

APPROVED  
by the Decision of the  
Customs Union Commission  
on August 16, 2011, No. 768

**TECHNICAL REGULATIONS  
OF THE CUSTOMS UNION**

---

**TR CU 004/2011**

**On safety of low-voltage equipment**

## Content

Foreword.....	3
Article 1. Field of application.....	3
Article 2. Definitions.....	3
Article 3. Market circulation rules.....	4
Article 4. Safety requirements.....	4
Article 5. Requirements for marking and accompanying documents.....	5
Article 6. Provision of compliance with the safety requirements.....	6
Article 7. Conformity assessment.....	6
Article 8. Marking by the single circulation mark in the market of the Customs Union member states.....	12
Article 9. Safeguard clause.....	12
Attachment: List of low-voltage equipment subject to conformity assessment in the form of certification in the Customs Union member states in compliance with the technical regulations of the Customs Union „On safety of low-voltage equipment“ (TR CU 0042011).....	13

## Foreword

1. The present technical regulations of the Customs Union are developed in compliance with the Agreement on common principles and rules of technical regulation in the Republic of Belarus, the Republic of Kazakhstan and the Russian Federation of November 18, 2010.

2. The present technical regulations of the Customs Union are developed for the purpose of specifying within the common customs territory of the Customs Union the common requirements on low-voltage equipment, which shall be subject to compulsory implementation and fulfillment, providing free movement of low-voltage equipment, which was released for circulation within the common customs territory of the Customs Union.

3. If there are other technical regulations of the Customs Union, the Eurasian Economic Community (hereinafter – EurAsEC) for low-voltage equipment specifying requirements to low-voltage equipment, then low-voltage equipment shall satisfy the requirements of these technical regulations of the Customs Union, the EurAsEC.

## Article 1. Field of application

1. The present technical regulations of the Customs Union apply to low-voltage equipment placed within the territory of the common customs territory of the Customs Union.

Object of the present technical regulations of the Customs Union for low-voltage equipment is electrical equipment suitable for use at nominal voltage of 50 through 1000 V (inclusive) alternate current and of 75 through 1500 V (inclusive) direct current.

2. The present technical regulations of the Customs Union do not apply to:

electric equipment designed for operation in explosive atmospheres;

medical equipment;

electrics of lifts and elevators (except electrical machinery);

electric equipment with defense purposes;

control equipment for grazing fences;

electric equipment, designed for use on air, water, ground and underground transport;

electric equipment, designed for safety systems of reactor units of atomic power stations;

3. The present technical regulations of the Customs Union specify requirements to low-voltage equipment for the purpose of protection of public life and health, property and prevention of actions misleading purchasers (users) of low-voltage equipment regarding its purposes and safety.

## Article 2. Definitions

In the present technical regulations of the Customs Union are used the following terms and its definitions:

manufacturer – legal or natural person acting as individual entrepreneur carrying out manufacture and/or vendition of low-voltage equipment under his name and responsible for its conformity to the safety requirements of the technical regulations of the Customs Union;

importer – a resident of the Customs Union member state, which has entered into a foreign trade contract with a non-resident of the Customs Union member states to transfer low-voltage equipment, carries out equipment vendition and is responsible for its conformity to the safety requirements of the present technical regulations of the Customs Union;

nominal voltage of low-voltage equipment – input and (or) output voltage (voltage range) of low-voltage equipment specified by a manufacturer on this equipment or in accompanying documents;

market circulation of low-voltage equipment – processes of transfer of low-voltage equipment from manufacturer to purchaser (user) within the common customs territory of the Customs Union, which passes low-voltage equipment after carrying out its manufacture;

intended application - use of low-voltage equipment in accordance with purpose specified by a manufacturer on this equipment or in accompanying documents;

manufacturer's authorized representative - legal or natural person registered in accordance with the established procedure by the Customs Union member state, which is designated by the manufacturer on a basis of contract concluded with him for performing acts under his name with conformity assessment, for products distribution within the common customs territory of the Customs Union and for assignment of responsibility for non-conformity of products to the requirements of the technical regulations of the Customs Union;

electrical equipment – equipment, designed for production, conversion, transmission, distribution or utilization of electric energy, including an individual electrical devices and devices embedded into machines, mechanics, apparatus, equipment and other products.

