.....	Defense Federal Acquisition Regulation
DMR	Discrepant Material Review, issued for minor non-conforming material
DPAS.....	Defense Priorities and Allocations System, origin of DO and DX orders
ESD	Electrostatic Discharge
FAI	First Article Inspection
FAR	Federal Acquisition Regulation
GIDEP	Government Industry Data Exchange Program
NAFTA	North American Free Trade Agreement, free trade zone with Canada and Mexico established in 1994
NDA.....	Non-Disclosure Agreement, also known as Confidentiality Agreement
OCM	Original Component Manufacturer
OEM	Original Equipment Manufacturer
PO.....	Purchase Order
QMS	Quality Management System, e.g., ISO-9001, AS-9100, etc.
REACH	Registration, Evaluation, Authorization and Restriction of Chemicals
RoHS.....	Restriction of Hazardous Substances
SCA	Supplier Corrective Action, issued for major non-conforming material

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1.2 Associated Documents and Forms

Lake Shore has established an internet webpage to provide Suppliers quick access to required documents, including an electronic copy of this document, our Supplier Terms and Conditions, and product-specific instructions that are in addition to requirements stated in this document.

CP-0080-2..... Confidentiality Agreement Form (also known as Non-Disclosure Agreement, or NDA)
 QP-Supplier Terms and Conditions

Symbols used in Lake Shore drawings are defined in the Drawing Requirements Manual (DRM) and associated ASME Y14 Family of specifications.

NOTE: Lake Shore uses and imposes IPC and other industry standards as applicable. Lake Shore does not provide these standards as part of the Supplier Quality Manual. They are copyright protected and when required by the PO, are the responsibility of the supplier to obtain.

1.3 About Lake Shore

Established in 1968, Lake Shore was founded by Dr. John Swartz, a former professor of electrical engineering at Ohio State University, and his brother David Swartz. Lake Shore Cryotronics is an international leader in developing innovative measurement and control solutions for science and industry. Lake Shore serves a worldwide network of customers including university and national laboratories, aerospace, and many of the premier companies around the world. Lake Shore physicists, material scientists, and engineers continue to dedicate themselves to the development of tomorrow's technology today.

Lake Shore produces equipment for the measurement of cryogenic temperatures, magnetic fields, and the characterization of the physical properties of materials in variable temperature and magnetic environments. Quality is key to our goal of total customer satisfaction. Our commitment to quality is confirmed with our certification to the ISO 9001 quality standard. For further details, visit our website at www.lakeshore.com.

1.4 Visiting Lake Shore

Lake Shore is located at 575 McCorkle Boulevard in Westerville Ohio. Arranged Supplier visits are encouraged. Please coordinate with the Buyer listed on the PO or Supply Chain prior to visits. Lake Shore does not receive unscheduled visitors.

Facility Business Hours: 8 am to 4 pm, Monday thru Friday. Lake Shore observes the following holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving (both days), Christmas Eve and Christmas Day. Lake Shore is shut down in the days between Christmas and New Year's.

If you visit, safety glasses and closed-toe shoes are required on the production floor. If entering ESD Safe areas, ESD foot straps will be provided.

WARNING: If planning to visit, please notify Lake Shore if you have a heart pacemaker or other battery-powered medical device. People with these devices must avoid the large magnetic fields present on the work floor.

2 Expectations

The location of manufacturing must be the facility address referenced on the PO. Relocation of this work to a different facility, division, affiliate, or subsidiary of the Supplier's company shall be submitted for approval to Lake Shore prior to relocation of the work. In the event of a relocation/transfer of work, requalification processes may be required.

Suppliers that provide services (not product) may provide their service from multiple offices or locations (ex. calibration services going to different labs) as long as any location used maintains the same policies and procedures as well as any identified certifications and/or accreditations as the location referenced on the PO.

A change in Supplier name, ownership, or facility location will subject the Supplier to reevaluation. The Supplier shall notify the Buyer listed on the PO of any of these changes in writing within 60 days prior to the change occurring. Also, Lake Shore requires notification of part obsolescence or discontinuing service.

