



STRATEGIC BUSINESS PLAN (SBP)

IEC/TC or SC 94	Secretariat Austria	Date 2014-05
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Title of TC
All-or-nothing electrical relays

A Background

In October 1992, after the dissolution of TC 41, SC 41A was transformed into TC 94. Its previous Strategic Policy Statement as finalized at the last meeting of TC 94 in Research Triangle Park/NC/USA was published in 2012-11 as part of document SMB/4917/R.

TC 94 is responsible for the standardization of all-or-nothing electrical relays used in the various fields of electrical engineering covered by IEC. Generally these relays are incorporated in electromechanical or electronic equipment. Most relay types are produced in large quantities (e.g. for telecom applications), and some of them are finally submitted to Quality Assurance procedures.

International Standards have been developed for elementary relays, time relays, solid-state relays, and reed switches. This work is assigned to several teams (MT, WG) as appropriate.

Information on the active maintenance teams and the membership of TC 94 are given on the TC 94 dashboard accessible on the IEC website.

Further teams with TC 94 experts are set up or re-activated when necessary.

B Business Environment

B.1 General

Market for all-or-nothing relays has been steadily increasing for the past years. In particular in the field of industrial and telecom applications, relays are produced in very large quantities under extreme price pressure. This emphasizes the importance of adequate IEC relay standards agreed upon on worldwide level.

The overall annual market for all-or-nothing electrical relays is estimated to approach 5 billion USD.

B.2 Market demand

The relay standards established by TC 94 are used by major relay manufacturers (already represented in TC 94), testing laboratories, and various customer groups within the electrotechnical community. Certification of general purpose and power relays against the basic relay standards is a prerequisite to delivering such relays to equipment manufacturers.

The parallel IEC/CENELEC voting has resulted in the implementation of the TC 94 standards by European IEC members as national standards. Together with the adoption of these standards in far eastern and emerging countries, this process emphasizes the importance of worldwide relay standards, in particular in light of the possibility to avoid trade barriers and costly re-certifications that otherwise would exist due to deviating national/regional standards.

Due to deviating requirements in North America (e.g. as laid down in the USA by the National Electrical Code), the current relay standards cannot be adopted. Therefore, TC 94 activities aim at aligning requirements and tests so that for the future a gradual harmonization of standards can be accomplished. But USA will harmonise their national standard with IEC 61810-1, the representing persons participate in MT3.

Several other organizations provide complementary and/or competing standards in the field of relays, for instance:

- ISO: Standards covering relays used in automotive and aircraft applications (ISO 7588, ISO 2315)
- MIL: Military specifications issued by the US Department of Defense (MIL-R-39016, MIL-R-5757)
- UL: Underwriters Laboratories Inc. (USA) for the North American market (UL 508)

In order to ensure adequate flexibility to adapt relays to improved manufacturing processes, new materials and other innovations, the standards created by TC 94 lay down performance requirements, but do not prescribe specific technological solutions nor design features.

B.3 Trends in technology

No extraordinary changes are foreseen for the medium term future in the principal technologies of all-or-nothing electrical relays.

Nevertheless, there is an ongoing evolution towards even higher reliability ("zero defects") and further miniaturization.

In the long term, micro-mechanical relays may become relevant on the market.

B.4 Market trends

Global players amongst several customer groups (e.g. worldwide operating companies in the telecommunications business) require interchangeability of relays procured from several key manufacturers. Therefore, relay standards need to ensure compatibility of relays as to form, fit and function.

An increasing emphasis on reliability issues (particularly in connection with "functional safety") is coming from the market place.

Markets which are becoming increasingly important are the photovoltaic, metering and the electric vehicle market, where relays are essential part of the systems. In these markets requirements on relay become higher (up to 400A or 1500V DC).