### Article 3. **Market circulation rules**

1. Low-voltage equipment puts into market circulation, if it is conform to the present technical regulations of the Customs Union and other technical regulations of the Customs Union, the EurAsEC, which apply to the equipment, and if it has passed conformity assessment according to Article 7 of the present technical regulations of the Customs Union and other technical regulations of the Customs Union, the EurAsEC, which apply to the equipment.

2. Low-voltage equipment conformity of which to the requirements of the present technical regulations of the Customs Union has not been verified should not bear the single circulation mark in the market of the Customs Union member states and is not permitted for market circulation.

3. Low-voltage equipment without single circulation mark in the market of the Customs Union member states is not permitted for market circulation.

### Article 4. **Safety requirements**

Low-voltage equipment shall be designed and manufactured in such a way that, when intended application and carried out the requirements to assembly, operation (use), storage, delivery (transportation) and maintenance, it provides:

- required level of protection against direct or indirect effect of electrical current;
  - absence of inadmissible risk of dangerous increase of temperature, voltage arcs or emissions, which can lead to hazard generation;
  - required level of protection against injury by moving and fixed elements of low-voltage equipment;
  - required level of protection against non-electrical hazards occurring on application of low-voltage equipment, including those caused by physical, chemical, biological factors;
  - required level of insulation protection;
  - required level of mechanical and commutation wear resistance;
  - required stability level to externally acting factors, including non-mechanical factors, at relevant environmental conditions;
  - absence of inadmissible risk in case of overload, emergency operation and equipment failure, caused by externally and internally acting factors;
  - absence of inadmissible risk during connection and (or) installation.
- Low-voltage equipment shall be designed and manufactured in such a way that it will not cause fire at proper operation conditions and at emergency operation.
- Low-voltage equipment shall be accompanied by necessary information ensuring its safe intended application.

#### **Article 5. Requirements for marking and accompanying documents**

1. Name and (or) notation of low-voltage equipment (type, mark, model), its main properties and characteristics having an effect on safety, name and (or) trade mark of manufacturer, country of manufacture of low-voltage equipment shall be applied on low-voltage equipment and specified in technical documentation accompanying it.
 

The name of manufacturer and (or) its trade mark, name and notation of low-voltage equipment (type, model, mark) shall be also applied on a package.
2. If application of information specified in item 1 of the present Article on low-voltage equipment is impossible, then it can be applied only in technical documentation accompanying this equipment. In such a case, the name of manufacturer and (or) its trade mark, name and notation of low-voltage equipment (type, mark, model (if available)) shall be also applied on a package.
3. Marking of low-voltage equipment shall be legible, easy-to-read, applied on low-voltage equipment in accessible for inspection without stripping with the application of instrument place.
4. Accompanying documents for low-voltage equipment shall include:
  - information specified in item 1 of the present Article;
  - information about purpose of low-voltage equipment;
  - properties and characteristics;
  - rules and conditions of safe operation (use);
  - rules and conditions of safe installation, storage, delivery (transportation), vendition and disposal (if it is necessary – to set such requirements);

information about measures to be taken in case of failure detection of low-voltage equipment;

name and location of the manufacturer (manufacturer's authorized representative), the importer, their contact information;

month and year of low-voltage equipment manufacture and (or) information about place of application and method for identification of the year of manufacture.

5. Accompanying documents shall be presented in Russian language and in official language(s) of the Customs Union member state, if there are such regulations in the legislation(s) of the Customs Union member state(s).

Accompanying documents shall be presented in hard copy. Thereto can be attached a package of accompanying documents in electronic format. Accompanying documents included in the package of non-household low-voltage equipment can be presented only in electronic format.

#### **Article 6. Provision of compliance with the safety requirements**

1. Conformity of low-voltage equipment to the present technical regulations of the Customs Union ensures by direct execution of its safety requirements or by carrying out requirements of standards included in the List of standards as a result of which application on a voluntary basis observance of requirements of the technical regulations of the Customs Union.

2. Analysis (test) and measurement methods for low-voltage equipment specified in standards included in the List of standards, carrying rules and methods of analysis (test) and measurement, including sampling procedures necessary for application and fulfillment of the requirements of the present technical regulations of the Customs Union and for carrying out conformity assessment (evaluation).