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The supplier shall notify Lake Shore in advance of any major changes to the production process. Major changes include: new production machine, location change, special processes, sub-tiered sources, etc. This notification is required to be submitted in writing to Lake Shore Supply Chain Department.

The supplier shall notify Lake Shore immediately upon the suspension or loss of any identified certifications, accreditations, or other formal credentials.

2.1 Supplier Quality Management and Corrective Action Systems

Lake Shore is proud of its ISO 9001 certification and is committed to the process of continuous improvement. In many ways, adherence to ISO 9001 benefits the relationship with our Suppliers and Customers. Simultaneously, Lake Shore requires our Suppliers to implement and maintain a Quality Management System (QMS), which can comply with any quality standard (ISO 9001, ISO/TS 16949, AS 9100, etc.). If your organization is certified to a QMS, please be sure to send Lake Shore a copy of your certificate. Also remember to send updates after any re-certification or other change in status.

Having a QMS in place means you also have a functioning process to handle non-conforming material. In the case of a non-conformance, Lake Shore may issue a Supplier Corrective Action (SCA) or Discrepant Material Review (DMR), which we expect will be handled as part of your non-conforming material process. Refer to Section 8 for further details.

2.2 Sub-Contracting

Suppliers are responsible for managing any sub-contractors they employ. This includes ensuring the quality of purchased components, materials, and services that become part of the product sold to Lake Shore. Any PO requirements imposed on the Supplier must be flowed down to the sub-contractor. Suppliers must notify Lake Shore when changing sub-contractors or if any problems/issues arise that impact quality or delivery of a product to Lake Shore.

The Supplier shall not subcontract for the design, fabrication, or procurement of the whole or any substantial part of the work specified in the PO without the prior written approval of Lake Shore. The Supplier shall notify the Buyer listed on the PO in writing within 60 days prior to the change occurring.

2.3 Parts Substitution

Changes in materials, processes, procedures, design interfaces, or software which affects the form, fit, function, safety, reliability, maintainability, testing, weight, or any other requirement or specified/implied/advertised characteristic of the product or service being delivered shall not be made without prior written approval from Lake Shore. Some specified parts include "or equivalent" in the description. If the specified part is not available, if the Supplier is not sure an alternate is equivalent, contact the Buyer listed on the PO for clarification.

Lake Shore is interested in developing partnerships with their Suppliers. If the Supplier is aware of or identifies any part savings or improved processes that will lower the cost, shorten delivery time, or improve quality, please communicate with the Buyer specified on the PO. Any suggestions provided will be forwarded to the appropriate Lake Shore entity for review. More details are provided in the product documents listed in Section 9.

2.4 Material Composition

In order to comply with global regulations and standards, Lake Shore must know the material composition of purchased products. Suppliers commit to promptly respond to any inquiries that Lake Shore makes to this end. Not exclusive of other requirements, use for these inquiries is detailed in the following sections.

2.4.1 Responsible Minerals Initiative

The Organization for Economic Co-operation and Development's "OECD Due Diligence Guidance for Responsible Supply Chains for Minerals from Conflict-Affected and High Risk Areas", serves as an international standard for reporting Responsible Minerals. As a control for human rights abuse, responsible-mineral disclosure specifically addresses originating smelters of tantalum, tin, gold, and tungsten. Many different governments have adopted this standard. In the USA it is Section 1502 of the Dodd-Frank Act. Generally, we report using the most current version of the [Responsible Minerals Reporting Template on the CFSI website](#). In addition, the Responsible Materials Initiative has identified cobalt as an additional mineral of concern. The [Cobalt Reporting Template](#) can be accessed if it is requested.