B.5 Ecological environment

Several topics with ecological importance (such as lead-free soldering, flame retardants in plastic materials, cadmium in contact materials) will also influence the design and production of relays. However, these topics are covered by respective general directives, and it is not seen appropriate that every technical committee establishes provisions on its own without a profound common basis (e.g. for lead-free soldering). In the future, these ecological topics will be included/updated during maintenance of relay standards in line with basic IEC documents applicable, and more specific requirements should be given in relay standards.

C System approach aspects

TC 94 establishes liaisons with other technical committees as appropriate.

Internal IEC Liaison	SC121A	Low-voltage switchgear and controlgear
Internal IEC Liaison	TC 111	Environmental standardization for electrical and electronic products and systems
Internal IEC Liaison	TC 72	Automatic controls for household use
Internal IEC Liaison	SC 48B	Electrical connectors
Internal IEC Liaison	TC 44	Safety of machinery - Electrotechnical aspects
Internal IEC Liaison	TC 3	Information structures and elements, identification and marking principles, documentation and graphical symbols
Liaison ISO	ISO/TC 20/SC 1	Aerospace electrical requirements
Liaison ISO	ISO/TC178	Lifts, escalators and moving walks

D Objectives and strategies (3 to 5 years)

For the time being, it is anticipated that TC 94 activities will focus on the maintenance of the existing standards and specifications for relays and reed switches.

In the past the majority of TC 94 projects have been accomplished within the given timeframe. Generally the overall development time has not exceeded 3 years. For the medium term future, it is intended to further reduce the mean time to publication to some 30 months.

During the review of relay standards, a close cooperation with system committees (e.g. TC 72) and application committees (e.g. TC61 and TC72) is to be sought in order to improve the acceptance of relay standards and avoid discrepancies due to deviating technical requirements.

Currently there is sufficient support from industry, since obviously the relevance of relay standards developed by TC 94 is considered important, and the quality of the standardization activities is appreciated. Increased participation from relay users (equipment manufacturers) is encouraged.

To adequately reflect the rising acceptance of online meetings etc., TC 94 will consider appropriate actions in order to keep the expenses for delegates within acceptable limits. Thus, future active participation can be maintained even under detrimental financial conditions.

Invitations for meeting venues of the maintenance teams are always welcome.

E Action plan

The current status of the programme of work of TC 94 can be found on the IEC website.

The series of basic standards for electromechanical elementary relays (IEC 61810 series) reached a consolidated status. MT 3 started to maintain the various parts of the IEC 61810 series starting 2011 and also considering the safety requirements of ISO/IEC Guide 51 and IEC Guide 104. The high demand applications of the photovoltaic and the electric vehicle markets are to be included in this review, as well as USA harmonizations.

The main task of MT 4 was the revision of the basic standard for time relays, IEC 61812-1. After the publication of the standard in 2011, no further activity is required at this moment.

MT 5 is responsible for the IEC 61811 series and will draft a new version 61811-1 including and replacing the entire series (IEC 61811-10, IEC 61811-11, IEC 61811-50, IEC 61811-51, IEC 61811-52, IEC 61811-53, IEC 61811-54, IEC 61811-54).

MT 6 is reviewing the generic specification for reed switches. A new version of IEC 62246-1 & IEC 62246-1-1 will be drafted. A TR 62246-3 for typical safety applications is considered.

The reduction of the development time of TC 94 standards to the anticipated 30 months is to be accomplished by using the procedural options allowed by the IEC rules (e.g. omit the CD stage, skip the final voting stage where no negative votes have been received against the CDV).

The maintenance teams will have to minimize travelling costs for delegates. This goal is to be achieved by grouping meetings of several MTs, and arrange meetings in conjunction with the TC 94 plenary sessions. Moreover, suitable electronic means (correspondence by e-mail, web or video conferences, conference phonecalls) further reduce travel costs.

F Useful links to IEC web site

[TC 94 Dashboard](#) giving access to Membership, TC/SC Officers, Scope, Liaisons, WG/MT/PT structure, Publications issued along with their Stability Dates, Work Programme and similar information for SCs, if any.

Name or signature of the secretary

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