#### **Article 7. Conformity assessment**

1. Before low-voltage equipment puts into market circulation, it shall pass assessment of conformity to the safety requirements of the present technical regulations of the Customs Union.

Conformity assessment of low-voltage equipment is carried out following procedures according to the Regulations on application of conformity assessment (evaluation) normal plans in the technical regulations of the Customs Union approved by Customs Union Commission (hereinafter – the Comission).

2. Low-voltage equipment included in the List, which is presented in an attachment to the present technical regulations of the Customs Union, is subject to conformity assessment in the form of certification (plans 1s, 3s, 4s).

Low-voltage equipment, which is not included in mentioned List, is subject to conformity assessment in the form of declaring conformity (1d, 2d, 3s, 4d, 6d). Determination of conformity assessment declaring plan for low-voltage equipment, which is not included in the List, is realized by the manufacturer (manufacturer's authorized representative) or importer.

By the decision of the manufacturer (manufacturer's authorized representative), importer conformity assessment of low-voltage equipment, which is not included in the List, can be realized in the form of certification according to item 5 of the present Article.

In case of non-application of standards specified in item 1 of Article 6 of the present technical regulations of the Customs Union or in case of its absence, conformity assessment of low-voltage equipment is carried out in the form of certification (plans 1s, 3s, 4s) according to item 10 of the present Article.

3. Certification of serially produced low-voltage equipment is carried out according to 1s plan. Low-voltage equipment is provided for certification by the manufacturer (manufacturer's authorized representative).

Certification of a batch of low-voltage equipment is carried out under 3s plan, one-of-a-kind product - under 4s plan. A batch of low-voltage equipment (one-of-a-kind product) manufactured within the common customs territory of the Customs Union is provided by the manufacturer, a batch of low-voltage equipment (one-of-a-kind product), which is imported into the common customs territory of the Customs Union, is provided by the importer or manufacturer (manufacturer's authorized representative).

4. Certification of low-voltage equipment is carried out by accredited certifying (conformity assessment (evaluation)) body included in United Register of Certification Authorities and Test Laboratories (Centers) of the Customs Union.

Certification tests is carried out by accredited test laboratory (center) included in United Register of Certification Authorities and Test Laboratories (Centers) of the Customs Union.

5. In the process of low-voltage equipment certification (plans 1s, 3s, 4s):

5.1. manufacturer (manufacturer's authorized representative), importer provides to the certifying (conformity assessment (evaluation)) body a package of documents on low-voltage equipment verifying conformity of low-voltage equipment to the safety requirements of the present technical regulations of the Customs Union, which includes:

technical specifications (if available);

accompanying documents;

list of standards, requirements of which shall confirm this low-voltage equipment included the List of standards mentioned in item 1 of Article 6 of the present technical regulations of the Customs Union;

contract (delivery contract) or transportation documentation for a batch of low-voltage equipment (one-of-a-kind product) (plans 3s, 4s);

5.2. Manufacturer takes all measures necessary to make process of manufacturing steady and to ensure conformity of low-voltage equipment to the requirements of the present technical regulations of the Customs Union;

5.3. certifying (conformity assessment (evaluation)) body:

5.3.1. carries out sampling (samplings);

5.3.2. carries out identification of low-voltage equipment by determination of identity of equipment characteristics to features of low-voltage equipment as specified in Article 1 of the present technical regulations of the Customs Union, to regulations specified in Article 5 of the present technical regulations of the Customs Union and to the documents stated in subitem 5.1 of item 5 of the present Article;

5.3.3. carries out tests of sampling (samplings) of low-voltage equipment to ensure conformity to the requirements of standards from List of standards mentioned in item 1 of Article 6 of the present technical regulations of the Customs Union, carries out analysis of tests report (reports);

5.3.4. carries out analyses of manufacture status (plan 1s);

7

**TR CU 004/2011**

If the manufacturer has certified quality management system as applied to manufacture or design and manufacture of low-voltage equipment, then assesses the possibility of this system to provide steady manufacturing of certifying low-voltage equipment conforming to the requirements of the present technical regulations of the Customs Union;

5.3.5. issues accordance certificate in a single form approved by the Commission. The term of action of accordance certificate for series-produced low-voltage equipment no more than 5 years, the term of action of accordance certificate for a batch of low-voltage equipment is not determined;

5.4. manufacturer (manufacturer's authorized representative), importer:

5.4.1. applies the single circulation mark in the market of the Customs Union member states;

5.4.2. after conformity assessment formalizes a package of documents for low-voltage equipment, which includes:

documents specified in subitem 5.1 of item 5 of the present Article;

tests report (reports);

results of manufacture status analyses;

accordance certificate.

