



IEC/TC or SC 37	Secretariat USA	Date 2008-03-25
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Title of TC Surge Arresters

A. Background

The International Electrotechnical Commission Technical Committee Number 37 is concerned with surge arresters for the protection of electrical supply systems

The scope of the Main Committee is as follows:

To prepare international standards regarding:

- Specifications for surge arresters and other surge protective devices (SPDs) for a.c. and d.c. systems.
- The selection of arresters to provide adequate protection of the system with satisfactory reliability, and the definitions of conditions of use enabling this result to be obtained

The Main Committee has two subcommittees 37A and 37B

- Subcommittee 37A: Low-Voltage Surge Protective Devices
- Subcommittee 37B: Specific Components For Surge Arresters And Surge Protective Devices

The scope of the subcommittees are as follows:

SC37A

- To prepare international standards for surge protective devices (SPDs) for protection against indirect and direct effects of lightning and/or against other transient overvoltages and for information on their selection and application. These devices are to be used in power, telecommunications and/or signalling networks with voltages up to 1 000 V a.c. or 1 500 V d.c.
- Requirements for selection and erection of SPDs in electrical installations of buildings as covered by TC64 are excluded.

SC37B

- To prepare international standards (IS) for components used in SPDs. These SPDs are used in power, telecommunications and/or signalling networks with voltages up to 1 000 V a.c. or 1 500 V d.c.

The Main Committee was established in July 1951

Subcommittee 37A was established in October 1988

Subcommittee 37B was established in November 1992

List of National Committees having P status in the work of:

TC37: AU, CA, CN, DK, EG, FR, DE, GR, IT, JP, KR, LU, NL, NO, PL, RU, RS, SI, ZA, ES, SE, CH, GB, US

SC37A: AU, AT, CN, FI, FR, DE, GR, IT, JP, KR, NL, PL, RU, RS, SI, ZA, ES, SE, CH, GB, US

SC37B: AU, AT, CN, FR, DE, GR, IT, JP, KR, PL, RO, RS, SI, ZA, ES, SE, CH, GB, US

System approach relevance of TC 37 and its subcommittees as follows:

System Committees (TC37/SC37A/SC37B as supplier)	TC14 SC17A TC99	Power transformers High voltage switchgear and controlgear System engineering and erection of electric power installations in systems with nominal voltage above 1 kV a.c. and 1.5 kV d.c., particularly concerning safety aspects
Other Committees	TC28 TC36 TC64 TC81 TC89 TC109 TC112	Insulation coordination Insulators Electrical installations and protection against electric shock Lightning protection Fire hazard testing Insulation coordination for low-voltage equipment Evaluation and qualification of electrical insulating materials and systems

Important Liaisons within and external to the IEC:

TC37: TC14, SC17C, TC28, TC42, TC89, TC99, TC112, CIGRE A3.17, CIGRE A3.21, CIGRE A3.22, CIGRE C4.3.3, IEEE SPDC

SC37A: IEC/TC 64 - IEC/TC 81 - IEC/TC 109, ITU-T/SG 5 (Cat B) , IEEE SPDC SC 3.6 (Cat D);, Cooperation with SC 77B with the task to work on coordination issues between SPD protection level and equipment withstand level.

SC37B: , ITU SG5, IEEE SPDC WGs 3.6.1 and 3.6.2 (Cat D), JEDEC J22.5

B. Environment

B.1 Business environment

Surge Arresters are applied on medium and high voltage electric systems to ensure, as far as possible, the maintenance of an uninterrupted supply of electricity to users, in the presence of overvoltages such as lightning surges, switching surges, temporary overvoltages, etc. The Technical Committee and its Subcommittees set technical requirements and testing methods to check the compliance to protective limits and to other performance aspects associated with the durability of the surge arrester or SPD.

Solid-state and discharge type SPDs are used in low voltage equipment which is vulnerable to overvoltages. Matters dealing with the use of SPDs to protect against such overvoltages and transient events is addressed by SC37A. Requirements for the components used in SPDs are addressed by SC37B.

In both the high- and low-voltage environments, these products improve the reliability of equipment and services through overvoltage control.

B.2 Market demand

The market for surge arresters is worldwide. The customers for the surge arrester and SPD products covered by the TC and its subcommittees include electric utilities, industrial users, and general consumers. General consumers make primary use of the low voltage SPDs. Users of SPDs are typically different from users of high voltage surge arresters since the products have somewhat different applications and are not used under the same conditions. In the high voltage area up to UHV levels, the user, typically having technical knowledge, is more deeply involved in performance specifications and system designs. The general public (i.e., the usual consumer of the low voltage devices) is less technically sophisticated in this product area and relies heavily upon manufacturer technical capability. TC37 and its Subcommittee membership reflect those interests and alignments and is responsive to all requests for participation. The general public consumers sector input is received through comments from relevant IEC horizontal and product committees (TC109, TC64, TC81, and TC112). The market for low voltage SPDs is rapidly expanding. In contrast, the market for high voltage equipment is more stable and more mature. Pervasion of broadband communications has resulted in a demand for lower capacitance SPDs.

