



Supplier Management System Requirements

QC 5 Issue 4



APPROVERS

Author	Carl Suter
Snr. Director, Operations	Ian Cooper
Snr. Mgr, Operations & Supply Chain	Lloyd Stamma
Chief Engineer	Hugh Jonson
Snr. Mgr, Product Engineering	Jon Hastings-Rendall
Snr. Mgr, Quality Assurance	Malc Thurlby

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CHANGE RECORD

Issue No.	Section(s) affected	Reason & Details of Change	Change originated by:	Date (DD/MM/YYYY)
1	All	Re-written for Sensors in line with older issue QC1 , CW Sensors requirements supporting WFT	Carl Suter	20/11/2021
2	B. SCOPE	Changed Link to CW Sensors.com	Carl Suter	14/12/2021
3	1.0	Material added to counterfeit parts	Malc T	21/12/2021
4	20	Added Prefix Descriptions	Carl Suter	15/06/2022

All changes to this document will result in a complete update and full authorisation and approval by the relevant personnel. Changes can be initiated and approved via Doc Sign. It is the responsibility of the Process Owners to ensure that this procedure is kept up to date. QA function to ensure that the revised procedure is promptly updated with any superseded copies being destroyed.

RELATED DOCUMENTS**INTERNAL DOCUMENTS**

Description	Doc. No.
Visual Acceptance Criteria (in conjunction with X55-301)	QP32-05
Supplier Assessment Audit Report	QF052
Concession/Production Permit	QF003

EXTERNAL DOCUMENTS / SYSTEMS

Description	Doc. No.
AS9100D / EN9100:2018	N/A
ISO9001:2015	N/A
BS EN61340 ESD	N/A
AS9146 FOD/Fod (reference only)	N/A
AS9102B FAI	N/A
AS13000 8D Reporting (reference only)	N/A

ABBREVIATION/DEFINITION

Abbreviation	Definition
Sensors	Curtiss Wright Sensors Division
QM	Quality Manager
ESD	Electrostatic Discharge
FO	An alien Foreign Object that could potentially enter or migrate into the product or system becoming FOD and potentially cause FOD
FOD	Any damage sustained which could degrade the product or the End User system affecting Safety
Fod	Any FO that has entered or migrated into the product or End Users system and could potentially cause FOD if not removed and controlled.
FAI	First Article Inspection (AS9102B)
NDA	Non-disclosure Agreement
ITAR	International Traffic in Arms Regulations
NADCAP	National Aerospace and Defense Contractors Accreditation Program
IAW	In Accordance With
CoC	Certificate of Conformity
MRR	Material Reject Report
CAR	Corrective and Preventative Action Requests
Kc	Key Characteristics
PPAP	Production Part Approval Process
ICP	Inspection Control Plans
SPC	Statistical Process Control


A. OBJECTIVE

- The purpose of this manual is to communicate Sensors' quality requirements and expectations to its suppliers.
- The products being procured are used on aerospace, military and commercial platforms. It is key that Sensors' suppliers understand the criticality of the product quality required.
- It is our intent to do business with suppliers who are able to provide quality parts, materials, processes and services consistently to drawings, standards and specifications. This manual is intended to aid suppliers in their understanding of requirements regarding specific management, communication and reporting processes.

B. SCOPE

- This procedure applies to all suppliers who provide materials, equipment, and services to CW Sensors. QC Regulations shown in Appendix 1 are the specific requirements for each Vendor Type along with all the other legal requirements/terms and conditions which can be found on page 2 of this web address. <https://www.cw-sensors.com/About/Supply-Chain>

C. GENERAL

- Suppliers are providers of product and services, which are either proprietary to them or are certified to National or internationally recognised standards.
- Key Characteristics are features of a material, process, or part whose variation has a significant influence on product fit, performance, service life, or manufacturability and identified accordingly, and is an example of an Essential Item. Key Characteristics will be highlighted on the drawing by the following symbol  and shall be subject to 100% inspection or Statistical Process Control.
- Data may be required/requested as part of the Zero Defects program to monitor process capability and must be made available on request.
- Risk is defined as, an undesirable situation or circumstance that has both a likelihood of occurring and a potentially negative consequence.
- **Note:** Risks arise from uncertainty due to lack of predictability or control of events.