5.5. certifying (conformity assessment (evaluation)) body carries out supervisory control of certified low-voltage equipment by samplings testing in accredited test laboratory (center) and (or) manufacture status analyses (plan 1s).

6. Conformity declaring of low-voltage equipment (plans 1d, 2d, 3d, 4d, 6d) is carried out on the basis of:

6.1. own demonstration materials (plans 1d, 2d):

- carrying out of low-voltage equipment tests (for a batch of low-voltage equipment (one-of-a-kind product)) (plan 2d);

- carrying out of low-voltage equipment tests and production supervision by the manufacturer (for series-produced low-voltage equipment) (plans 1d);

6.2. demonstration materials obtained with the help of accredited test laboratory (centre), certification authority for quality management systems included in United Register of Certification Authorities and Test Laboratories (Centers) of the Customs Union (plans 3d, 4d, 6d):

- carrying out of low-voltage equipment tests, certification of quality management system as applied to manufacture or design and manufacture of low-voltage equipment and production supervision by the manufacturer (for series-produced low-voltage equipment) (plan 6d).

- carrying out of low-voltage equipment tests (for a batch of low-voltage equipment (one-of-a-kind product) (plan 4d);

- carrying out of low-voltage equipment tests and production supervision by the manufacturer (for series-produced low-voltage equipment) (plans 3d);

- carrying out of low-voltage equipment tests, certification of quality management system as applied to manufacture or design and manufacture of low-voltage equipment and production supervision by the manufacturer (for series-produced low-voltage equipment) (plan 6d).

6.3. Conformity declaring of series-produced low-voltage equipment is carried out by the manufacturer (manufacturer's authorized representative) under plans 1d, 3d, 6d.



**TR CU 004/2011**

Conformity declaring of low-voltage equipment batch (one-of-a-kind product) is carried out by the manufacturer (manufacturer's authorized representative), importer under plans 2d, 4d.

7. At conformity declaring of low-voltage equipment under plans 1d, 2d:

7.1. manufacturer (manufacturer's authorized representative), importer:

7.1.1. formalizes a package of documents for low-voltage equipment verifying conformity to the requirements of the present technical regulations of the Customs Union, which includes:

technical specifications (if available);

accompanying documents;

list of standards, requirements of which shall confirm this low-voltage equipment included the List of standards mentioned in item 1 of Article 6 of the present technical regulations of the Customs Union;

report (reports) of tests carried out in an accredited test laboratory (centre) by the decision of the manufacturer (manufacturer's authorized representative), importer;

accordance certificate (if available);

manufacturer's declaration of conformity (if available) (for a batch of low-voltage equipment (one-of-a-kind product) (plan 2d);

contract (delivery contract) or transportation documentation (for a batch of low-voltage equipment (one-of-a-kind product) (plan 2d);

7.1.2. carries out identification of low-voltage equipment by determination of identity of equipment characteristics to features of low-voltage equipment as specified in Article 1 of the present technical regulations of the Customs Union, to regulations specified in Article 5 of the present technical regulations of the Customs Union and to the documents specified in subitem 7.1.1 of item 7.1 of the present Article;

7.2. manufacturer:

carries out production supervision and takes all measures necessary to ensure conformity of low-voltage equipment to the requirements of the present technical regulations of the Customs Union (plan 1d).

Requirements for manufacturing and control processes and results of their control shall be documented (under form stated by the manufacturer);

7.3. manufacturer (manufacturer's authorized representative), importer:

7.3.1. accepts declaration of conformity of low-voltage equipment to the requirements of the present technical regulations of the Customs Union in a single form approved by the Commission in writing and applies the single circulation mark in the market of the Customs Union member states;

7.3.2. includes declaration of conformity in a package of documents for low-voltage equipment specified in subitem 7.1.1 of item 7.1 of the present Article after conformity assessment.

