



IEC/TC or SC <b>TC 85</b>	Secretariat <b>China</b>	Date 2007-11
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Title of TC

**Measuring Equipment for Electrical and Electromagnetic Quantities**

**A. Background**

IEC TC 85 was transferred from SC 13B (Electrical Measuring Instruments) and established in 1983. In 1992, the original TC 66 was absorbed by TC 85, while a new subcommittee SC 66E was set up to later become TC 66 dealing with safety of measuring, control and laboratory equipment.

The scope of TC 85 was updated in 2007 as follows:

**Scope:** To prepare international standards in the field of equipment and systems for the measurement, test, monitoring, generation and analysis of simple and complex electrical and electromagnetic quantities, as well as their calibrators. Such equipment includes instruments, measurement standards, signal generators, monitoring equipment, recorders and electrical measuring transducers, together with their accessories.

NOTE: Product safety aspects are covered by TC 66.

**Current Working Groups and their status:**

- WG 8: Measuring and monitoring equipment for testing protective devices in energy distribution systems.
- WG 10: Dimensions for panel-mounted indicating and recording electrical measuring instruments.
- WG 13: Expression of the performance of electrical and electronic measuring equipment.
- WG 16: Performance characteristics and calibration methods for digital data acquisition systems and relevant software.
- WG 17: Amendment 2 to IEC 60688: Electrical measuring transducers for converting a.c. electrical quantities to analogue or digital signals (IEC 60688:2002).

**Number of publications: 43**

**Number of projects in development: Maintenance work: 1; genuine work: 2.**

**System Approach:**

**Component committees** IEC TC 13: energy measurement meters  
(IEC TC 85 as customer) IEC TC 64: installation rules  
IEC SC 65A: product EMC 8WG 4)  
IEC TC 66: product safety  
IEC SC 77A: measurement methods

**System committees** IEC TC 13: energy measurement for meters (potential customer)  
(IEC TC 85 as supplier)

**Other committees** IEC TC 1, IEC TC 106, IEC TC 111, OIML/TC 5, OIML TC 12,  
IEEE/TC 10

<b>List of P-members: 22</b>		
Austria (AT)	Hungary (HU)	Russian Fed. (RU)
Canada (CA)	Italy (IT)	Slovenia (SI)
China (CN)	Japan (JP)	Spain (ES)
Czech Republic (CZ)	Korea (Rep. of) (KR)	Ukraine (UA)
Egypt (EG)	Mexico (MX)	United Kingdom (GB)
Finland (FI)	Poland (PL)	U.S.A. (US)
France (FR)	Portugal (PT)	
Germany (DE)	Romania (RO)	
<b>List of O-members: 11</b>		
Belgium(BE)	India (IN)	South Africa (ZA)
Brazil (BR)	Norway (NO)	Sweden (SE)
Bulgaria (BG)	Serbia (RS)	Turkey (TR)
Denmark (DK)	Singapore (SG)	
<b>Liaisons:</b>		
IEC TC 1 (WG 300), TC 66, SC 77A, TC 106, TC111;		
Liaison A with OIML /TC 5 and OIML/TC12 to be established;		
Liaison with IEC/TC 13 to be established;		
Liaison with IEEE/TC 10 to be established.		

<b>B. Environment</b>
<b>B.1 Business environment</b>
Most of measuring instruments or functions for electrical and electromagnetic parameters are more and more integrated into automatic measurement-control or continuous monitoring-control systems as parts of the system.
The scope of TC 85 addresses single functional instruments as well as multi-functional instruments or systems (the measuring system and the measuring-control system, for instance).
Measuring and monitoring the electrical safety is an important method for ensuring the safe operation of energy distribution systems.
Communication interfaces for external data acquisition become increasingly important.
Using digital signal processing techniques, the equipment and systems should be required to conform to various EMC requirements.
<b>B.2 Market demand</b>
Standards developed and maintained by TC 85 are requested:
- by the industry for the basic maintenance of industrial equipment;
- in the power distribution systems for testing and monitoring of protective measures;
- by laboratories, by test and calibration laboratories;
- for legal metrology purposes;
- for educational purposes.
Improving <b>electrical energy efficiency (E<sup>3</sup>)</b> means first to measure or monitor electrical quantities. Therefore, TC 85 will remain active in this field.
TC 85 standards are globally recognized. Through the agreement with CENELEC, they are generally adopted as European Standards (EN).
Some of the standards are listed in compliance with the European Directive (LVD).

### **B.3 Trends in technology and trade**

The development of completely automatic measuring and monitoring systems makes interfacing between the devices and the local and/or remote acquisition systems essential.