D. QUALITY SYSTEM REQUIREMENTS

- Suppliers are encouraged to develop foundational quality systems which provide for continuous improvement and emphasise defect prevention to drive to Zero Defects.
- AS9100 certification is preferred, ISO9001 is a minimum requirement unless approved otherwise by the Sensors QM.
- As required by: Drawings/Control Documents/PO's, the supplier and sub tier suppliers performing "special processes" as defined shall be NADCAP certified to that process unless approved otherwise by CW Sensors.
- Suppliers are required to notify the Sensors QM of any changes to their Quality System accreditations resulting in system disqualification or downgrading. Failure to do so may result in supplier being disapproved.

- All Test and Measurement equipment used for verification of parts supplied to Sensors must be encompassed within the supplier/sub-contractors Calibration System. The system and records for internal and external calibrated items must demonstrate that the calibration is traceable back to UKAS approved Calibration Facility or equivalent.

E. CODE OF CONDUCT

- Health, safety, and environmental management. Sensors expects its suppliers/ sub-contractors to make proper provision for the health, safety and welfare of visitors, contractors, customers.
- Business activities shall be conducted in accordance with all relevant HS&E laws and regulations of the applicable country.

F. CONFLICT OF INTEREST.

- Employees within the supply base must deal with Sensors in a manner that avoids conflict between personal interests and those of the employer and Sensors. This requirement applies equally to business relationships and personal activities.

G. RECORD RETENTION

- Records retained by the supplier, or its sub-tiers related to testing, inspection and traceability and not otherwise delivered with a purchase order, shall be retained indefinitely, unless agreed otherwise by the Sensors QM.
- Storage conditions shall allow the records to remain legible, readily identifiable, retrievable, and adequately protected from damage (Water, Fire).
- Supplier shall provide Sensors all records relevant to a purchase order if unable to retain records at their facility for the required record retention period.
- Prior to the destruction of any records, seek Sensors Quality approval.
- The supplier shall ensure records are protected from unauthorised access or distribution.
- Electronic files shall be password protected and a firewall shall exist to prevent unauthorised access.
- Regular backup copies of records and software will be made and secured in a suitable place.

H. RIGHT OF ENTRY

- Sensors, its customers, and third-party officials reserve the right to verify the quality and delivery of all materials, documentation and services included in this procurement at the Supplier's facility.

1. COUNTERFEIT PARTS PREVENTION/OBSOLESCENCE

- Electronic components and Materials to be supplied only from franchised distributors of OEM's.
- In order to mitigate the risk of obtaining counterfeit Material, electronic/electrical parts, Sensors will only purchase Material, electronic/electrical parts from those suppliers who can provide traceability to an authorised Original Components Manufacturer (OCM) for each item/part number unless agreed otherwise by Sensors QM.
- Required With Shipment: If the supplier is the manufacturer, then the OCM C of C is all that is needed. If a distributor is the supplier, then the distributors C of C is required. The distributor's C of C must have the OCM information included.
- Notification of pending obsolescence:

If the supplier has been made aware, or is aware of any material obsolescence, then Sensors must be informed immediately so that appropriate actions can be taken.

2. CONTROL OF SUPPLIERS AND SUB-TIER SUPPLIERS

- Supplier, if necessary, has the responsibility to ensure NDA's and ITAR requirements are in place.
- For sub-tiers used, additional NDA's will be required to be signed for products that are controlled under ITAR licence agreements. Sensors are happy to support this activity, if require.
- Supplier has the responsibility to flow down applicable requirements contained within all purchase orders, drawings, and specifications from Sensors.
- Suppliers will not share any "Proprietary Information" with the 3rd party, unless an NDA is in place.
- Supplier shall maintain an "approved supplier listing" with regular audits in place to ensure capability and quality control.