8. At conformity declaring of low-voltage equipment under plans 3d, 4d, 6d:

8.1. manufacturer (manufacturer's authorized representative), importer:

8.1.1. formalizes a package of documents, which includes:

technical specifications (if available);

accompanying documents

list of standards, requirements of which shall confirm this low-voltage equipment included the List of standards mentioned in item 1 of Article 6 of the present technical regulations of the Customs Union;

contract (delivery contract) or transportation documentation (for a batch of low-voltage equipment (one-of-a-kind product) (plans 3d, 4d);

accordance certificate (copy of certificate) of quality management system as applied to manufacture or design and manufacture of low-voltage equipment (plan 6d);

8.1.2. carries out identification of low-voltage equipment by determination of identity of equipment characteristics to features of low-voltage equipment as specified in Article 1 of the present technical regulations of the Customs Union, to regulations specified in Article 5 of the present technical regulations of the Customs Union and to the documents specified in subitem 8.1.1 of item 8.1 of the present Article;

8.1.3. carries out tests of sampling (samplings) of low-voltage equipment to ensure conformity to the requirements of standards from List of standards mentioned in item 1 of Article 6 of the present technical regulations of the Customs Union;

8.2. manufacturer:

carries out production supervision and takes all measures necessary to ensure conformity of low-voltage equipment to the requirements of the present technical regulations of the Customs Union (plans 3d, 6d).

Requirements for manufacturing and control processes and results of their control shall be documented (under form stated by the manufacturer);

takes all measures necessary to make process of manufacturing and operation of the quality management system as applied to manufacture or design and manufacture of low-voltage equipment steady and to ensure conformity of low-voltage equipment to the requirements of the present technical regulations of the Customs Union (plan 6d);

8.3. manufacturer (manufacturer's authorized representative), importer:

8.3.1. accepts declaration of conformity of low-voltage equipment to the requirements of the present technical regulations of the Customs Union in a single form approved by the Commission in writing and applies the single circulation mark in the market of the Customs Union member states;

8.3.2. formalizes a package of documents for low-voltage equipment after conformity assessment, which includes:

documents specified in subitem 8.1.1 of item 8.1 of the present Article;

tests report (reports);

declaration of conformance.

9. Declaration of conformance is subject to registration in accordance with the Customs Union legislation. The term of action of declaration starts from the date of its registration.

The term of action of declaration of conformance for series-produced low-voltage equipment no more than 5 years, the term of action of declaration of conformance for a batch of low-voltage equipment (one-of-a-kind product) is not determined.

10. When certification is carried out in case of non-application of standards from the List of standards specified in item 1 of Article 6 of the present technical regulations of the Customs Union or in case of its absence (plans 1s, 3s, 4s):

10.1. manufacturer (manufacturer's authorized representative), importer provides to the certifying (conformity assessment (evaluation)) body a package of documents on low-voltage

equipment verifying conformity of low-voltage equipment to the safety requirements of the present technical regulations of the Customs Union, which includes:

- technical specifications (if available);
- accompanying documents;
- description of adopted technical decisions and risk assessment confirming fulfilling safety requirements of the present technical regulations of the Customs Union;

10

**TR CU 004/2011**

contract (delivery contract) or transportation documentation (for a batch of low-voltage equipment (one-of-a-kind product) (plans 3s, 4s);

10.2. Manufacturer takes all measures necessary to make process of manufacturing steady and to ensure conformity of low-voltage equipment to the requirements of the present technical regulations of the Customs Union;

10.3. certifying (conformity assessment (evaluation)) body:

10.3.1. carries out sampling (samplings);

10.3.2. carries out identification of low-voltage equipment by determination of identity of equipment characteristics to features of low-voltage equipment as specified in Article 1 of the present technical regulations of the Customs Union, to regulations specified in Article 5 of the present technical regulations of the Customs Union and to the documents specified in subitem 10.1 of item 10 of the present Article;

10.3.3. carries out conformity assessment of low-voltage equipment to the safety requirements of the present technical regulations of the Customs Union;