B.3 Trends in technology and trade

TC37: The newer technology of both gapped and non-gapped, metal-oxide surge arrester is the primary type of surge protection. However, different types of envelopes, or surrounding media, (such as polymeric coating, oil-immersion and gas insulation) and different applications of the devices (such as, connecting surge arresters directly to overhead lines and including arresters in GIS substations) are receiving increased consideration for use. Emerging issues relating to UHV may require special consideration.

SC37A: The proliferation of sensitive electronic equipment connected to low-voltage ac power distribution systems is increasing the need for the application of SPDs. Multi-port SPDs are being deployed that provide surge protection for ac power, telephone, coaxial cable and, likely, fibre-optic communications circuits. Low-voltage SPDs are evolving into products that provide surge diversion, harmonic filtering and both overload and thermal protection.

SC37B: New developments are taking place in surge protection components that are used in SPDs Trends are in miniaturization, surface mount and increased component complexity.

B.4 Ecological environment

The nature of the primary technology of surge arresters implies that practically all constructional elements can be recycled without limitation. There are no detrimental emissions during the diversion process. Care is taken to avoid the use of toxic materials or materials which may produce toxic by-products. However, life cycle assessment studies, in progress within the scientific community, may provide TC37 with insight into not now available additional environmental issues that occur during the entire life cycle of the surge arrester that may need to be addressed. EMC considerations are included in TC documents related to high voltage arresters. Requirements of RoHS need to be taken into account during the entire life cycle of considered equipment.

C. Work programme

C.1 Current work

In TC37

MT4

Project IEC 60099-4 Amd.2 Ed 2.0, Revision of mechanical and environmental tests for both porcelain/cast resin and polymer housed arresters

Currently at CDV stage (2008-05-16 closing date for voting).

Project IEC 60099-8 Ed.1.0, Testing standard for externally-gapped metal-oxide line arresters; currently at CD2 stage (2008-05-30 closing date for comments)..

MT10

Revision to IEC 60099-5

WG11

Harmonization of terms and definitions in documents TC37 and its subcommittees SC37A and SC37B

Continuing activity in JWG 456 (Joint Working Group between TC1 and TC37)

In SC37A

Project IEC 61643-12 A1 Ed.1.0

Will be published as IEC 61643-12 Ed. 2.0 due to many updates and changes resulting in too many pages for an amendment.

37A/186/CDV approved (results of voting 37A/195/RVC)

Project IEC 61643-21 A1 Ed. 1.0

Currently 37A/200/FDIS, distributed 2008-02-08, deadline for voting 2008-04-11

PWI IEC 61643-11 Ed. 1.0

Total revision of IEC 61643-1 Ed.2.0

PWI for SPDs for DC applications

To develop tests and performance requirements for SPDs for d c power systems

PWI IEC 61643-12 A2 Ed.1.0

To update IEC 61643-12 based on the total revision of IEC 61643-1 Ed.2.0 and based on changes

in installation rules and lightning protection requirements.

In SC37B

Established teams to maintain SC37B documents

- MT 1 -- IEC 61643-311, IEC 61643-331
- MT 2 -- IEC 61643-321, IEC 61643-341

Harmonize documents within SC37B, review documents to update references, definitions, conform to ISO/IEC directives

Extract performance and application data for future work

C.2 Resources/infrastructure needed

The resources provided by US to TC37 and SC37B and by UK to SC37A are adequate.

D. Future work

In TC37

Maintenance of published standards

- MT4 - Maintenance Team 4 -- IEC 60099-4 and IEC 60099-6
- MT10 - Maintenance Team 10 -- IEC 60099-5

Reconfirm of withdraw IEC 60099-1 based on results of Q-document to be circulated in 1Q 2008

Completion of new standard IEC 60099-8 (being undertaken by MT4)

Inclusion into IEC 60099-4 of requirements for arresters for UHV systems (to be undertaken by MT4)

In SC 37A

Maintenance of published standards

- WG 3 - Maintenance Team 8 -- IEC 61644-12
- WG 4 - Maintenance Team 7 -- IEC 61643-21 and IEC 61643-22
- WG 5 - Maintenance Team 6 -- IEC 61643-1 (future IEC 61643-11)

In SC 37B

Development of IEC 61643-3X2 series: Performance Specifications

Development of IEC 61643-3X3 series: Selection and Applications Principles.

E. Maintenance cycle

Publication no.	Date of publication	Review date	Maintenance result date	Responsibility (Maintenance Team)
TC37 Documents				
60099-1, Ed 3.1	1999-12	2008	2008 – reconfirm or withdraw based on results of Q document	TC37
60099-4, Ed 2.0	2004-05	Amendment in progress	2008	MT4
60099-5, Ed 1	2000-03	2008	2010	MT10
60099-6, Ed 1	2002-08	2008	2011	MT4
SC37A Documents				
61643-1: Ed.2.0	2005-03	2008	2010	WG 5
61643-12: Ed.1.0	2002-02	Revision in progress	2008	WG 3
61643-21: Ed.1.0	2000-09	2011	2013	WG 4
61643-22: Ed.1.0	2004-11	2008	2008	WG 4
SC37B Documents				
61643-311 (61647-1)	2001	2008	2010	MT1
61643-321	2001	2008	2010	MT2
61643-331	2003	2008	2010	MT1
61643-341	2001	2008	2010	MT2

Name or signature of the secretary

Michael Comber