3. SUPPLIER PERFORMANCE

- Supplier Performance is measured through late deliveries, quality escapes or breeches of this document. If a supplier is seen to have poor performance levels, then this could result in the supplier being removed from the Sensors approved vendor list. Where practical a regular review shall be held with suppliers and Sensor's personnel to review performance levels along with CI and Corrective/Preventive Actions.
- Suppliers are expected to seek continual high levels of Quality and OTD as agreed by Sensors and to develop systems and processes adequately resourced to this end. Levels of performance are set by CW Sensors and CW will work with all suppliers to ensure these levels are maintained.
- If selected, then the Supplier will be sent Performance Vendor Packs each month showing both OTD and Quality Performance.
- Suppliers are expected to achieve 100% on time delivery. It is the supplier's responsibility to notify Sensors as soon as possible of potential late deliveries.
On time delivery is defined as - 5 days early, 0 day late against the agreed PO date.

4. SUPPLIER APPROVAL/RE-APPROVAL

- A supplier will be disapproved and placed on business hold under the following conditions:
 - The supplier has had no physical receipts for a period of three (3) calendar years.
 - The supplier's quality or delivery performance is considered unacceptable.
 - The supplier's "Approved Until" date has expired.
 - Other mitigating factors

5. CHANGES IN DESIGN MATERIALS AND PROCESSING

- Supplier or sub-tier shall not make any changes in product design, material, processing, or in the methods of fabrication, without prior approval in writing by Sensors.
- Supplier shall use Sensors Concession/Production Permit Request Form to obtain approval prior to any changes, or deliveries being made.
- When sub-tier suppliers are to be changed, Sensors shall be notified in writing prior to the change and written approval is gained from Sensors QM.
- Any change made without written approval may be considered unacceptable for receipt of product by Sensors and could be scrapped at the supplier's cost.

6. FOREIGN OBJECT DEBRIS / DAMAGE (FOD) PREVENTION

- Supplier shall maintain a FOD/FOD prevention program. It is recommended that these prevention programs are in accordance with, or comparable to the Aerospace AS9146 Foreign Object Damage/ Foreign Object Debris (FOD) Prevention standard.
- By delivering items to Sensors, the supplier shall be deemed to comply with the drawing that such goods do not contain any foreign materials that could result in FOD/FOD.
- FOD are items that not highlighted on drawings, e.g., burrs and debris left from the manufacturing processes which may cause product to malfunction and may cause serious catastrophic failure.
- FOD Damage are items that not highlighted on drawings, e.g., dents and scratches, or Non-Machine Marks.

7. ELECTROSTATIC DISCHARGE (ESD) – BS EN61340

- For all electronic components, PCB assemblies and those which are considered by Sensors to be susceptible to damage from electrostatic discharge. The Supplier shall:
 - Take the necessary precautions while handling and packaging the deliverable product to prevent damage.
 - Ensure that device leads are electrically shorted together using non-corrosive conductive foam or other suitable methods of packing.
 - Ensure that items are encased in static dissipative tubes, carriers, or bags for shipment.
 - The packaging is labelled to indicate that it contains electrostatic sensitive parts.
 - Maintain an environment that protects against ESD damage in line with BSEN61340 and that all staff are adequately trained.

8. SPECIAL PROCESSES

- Special Processing (heat treat, weld, plating, hardness testing etc.)
- All supplier's and their sub-tier performing special processes, and shall be NADCAP certified to that process, unless otherwise agreed in writing by Sensors' QM.
- Test Specimens and Results.
 - The supplier shall process a test specimen when requested by the PO and is required to forward the specimen and the test results, showing the degree of compliance to the applicable drawing/specifications.
 - A weld specimen and/or report is required when a new weld schedule is being used.
 - The Supplier shall provide, with each test piece, authenticated quantitative test reports showing the degree of compliance with the applicable specification.