In low-voltage distribution IT systems, it is important to locate the first insulation fault as soon as possible.

Besides, it becomes more and more necessary to measure different electrical parameters, in order to monitor the required performances in energy distribution systems due to:

- installation standards evolutions, for instance, over current detection is now a new requirement for the neutral conductor due to harmonic content;
- technological evolutions (electronic loads, electronic measuring methods, etc.);
- end-users' needs (cost saving, compliance with aspects of building regulations, etc.);
- safety and continuity of operation of energy distribution systems;
- in the field of sub-metering, sustainable development requirements where energy measurement for instance is recognised as an essential element of energy management, part of the overall drive to reduce carbon emissions and to improve the commercial efficiency of manufacturing, commercial organisations and public services.

The development of electrical measuring technology has to adapt continuously to new requirements in energy distribution systems. The following are factors which may affect, to a certain extent, the future work of TC 85:

- changing requirements from the applications;
- increasing demand on reliability;
- changes in the lifecycle of measuring equipment;
- changes in the EMC environment;
- new communication technologies;
- development of electronic and manufacturing techniques. This may affect the way requirements are specified and tests are performed;
- increase in the use of software inside measuring instruments;
- more and more functions in measuring equipment are beyond the current scope of TC 85.

### **B.4 Ecological environment**

Electronic measuring equipment may have shorter life cycles due to functional obsolescence. Some types of equipment may contain batteries and other hazardous materials. Therefore, use of hazardous materials and safe disposal will become an issue to be addressed.

Improvements are always made on parameters that are measured and monitored. By providing accurate measurement on the use of electric energy, measuring equipment contributes to improve energy efficiency and – consequently – will contribute to the reduction of pollution.

To liaise with IEC/TC 111 in the elaboration of environmental requirements may be worthwhile.

## **C. Work programme**

### **C.1 Current work**

23 current publications has been maintained this year. The maintenance procedure was initiated in March 2007 by the Secretary to all National Bodies for comments and calling for experts and project leaders.

The Plenary Meeting was held in Paris on 24th October 2007.

- MT 18 has been set up and will start with the revision of the IEC 60496-1~2. The convenor is Mr. Nicholas G PAULTER (US).
- MT 19 has been set up and will start with the revision of the IEC 60688. The convenor is Mr. Laurent OBERLE (FR).

- WG 8 will continue their current work:

a. The maintenance work of IEC61557-9 was commenced in January 2007 and the current status is CDV.

b. Work on a new Part 11 of IEC61557 was commenced in Nov. 2005 and the current status is CDV.

c. Work on a new Part 13 of IEC61557 was commenced in Aug. 2007 and the current status is NP.

- A “call for experts” will be sent through NC about IEC 61187 maintenance.

- A NWIP, a standard for the dimension of “Modular boxes” for panel mounted measuring instruments, will be circulated soon.

The next plenary meeting is decided to be held in 2009 in Beijing.

#### C.2 Resources/infrastructure needed

For an efficient development, TC 85 needs the necessary resources and support from National Bodies. Manufacturers are actively represented. TC85 is lacking direct participation from representatives of the end users and of the legal electrical metrology bodies, although they have made contributions through the National Committees.

All TC85 WG meetings were held in Europe in the recent years since most of the experts come from there. We would like to attract experts from other parts of the world to actively participate in the work.

We confirm liaison with TC 66, TC 106, SC 77A and consider establishing a liaison with TC13, and IEEE/TC10, OIML/TC 5 (Electronic instruments and software) and OIML/TC 12 (Instruments for measuring electrical quantities).

#### C.3 Safety aspects (only for committees which do not have a reference to safety in their scope)

The IEC61010 series of publications is a reference for product safety aspects.

#### D. Future work

To meet the demands mentioned above, the TC 85 standards aim at addressing:

- a. monitoring of protective measures in power distribution systems;
- b. measuring and analysis of power quality (or parameters) to reduce power pollution;
- c. measuring and evaluating methods for energy efficiency of products and energy conservation/saving products. (Service for energy conservation & environmental protection=the action of  $E^3$ );
- d. measuring low level or high level electric quantities more accurately;
- e. isolated measurement of d.c. current, e.g. with current sensors/clamps;
- f. functional safety with regards to some parts of series IEC 61557 for monitoring devices;
- g. providing a set of requirements and evaluating procedures on reliability aspects.