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2.4.2 RoHS

The European Union has enacted [Directive 2011/65/EU](#) and [Directive \(EU\) 2015-863](#) on the Restriction of the use of certain Hazardous Substances in electrical and electronic equipment (RoHS). The substances regulated under RoHS are lead (Pb), mercury (Hg), cadmium (Cd), hexavalent chromium (CrVI), polybrominated biphenyls (PBB), polybrominated diphenyl ethers (PBDE), and four different phthalates (DEHP, BBP, BBP, DIBP). RoHS adherence now transcends the EU as a global initiative. Because Lake Shore must comply with government requirements and customer expectations, if we wish to incorporate your materials in our products, we need supplier-provided documentation of compliance when requested.

2.4.3 REACH

This legislation governs the European Regulation on Registration, Evaluation, Authorization and Restriction of Chemicals; being **Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 and subsequent amendments**. To ensure compliance with the legislation, Lake Shore will ask suppliers if any REACH Substances of Very High Concern (SVHC) are part of the materials purchased. This [list](#) of SVHCs includes justification for being on the list. In addition to the EU, Lake Shore uses these material declarations for requirements of other country groups.

2.5 Counterfeit Parts

Suppliers shall have a process in place to ensure it does not receive counterfeit parts into inventory, use them in manufacturing, or provide them to Lake Shore. Suppliers may use SAE AS5553 (or other appropriate standard) as a guide for electrical, electronic, electro-mechanical and electro-optical (EEE) parts.

All EEE parts delivered or used shall be from the Original Component Manufacturer (OCM), Original Equipment Manufacturer (OEM), franchised distributors, or authorized Aftermarket Manufacturer (AM). If a part is not directly available from the OCM, OEM, AM, franchised distributor (electronics), or authorized distributor (non-electronics), purchase from an independent distributor may be made but evidence of supply chain traceability must be provided and pre-approval from Lake Shore is required.

If suspect counterfeit parts are found, the supplier shall bear the burden of the investigation and any costs associated with replacing the suspect parts in all product delivered to Lake Shore and subsequently delivered to Lake Shore customers.

2.6 Human Rights

Lake Shore encourages and expects our suppliers to follow best practice in their business in a way that values human rights, as described in the [UN Guiding Principles](#) (and [secondary link](#)) and [Electronics Industry Citizenship Coalition Code of Conduct](#). This includes:

- Freely chosen employment, avoiding the use of child or forced labor, of any kind including human trafficking.
- Working hours and wages commensurate with local laws.
- A workplace free of harassment and unlawful discrimination.
- Freedom for workers to associate without fear of discrimination, reprisal, intimidation or harassment.
- A workplace based on health and safety standards.
- Environmental stewardship.

3 Contractual Obligations

A Lake Shore Purchase Order (PO) emailed to the Supplier must be acknowledged by the Supplier as acceptable within 2 business days via return email to Lake Shore. If the Supplier is unable to meet the Lake Shore requested PO quantity or date, the Supplier must contact the Buyer listed on the PO. Please note that the due date specified on the PO is the date we require delivery to reach Lake Shore. Suppliers must acknowledge the Lake Shore bi-weekly Open Order Report within 1 week of the date of receipt. Refer to QP-Supplier Terms and Conditions.

3.1 Non-Disclosure/Confidentiality Agreement

Lake Shore drawings and other documentation exchanged during the execution of the PO shall be considered confidential and must not be shared with any third party (including sub-contractors) without the express written consent of Lake Shore. To reinforce this rule, Lake Shore expects every Supplier who receives Lake Shore drawings and other documentation to have a Non-Disclosure Agreement (NDA) in place. Use Form CP-0080-2 - Confidentiality Agreement.

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3.2 Governing Law and Venue

The terms and conditions of purchases by and transactions between Lake Shore and its Suppliers shall be governed by and construed under the laws of the State of Ohio, USA, excluding the Ohio law relating to Conflicts of Law. Each and every matter, dispute, or proceeding invoking the jurisdiction of a Court of law or otherwise relating to resolution of a dispute in any tribunal in relation to any agreement or arrangement between a Supplier and Lake Shore shall be conducted in either Delaware County or Franklin County, Ohio.