9. SERIALISED ITEMS

- Where product is supplied "serialised", items supplied shall be on Supplier's release documentation, (i.e., C of C, test reports, packing list, etc.)
- Serialisation shall be maintained during processing to maintain full traceability.

10. FIRST ARTICLE INSPECTION

- Suppliers shall conduct a First Article production run and produce parts utilizing normal production equipment, tooling and processes that would be used as in mass production.
- Suppliers shall submit a First Article for new parts or changes to existing parts (as flowed down in the purchase order) or process change, manufacturing locations, change to sub-contractors, or materials, or cessation in manufacturing for two years.
- Requirements for the First Article submissions must meet AS9102B requirements at a minimum.
- PPAP and ICP's may be requested to support the Zero Defects programme.

11. NON-CONFORMING MATERIALS

- Notification to Sensors must occur anytime suspect items had been shipped. Suppliers are to notify the Sensors Purchasing or Supplier Quality department.
- As soon as Supplier becomes aware of nonconforming materials/parts that have already been shipped/delivered to Sensors, and that may affect the eventual fit, form, or function of Sensors products, must inform the Sensors of nonconforming parts. This Notification will include as a minimum:
 - a clear description of the non-conformance
 - the product number (customer's number, where required) and the quantity
 - the serial numbers, batch numbers, date of manufacture, as applicable
 - planned corrective action, with date for completion.

12. RECEIPT OF NON-CONFORMING GOODS

- Upon receipt or identification of nonconforming material Sensors may issue an MRR (Material Reject Report).
- Within 24 hours of notification of defective parts through MRR, suppliers must:
 - Implement requirements of Normal Containment
 - Inform Sensors the plan to replace suspect material
 - Identify short term corrective actions
 - Send initial CAR responses
- Within 10 business days of notification of defects suppliers must:
 - Define and verify Root Causes of defect and Escape
 - Determine and Implement permanent corrective actions for Root Cause and Escape
 - Verify and Validate permanent corrective actions
- If a non-conformance is considered a minor issue, Sensors will issue a Quality Alert to the supplier describing the problem, this will be in the form of an email or letter. An MRR would not normally be raised, but the supplier is expected to identify Root Cause and associated Corrective Actions.
- If a supplier manufactures product that does not conform to Sensors' specifications and lead-time does not allow permanent corrective action due to Sensors' production requirements, a Supplier Concession form QF003 must be submitted to Sensors and approved prior to shipping non-conforming material.

13. PROBLEM SOLVING EXPECTATIONS

- When Sensors issued a CAR, Supplier requires to submit a formal response. Unless agreed prior CAR responses must be IAW AS13000 (8D reporting).
- Supplier is responsible for developing a manufacturing process that ensures that the product meets the Sensors quality requirements and specifications. Suppliers must include at minimum elements of the following process of containment.

14. DELEGATED INSPECTION AUTHORITY / SOURCE INSPECTION (IF APPLICABLE)

- Where required by purchase order, the Supplier will assign a source acceptance delegate, who assumes full responsibility for all aspects of part conformity. The Delegate signs statement, "This shipment accepted by Sensors Supplier Quality Assurance Delegate."
- Quality Assurance will perform source inspection at Supplier's facilities during the manufacture and/or test of items furnished by those purchase orders.
- Source Inspection will be scheduled by Sensors and coordinated with the Supplier. The Supplier shall notify Sensors if equipment required to perform the inspection is not available at Supplier's facility.

15. CERTIFICATE OF CONFORMANCE REQUIRED FROM SUPPLIER

- Supplier shall provide a Certificate of Conformance, or Statement of Compliance with each shipment of parts signed by a legally authorised representative of the Suppliers Organization.
- The Certificate of Conformance shall include the following:
 - Sensors' part number and quantity;
 - Part revision level;
 - Military/Government/ Industry Specification Number (if applicable);
 - Description of material or services;
 - Serial number of lot/batch number (if applicable);
 - Sensors Purchase Order, or Sub-Contract number;
 - Materials supplied must meet applicable drawings and/or specifications (Documentation must be filed to support this statement and it is subject to Sensors' examination upon request). Include all certifications.

