

TECHNICAL SPECIFICATION

IEC TS 62239

First edition
2003-05

Process management for avionics – Preparation of an electronic components management plan

*Gestion des processus pour l'avionique –
Préparation d'un plan de gestion
des composants électroniques*

IEC/TS 62239:2003

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

**PROCESS MANAGEMENT FOR AVIONICS –
Preparation of an electronic components management plan**

FOREWORD

- 1) The IEC (International Electrotechnical Commission) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of the IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, the IEC publishes International Standards. Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. The IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
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Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC 62239, which is a technical specification, has been prepared by IEC technical committee 107: Process management for avionics.

The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
107/19, 19A/DTS	107/20/RVC

Full information on the voting for the approval of this technical specification can be found in the report on voting indicated in the above table.

This technical specification cancels and replaces IEC/PAS 62239 published in 2001. This first edition constitutes a technical revision.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until 2006. At this date, the publication will be

- reconfirmed;
- withdrawn;
- replaced by a revised edition, or
- amended.

A bilingual version of this technical specification may be issued at a later date.

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INTRODUCTION

This document is intended to help aerospace equipment manufacturers, subcontractors, maintenance facilities, and other aerospace component users develop their own Electronic Component Management Plans (ECMPs), hereinafter also referred to as 'plan'. This document states objectives to be accomplished; it does not require specific tasks to be performed, specific data to be collected or reports to be issued. Those who prepare plans in compliance with this document are encouraged to document processes that are the most effective and efficient for them in accomplishing the objectives of this document. In order to allow flexibility in implementing and updating the documented processes, plan authors are encouraged to refer to their own internal process documents instead of including detailed process documentation within their plans.

This component management document is intended for aerospace users of electronic components. This standard is not intended for use by the manufacturers of electronic components. Components selected and managed according to the requirements of a plan compliant to this document may be approved by the concerned parties for the proposed application, and for other applications with equal or less severe requirements.

Organizations that prepare such plans may prepare a single plan, and use it for all relevant products supplied by the organization, or may prepare a separate plan for each relevant product or customer.

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PROCESS MANAGEMENT FOR AVIONICS – Preparation of an electronic components management plan

1 Scope

This Technical Specification defines the requirements for developing an Electronic Components Management Plan (ECMP) to assure customers and regulatory agencies that all of the electronic components in the equipment of the plan owner are selected and applied in controlled processes compatible with the end application and that the technical requirements detailed in Clause 4 are accomplished. In general, the owners of a complete electronic components management plan are avionics equipment manufacturers.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC/PAS 62240, *Use of semiconductor devices outside manufacturers' specified temperature ranges*

3 Terms definitions and abbreviations

3.1 Terms and definitions

For the purposes of this Technical Specification, the following definitions apply.

NOTE Plan owners may use alternative definitions consistent with convention within their company in their plan.

3.1.1

avionics equipment environment

applicable environmental conditions (as described per the equipment specification) that the equipment shall be able to withstand without loss or degradation in equipment performance during all of its manufacturing cycle and maintenance life (the length of which is defined by the equipment manufacturer in conjunction with customers)

3.1.2

capable

term used to indicate that a component can be used successfully in the intended application

3.1.3

certified

indicates assessment and compliance to an applicable third party standard and maintenance of a certificate and registration (i.e. CECC, JAN, IECQ)

3.1.4

characterization

process of testing a sample of components to determine the key electrical parameter values that can be expected of all produced components of the type tested

3.1.5

component application

process that assures that the component meets the design requirements of the equipment in which it is used

3.1.6**component manufacturer**

organization responsible for the component specification and its production

3.1.7**component obsolescence management**

range of management actions taken to avoid or resolve the effects of components not being procurable due to the manufacturer(s) ceasing production. Component obsolescence management should be considered an element of component dependability

3.1.8**component qualification**

process used to demonstrate that the component is capable of meeting its specification for all the required conditions and environments

3.1.9**component quality assurance**

all activities and processes to provide adequate confidence that each individual component meets the performance and environmental requirements

3.1.10**component selection**

process of choosing a specific component for a specific application

3.1.11**dependability**

capability of a product enabling it to achieve the specified functional performance at the appropriate time and for the planned duration, without damage to itself or its environment

NOTE Dependability is generally characterised by the following four parameters: reliability, maintainability, availability, safety.

3.1.12**distributor**

organization contractually authorized by a manufacturer to store, split, repack and distribute completely finished components which have been declared by the manufacturer as conforming to their specifications. The distributor is responsible for providing any technical information and traceability information supplied by the component manufacturer

3.1.13**Electronic Components Management Plan
ECMP**

equipment manufacturer's document that defines the processes and practices for applying components to an equipment or range of equipment. Generally, it addresses all relevant aspects of controlling components during system design, development, production, and post-production support

3.1.14**electronic components**

electrical or electronic devices that are not subject to disassembly without destruction or impairment of design use. They are sometimes called electronic parts, or piece parts

EXAMPLES Resistors, capacitors, diodes, integrated circuits, hybrids, application specific integrated circuits, wound components and relays.

3.1.15**electronic equipment**

item produced by the plan owner, which incorporates electronic components

EXAMPLES End items, sub-assemblies, line-replaceable units and shop-replaceable units.

3.1.16

obsolete component

component which is no longer manufactured, and may or may not still be available

3.1.17

package type

generic package family describing the physical outline and lead style

EXAMPLES Plastic quad flat-package, ball grid array, chip scale package, SOIC package, SOT23 etc.

3.1.18

plan owner

original design authority responsible for all aspects of the design, functionality and reliability of the delivered equipment in the intended application and is responsible for writing and maintaining their specific ECMP

3.1.19

risk

measure of the potential inability to achieve overall program objectives within defined cost, schedule, and technical constraints

3.1.20

single event effect

response of a component caused by the impact of galactic cosmic rays, solar enhanced particles and/or energetic neutrons and protons. The range of responses can include both non-destructive (for example upset) and destructive (for example latch-up or gate rupture) phenomena

3.1.21

subcontractor

person or entity to whom the holder of obligations under a contract has delegated part or all of such obligations

3.1.22

substitute component

component used as a replacement in equipment after the equipment design has been approved

NOTE In some contexts, the term "alternate component" is used to describe a substitute component that is "equal to or better than" the original component.

3.1.23

validation

method of qualifying components at the equipment manufacturer, when no in service data from prior use is available and there is no manufacturer's qualification data to analyse

3.2 Abbreviations

DSCC – Defence Supply Center Columbus

ECMP – Electronic Components Management Plan

EMC – Electromagnetic Compatibility

ESS – Environmental Stress Screening

NSI – National Supervising Inspectorate

OEM – Original Equipment Manufacturer