3.3 Federal, State, and Local Law

The Supplier will comply with all Federal, State, and Local laws applicable its products sold to Lake Shore, including but are not limited to Presidential Executive Orders and regulations issued thereunder, such as:

- Executive Order No. 11246, respecting discrimination in employment and non-segregation of facilities including, but not limited to, requirements set out at 41 CFR 60 – 1.4, and 60 – 741.5(a), which equal opportunity clauses are hereby incorporated by reference and 60 – 250.45 and 29 CFR Part 471, if applicable;
- The Federal Occupational Safety and Health Act (OSHA) of 1970, as amended;
- The Federal Hazardous Material Transportation Safety Act of 1994, as amended;
- The Federal Toxic Substance Control Act, as amended.

The Supplier warrants Lake Shore that all goods and containers of goods delivered under the Lake Shore PO conforms to the requirements of Federal, State and Local laws, orders and regulations as listed above, and agrees further to hold Lake Shore harmless and to indemnify Lake Shore against any and all costs, expense or liability, including attorney fees, for failure to so comply with Federal, State or Local requirements relating to Supplier product sales to Lake Shore.

3.4 FARs and DFARs

Federal Acquisition Regulation (FARs) apply to Federal Government orders. The Department of Defense (DOD) has additional requirements called Defense FARs (DFARs). [Part 52 - Solicitation Provisions and Contract Clauses](#), are the core set of FARs that apply to anyone in the supply chain that deals with the Government. Some FARs/DFARs are only meant for the prime contractor, some are first tier subcontractor only, some are second, while others have dollar thresholds before they are applicable. In other words, there is no simple list of FARs/DFARs that are applicable in all situations. If there are any applicable FARs or DFARs applicable to a Lake Shore order, they will be flowed down on a per-contract basis and cited on the PO.

3.5 DX and DO Orders

Lake Shore accepts orders under the Defense Priorities and Allocations System (DPAS). DX rated order have top priority over DO rated or non-rated orders. DO rated order have priority over non-rated orders. If a DPAS priority requirement exists, it will be flowed down to the Supplier and noted on the PO. For further information, refer to FAR Subpart 11.6 - Priorities and Allocations.

3.6 Government Contract GIDEP Requirement

For U.S. Government contracts, the requirement to participate in the Government Industry Data Exchange Program (GIDEP) program is flowed down to qualified Suppliers. If qualifications for GIDEP are met, each Supplier is then responsible for monitoring and reporting GIDEP Alerts for impact to items delivered to Lake Shore and shall act to eliminate or mitigate any negative effects to an acceptable level. Any failed or non-conforming items discovered during the course of the PO are disclosed by filing the appropriate failure experience data report: GIDEP Alert, GIDEP Safe-Alert, or GIDEP Problem Advisory. (<http://www.gidep.org/gidep.htm>).

3.7 Specialty Metals

DFARS 252.225-7014, Preference for Domestic Specialty Metals, Alternate 1, and DFARS 225.872-1 prohibit Lake Shore and its Suppliers from incorporating “specialty metals” (including titanium and stainless steel) which have been melted outside the United States, its possessions, or Puerto Rico, into military components, and/or end deliverables unless exceptions therein or in DFARS Subpart 225.7002-2 apply. One such exception is for specialty metals melted in the United States, or in a qualifying country or incorporated into an article manufactured in a qualifying country. Those countries include: Australia, Belgium, Canada, Denmark, Egypt, Federal Republic of Germany, France, Greece, Israel, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, and United Kingdom of Great Britain and Northern Ireland.

Under these provisions Suppliers have a responsibility:

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- To ensure no foreign metal melted for specialty metals are used to fabricate components of a product supplied to Lake Shore unless they are from a qualifying country.
- To ensure that the Supplier’s suppliers have complied with the specialty metal clause requirements stated above and, that proper certifications are issued.
- To inform Lake Shore if the above requirements cannot be complied with.