16. SHELF-LIFE

- Cured items with limited life:
 - Cured items that have a limited life (i.e., "O" rings, gaskets, seals), on which the cure date has exceeded one (1) quarter (25%) shelf life shall not be shipped to sensors, or if at the time of receipt at Sensors, more than three months have passed since the date of cure unless otherwise agreed in writing by the Sensors QM.
- Limited Life Items:
 - Seller shall not ship material where more than ten percent (10%) of the shelf-life has expired at the time of shipping, unless otherwise agreed in writing by the Sensors QM.
 - Vendor must specify the name of the manufacturer and date of manufacture on product certification.

17. TRACEABILITY TO SOURCE OF ORIGIN

- Raw material bar stocks, tube, sheets etc., must be manufactured by UK; Western European; North American sources, unless otherwise approved by Sensors QM.
- Supplier must ensure that all items supplied are traceable to source of origin as applicable with lot number (s), date code(s) and batch number(s), cast number (s) etc.

18. QUANTITATIVE TEST REPORTS/MATERIAL ANALYSIS (WHEN REQUIRED)

- Supplier shall provide with each shipment of material: (bar, tube, sheet, plate or as per PO)
 - Authenticated, quantitative test reports showing the degree of compliance with physical property specifications
 - Certification of chemical composition
 - Original manufacturer's information.

19. PACKAGING AND SHIPPING REQUIREMENTS

- Supplier shall ensure the use of adequate protective measures to prevent damage during transportation and storage, including application of packages and wraps, cushioning, and complete identification marking of unit, and intermediate and exterior containers.
- Products shall also be identified as per specification and/or drawing requirements when applicable.
- Only containers that do not generate potential FOD shall be used to ship product, Sensors are happy to support the use and return of recyclable packaging.
- Precision Machined components shall be packaged during manufacture and shipment such that there is not any sharp or “metal to metal” contacts to avoid damage.
Extra protection for treated parts such as Anodising to be considered to eliminate any marks caused during transit.
- All supporting documentation must be provided with the goods at the time of shipment such as C of C, material certs, FAI etc., or by electronic copy, means as previously agreed by CW.

20. DEFINITION OF ‘PREFIXES’ FOR THE CONTROL OF PARTS.

(will show on order e.g. **V-Main Body**)

Please Note! Not all drawings will be marked with a ‘STAMP’ for the below parts, the Order Description showing the Prefix Letter is what controls the part.

Prefix	Description
V-	Vital Part
T-	ITAR Controlled Part
P-	PPAP Controlled Part



APPENDIX 1

QC Regulations IAW QC5
Applicable QC5 Sections per Vendor Type

Vendor Type	Vendor Categories	Sec 1	Sec 2	Sec 6	Sec 7	Sec 8	Sec 10	Sec 16	Sec 19	
	↓	Counterfeit Parts & Material Obsolescence	Control of Sub-tier	FOD control	ESD	Special Processes	FAI (AS9102)	Shelf Life	Packaging and Shipping	CW Legal Requirements
A	Chemicals/Solvents/Pottings/Adhesives	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
B	Fasteners/Hardware	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
C	Castings/Precision Extrusions	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
D	Electrical and Electronic Parts	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
E	Mechanical Components	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
F	Special Processes	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
G	Precision Machining	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
H	Metal Forming and Pressings	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
I	Precision Plastic Mouldings	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
J	Electrical/Electronic/Mechanical Sub-Assy's	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
K	Calibration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
L	Third Party Testing - EMC/Vibration/NDT etc	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
M	Carriers and Packing Supplies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
P	Raw material	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>