New Work Items to be initiated soon:

- a. Communication protocol for sub-meters;
- b. Performance of ammeters clamps;
- c. Panel mounted electrical measuring instruments with digital display;
- d. Direct acting indicating analogue maximum demand ammeters;
- e. Standard for the dimension of “Modular boxes” for panel mounted measuring instruments;
- f. Virtual instruments;
- g. Testing procedures for power quality measurement instruments;
- h. Assessment and control of metrological software.

Some of the TC 85 publications need to be maintained to keep them reflecting the current

technological developments or to keep them in line with the development of horizontal standards, such as EMC standards, standards for safety, reliability aspects and specific communication requirements.

Setting up new WGs or resuming the duty of inactive WGs is expected.

Measurements in industry and laboratories require combining the quality standards (such as ISO 9000) and standards based on calibration as well as a definition of measurement, as uncertainty is not only relative to hardware (through analogue/digital conversion) but also to software.

Consequently, TC 85 is predicting to receive the task of developing more new standards, as is required by the market.

E. Maintenance cycle				
Publication no.	Date of publication	Review date	Maintenance result date	Responsibility (Maintenance Team)
60051-1 Ed.5.0	1997	2010	2012	To be defined
60051-2 Ed.4.0	1984	2010	2012	To be defined
60051-3 Ed.4.0	1984 (Amd.1:1994)	2010	2012	To be defined
60051-4 Ed.4.0	1984	2010	2012	To be defined
60051-5 Ed.4.0	1985	2010	2012	To be defined
60051-6 Ed.4.0	1984	2010	2012	To be defined
60051-7 Ed.4.0	1984	2010	2012	To be defined
60051-8 Ed.4.0	1984	2010	2012	To be defined
60051-9 Ed.4.0	1988(Amd.1:1994; Amd.2:1995).	2010	2012	To be defined
60258 Ed.1.0	1968 (Amd.1:1976)	2010	2012	To be defined
60351-1 Ed.1.0	1976	2002	2007	Withdrawn in Sep.2007
60351-2 Ed.1.0	1976	2002	2007	Withdrawn in Sep.2007
60359 Ed.3.0	2001 (Amd.1:1991)	2010	2012	WG 13
60428 Ed.1.0	1973	2010	2012	To be defined
60469-1 Ed.2.0	1987	2007	*	MT 18
60469-2 Ed.2.0	1987	2007	*	MT 18
60477 Ed.1.0	1974 (Amd.1:1997)	2010	2012	To be defined
60477-2 Ed.1.0	1979 (Amd.1:1997)			
	1975 (Amd.1:1979; Amd.2:1997)	2010	2012	To be defined
60523 Ed.1.0	1975 (Amd.1:1981; Amd.2:1997)	2010	2012	To be defined
60524 Ed.1.0	1976	2010	2012	To be defined
60548 Ed.1.0	1976	2002	2007	Withdrawn in Sep.2007
60564 Ed.1.0	1977 (Amd.1:1981; Amd.2:1997)	2010	2012	To be defined
60615 Ed.1.0	1978	2010	2012	To be defined
60618 Ed.1.0	1978 (Amd.1:1981; Amd.2:1997)	2010	2012	To be defined
60624 Ed.1.0	1978	2010	2012	To be defined
60688 Ed.2.2	2002(incl.amd.1:1997 +amd.2:2001)	2007	*	MT 19
61028 Ed.1.0	1990 (Amd.1:1995; Amd.2:1997)	2010	2012	To be defined
61143-1 Ed.1.1	1998 (incl.amd.1:1997)	2010	2012	To be defined
61143-2 Ed.1.0	1992	2010	2012	To be defined
61187 Ed.1.0	1993	2010	2012	To be defined
61554 Ed.1.0	1999	2009	2010	WG 10
61557- 1 Ed.2.0	2007	2009	2010	WG 8
61557- 2 Ed.2.0	2007	2009	2010	WG 8
61557- 3 Ed.2.0	2007	2009	2010	WG 8

61557- 4 Ed.2.0	2007	2009	2010	WG 8
61557- 5 Ed.2.0	2007	2009	2010	WG 8
61557- 6 Ed.2.0	2007	2009	2010	WG 8
61557- 7 Ed.2.0	2007	2009	2010	WG 8
61557- 8 Ed.2.0	2007	2009	2010	WG 8
61557- 9 Ed.1.0	1999	2002	2008	WG 8
61557-10 Ed.1.0	2000	2002	2010	WG 8
61557-12 Ed.1.0	2007	2009	2010	WG 8
62008 Ed.1.0	2005	2009	2010	WG 16

\* To be determined by MT later.

<p>Name or signature of the secretary</p> <p><b>Bo CHEN</b></p>
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