3.8 U.S. Domestic End Product and U.S. Made End Product Information

The *Buy American Act* restricts the purchase of supplies that are not domestic end products, by the United States Government. Exporters are required to note country of origin when shipping product. Accordingly, Lake Shore must know the origin of products it purchases from Suppliers.

The country of origin for an end product under the *Buy American Act* is different from the country of origin for export. The *Buy American Act* uses a two-part test to define a “domestic end product”. It is whether the manufacture is in the United States and whether the cost of domestic components is greater than 50% of the total.

It is important to note that an item may be a U.S. “Made” end-product for export without qualifying as a U.S. “Domestic” end product for Government purchase. Lake Shore may ask Suppliers the origin of products it has purchased in order to comply with regulations. Suppliers agree to promptly respond to such inquiries.

4 Supplier Evaluation

Suppliers who provide Lake Shore with goods, or services used in the production of goods, must be evaluated prior to being accepted as an approved supplier. Suppliers are automatically “Approved” if they maintain ISO9001 (or equivalent) registration. Suppliers who do not meet the automatic criteria are approved through Supplier Self-Assessment, first-article approval and/or site visitation.

Suppliers who provide calibration services may be required to be accredited to ISO17025 based on Lake Shore’s use of the calibrated equipment. Where Lake Shore requires it, Suppliers shall only be an “Approved” calibration service if accredited to ISO17025. Lake Shore shall confirm this status before any initial purchase orders or other transactions are made.

Part of the evaluation process includes filling out Supplier Contact Information and Self-Assessment. Suppliers are required to fill out the contact and business information on the first 2 pages. The final 4 pages are completed only if the Supplier does *not* maintain a quality system certified to ISO 9001 (or equivalent). Lake Shore personnel conduct an annual Supplier status review.

If the need arises, a disqualified or inactive Supplier can be re-activated by repeating the Supplier evaluation process. Depending on the reasons for disqualification, a visit may be required by a member from the Supply Chain and/or Quality group to ensure facility, processes, and quality expectations are met. Supply Chain will release a trip report with recommendations or approval for reinstatement that is shared with the Supplier.

5 Notifications and Acknowledgments

This section provides some general words about notifications (communication from Lake Shore) and acknowledgments (communication to Lake Shore).

If the supplier has a first-article inspection process, Lake Shore will comply with providing timely approvals, as long as PO delivery dates are preserved. In general, Lake Shore will request evaluation samples in lieu of a first article inspection.

5.1 Engineering Prototypes

Engineering prototypes must be built in conformance with requirements specified on Lake Shore Engineering Drawings. There are no formal incoming inspections or written approvals for prototypes. There will be feedback provided by Lake Shore Engineering should there be a non-conformance.

5.2 Drawings and Engineering Change Orders

For parts made to drawings, a PDF of the drawing is included with each PO. Additional SolidWorks files (*.SLDDRW and *.SLDPRT) corresponding to the drawing are available upon request. The drawings are subject to revision control. If a part changes while a PO is

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active, the Supplier is contacted, a new drawing is sent, and the impact of change is negotiated on a case-by-case basis. In some cases, (mostly PCB changes), a copy of the Engineering Change Order (ECO) is also provided.

Documents referenced in the PO are interpreted acting together as one agreement. If there is any order of precedence of documentation, it will be spelled out in the PO. If the Supplier notes a discrepancy between various Lake Shore documents, please contact the Buyer specified on the PO to resolve the issue.

5.3 Certification of Conformance (CoC)

If a Certificate of Conformance (CoC) is required, it will be detailed in the PO or on the drawing. In general, the CoC shall include: Supplier name, purchase order number, model number, quantity, unit of measure, lot or serial number (when required), and authorizing signature with title and date. Special requirements for the CoC, e.g., traceability, serial numbers, lot numbers, etc., will be specified on the PO.

6 Shipping

6.1 Due Date

The Due Date specified on the PO is the day we expect delivery to arrive at Lake Shore. Please allow enough lead time to ensure the shipment arrives on the due date. Shipments can be up to 3 days early without penalty. Shipments arriving before the 3-day window, or arriving late, are reflected in the Supplier Rating.

6.2 Packaging

The Supplier shall handle, pack, and use packaging that protects from loss or damage, in accordance with good commercial practices, Government regulations (including those applicable to chemicals and hazardous materials as detailed in Section 6.4), as specified in Lake Shore specifications, and as stated on the PO. The Supplier is responsible for any loss or damage due to its failure to handle, pack, or package in a proper and lawful manner.

6.3 Shipment Notification

No shipment notification is required. If your company already has a process of notification in place, please feel free to continue the practice.

6.4 Hazardous Material

The supplier must comply with all applicable domestic and international transport regulations when shipping hazardous materials and/or dangerous goods to Lake Shore. A Safety Data Sheet (SDS) must accompany every shipment of hazardous material.

Products that reuse Supplier-provided wooden crates are negotiated in advance and are specified on the PO. The wood used to make the container must comply with ISPM 15 – Regulation of Wood Packaging Material in International Trade, published by the UN Food and Agriculture Organization (FAO).

6.5 Delivery to Lake Shore

Lake Shore Receiving hours are: Monday thru Friday between 8:00 am to 5:00 pm EST. Supplier deliveries to Lake Shore must use Hoff Road to Tressler Drive; 550 Tressler Drive, Westerville, OH 43082-8699. Suppliers must *not* use the McCorkle Boulevard entrances. Suppliers must *not* insure shipments.

6.6 Delivery Paperwork

Supplier Bill of Lading and a Packing List must accompany each shipment. Lake Shore part code number must be listed on shipping papers. Supplier must include a line number of the PO release. Supplier must properly code all materials to assist Lake Shore to maintain safe, quality focused and efficient operations. Supplier's failure to properly code its materials *adversely affect the Supplier's relationship with Lake Shore and may result in issuance of a Non-Conformance Report*. The Lake Shore PO Number *must* appear on the Supplier Bill of Lading and Invoices (including drop shipments). Failure to do so *will result in delayed payment*. If a Certificate of Conformance is requested in the PO, it shall accompany the shipment.

6.7 Payment

On the day of Supplier shipment, e-mail the request for payment to: accountspayable@lakeshore.com.

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7 Supplier Ratings

Key Suppliers are sent a Supplier Performance Report each month. The Supplier is given a delivery performance rating based on receipt date versus the acknowledged date entered in the PO. The percentage is calculated by dividing the total on-time receipts by the total expected receipts. Suppliers are also given a quality performance rating based on the quantity of accepted items versus the quantity of total receipts. The percentage is calculated by dividing the total accepted receipts by the total receipts. Based on the calculations, suppliers are rated as follows.

<i>Rating</i>	<i>Delivery</i>	<i>Quality</i>
Excellent Performer	95% – 100%	100%
Good Performer	85% – 94%	98% – 99%
Average Performer	70% – 84%	95% – 97%
Poor Performer	<70%	<95%

The Supplier has 2 weeks to question any findings. Supply Chain personnel will cooperate fully with the Supplier to resolve any disputed results.

A supplier with an overall rating of "Poor" for two consecutive evaluation periods may be issued a Supplier Corrective Action (SCA). Refer to Section 8. Suppliers who have not improved by the next evaluation period may have Inspection Required for subsequent shipments and may be requested to meet with Lake Shore to determine a strategy for improving their performance. Suppliers who have not improved by the next evaluation period will be required to participate in meetings with Lake Shore. The frequency (weekly, bi-weekly, monthly, etc.) and means (telephone, face-to-face, etc.) of the meetings are negotiated by Lake Shore and the Supplier. For sole suppliers, Supply Chain will monitor performance quarterly and create an action plan to ensure the supplier is meeting Lake Shore requirements.

In addition to the typical metrics reviewed for all suppliers, any calibration services supplier required to be accredited to ISO17025 will have their accreditation reviewed annually and may, at any time, be sent a corrective action and/or be removed as an approved supplier if there is evidence their service does not meet all requirements of ISO17025.

8 Non-Conforming Material

The Supplier shall maintain a documented system for controlling non-conforming material. Non-conforming material must be identified, documented, evaluated, segregated (where practical), and dispositioned to prevent its unintended release or use.

Lake Shore employs a two-tier system for Supplier response to non-conforming material.

1. Minor non-conformances that do not require root cause analysis, a Discrepant Material Review (DMR) is issued from the Lake Shore ERP System.
2. For major non-conformances where a root cause analysis is required, a formal Supplier Corrective Action (SCA) is issued from the Lake Shore Corrective Action/Preventive Action (CAPA) System.

The Supplier shall respond to the SCA with containment, impact on delivered product, root cause, and preventive action to prevent recurrence, within the timeframe specified in the SCA. Failure to respond within the allotted timeframe or an unacceptable response may impact the Supplier rating and approval status.

9 List of Product-Specific Instructions

Refer to Lake Shore Engineering Drawings for specific instructions. RoHS requirements are as stated in Section 2.4. If traceability is required, the requirement is included in the PO. Traceability or record retention terms imposed upon Lake Shore by our Customer are flowed down to the Supplier.

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Lake Shore is currently developing product- or process-specific instructions that will be rolled out as they are completed. The topics for the instructions are as follows. Instructions concise enough not to warrant a separate document are included below.

- Materials
- Printed Circuit Boards (PCBs), including Keypads, Displays, and Touchscreens
- Surface Treatments: Anodizing, Chemical Coatings, Passivation, and Plated Finishes

9.1 Electrostatic Discharge (ESD) Requirements

Handling and packaging for any parts identified as Electrostatic Discharge (ESD) sensitive must conform to ANSI/ESD S20.20 – ESD Association Standard for the Development of an Electrostatic Discharge Control Program for Protection of Electrical and Electronic Parts. Minimum voltage Class requirements are determined by the actual component.

9.2 Brazing and Welding

Brazing and welding are what ISO 9001 defines as a “special process.” We rely on the expertise of the Supplier to provide knowledgeable support and perform brazing and welding tasks in accordance with standard industry practices, as defined in the following specifications:

- AWS C3.6/C3.6M – Specification for Furnace Brazing.
- AWS C5.5/C5.5M – Recommended Practices for Gas Tungsten Arc Welding.

Welding operators are qualified in accordance with the requirements of ASME Boiler and Pressure Vessel (B&PV) Code. Please advise Lake Shore if you are NADCAP Certified.

9.3 Cable Assemblies

Lake Shore expects Suppliers to produce cable assemblies in accordance with IPC/WHMA-A-620 – Requirements and Acceptance for Cable and Wire Harness Assemblies, Class 2. Any deviations or requirements other than this specification will be stated on the PO. Cable assemblies must be RoHS compliant.

9.4 Transformers

Lake Shore provides final specifications for transformers and expects Suppliers to design and construct transformers that meet those specifications. Lake Shore expectations include compliance with EU RoHS, electrical leakage testing in accordance with EN 61010 – Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory use, and that the resulting transformer will be included in a final product that must pass CE Mark in accordance with BS/EN 61558 – Safety of Power Transformers, Power Supplies, Reactors and Similar Products.

9.5 Marking, Labels, and Barcode

Marking and label requirements are specified on the PO. Any serialization or traceability requirements are also specified on the PO. If barcode is specified, use 1D formats 3 of 9 (39) or GS1-128. Please contact the Buyer specified on the PO before using 2D barcode.

10 Revision History

Revision	Sections Changed	Change Description	Date
4.0	All	Initial release	03-22-2017
2-12-2019	All	Removed QP numbers and revision number.	02-12-2019
7-10-2019	2.4.1 2.6 3	Changed conflict minerals to responsible minerals initiative Added anti-trafficking to the list of human rights Removed NAFTA Certificate reporting requirement	07-10-2019
8/11/2022	2, 4, 7	Made minor wording changes to supplier expectations and added requirements to align with ISO17025	8/11/2022