Thereat certifying (conformity assessment (evaluation)) body:

determines on a basis of safety requirements of the present technical regulations of the Customs Union specific safety requirements for certifying low-voltage equipment;

carries out analysis of adopted technical decisions and risk assessment confirming fulfilling safety requirements of the present technical regulations of the Customs Union carried out by the manufacturer;

states standards from the List specified in item 2 of Article 6 of the present technical regulations of the Customs Union, which state analysis and measurement methods or, in case of its absence, determine methods of control, analysis and measurement for assessment of conformity of low-voltage equipment to specific safety requirements;

.carries out tests of low-voltage equipment and analysis of tests report (reports);

10.3.4. carries out analyses of manufacture status (plan 1s);

If the manufacturer has certified quality management system as applied to manufacture or design and manufacture of low-voltage equipment, then assesses the possibility of this system to provide steady manufacturing of certifying low-voltage equipment conforming to the requirements of the present technical regulations of the Customs Union;

10.3.5. issues accordance certificate in a single form approved by the Commission.

The term of action of accordance certificate for series-produced low-voltage equipment no more than 5 years, the term of action of accordance certificate for a batch of low-voltage equipment is not determined;

10.4. manufacturer (manufacturer's authorized representative), importer:

10.4.1. applies the single circulation mark in the market of the Customs Union member states;

10.4.2 after conformity assessment formalizes a package of documents for low-voltage equipment, which includes:

documents specified in subitem 10.1 of the present item;

tests report (reports);

results of manufacture status analyses;

10.5. certifying (conformity assessment (evaluation)) body carries out supervisory control of certified low-voltage equipment by samplings testing in accredited test laboratory (center) and (or) manufacture status analyses (plan 1s).

11. The package of documents for low-voltage equipment shall be retained within the common customs territory of the Customs Union for:

low-voltage equipment - manufacturer (manufacturer's authorized representative), no less than 10 years since the date of production end (phasedown) of this low-voltage equipment;

batch of low-voltage equipment – importer or manufacturer's authorized representative, no less than 10 years since the date of vendition of the last product from the batch.

#### **Article 8. Marking by the single circulation mark in the market of the Customs Union member states**

1. Low-voltage equipment conforming to the safety requirements of the present technical regulations of the Customs Union and passed conformity assessment according to Article 7 of the present technical regulations of the Customs Union shall be marked by the single circulation mark in the market of the Customs Union member states.

2. Marking by the single circulation mark in the market of the Customs Union member states is carried out before release low-voltage equipment for market circulation.

3. The single circulation mark in the market of the Customs Union member states applies on each union of low-voltage equipment in every way providing clean and brilliant image during all service life of low-voltage equipment and also provides in attached accompanying documents.

4. It is assumed to apply the single circulation mark in the market of the Customs Union member states only on the package and provide it in attached accompanying documents, if application on low-voltage equipment is impossible.

5. Low-voltage equipment marks by the single circulation mark in the market of the Customs Union member states, if it is conform to all technical regulations of the Customs Union, the EurAsEC, which apply to the equipment.

#### **Article 9. Safeguard clause**

The Customs Union member states are obligated to take all measures necessary to restriction, prohibition of low-voltage equipment for market circulation within the common customs territory of the Customs Union or to withdraw low-voltage equipment from the market, if it is not conform to the safety requirements of the present technical regulations of the Customs Union.

Attachment  
to the technical regulations  
of the Customs Union  
„On safety of low-voltage  
equipment“  
(TR CU 0042011)

**LIST**  
**of low-voltage equipment**  
**subject to conformity assessment**  
**in the form of certification**  
**in compliance with the technical regulations of the Customs Union**  
**„On safety of low-voltage equipment“**  
**(TR CU 0042011)**

1. Electrical apparatus and household equipment:
  - for food preparation and storage and kitchen works mechanization;
  - for clothing, dress and footwear handling (washing, ironing, drying, cleaning);
  - for cleaning and sweeping in the building;
  - for maintenance and control of microclimate in the building;
  - sanitary and hygienic;
  - for hair, nails and skin care;
  - for body warming;
  - for vibratory massage;
  - gaming, sporting and training equipment;
  - audio and video equipment, radio and TV receivers;
  - sewing and knitting;
  - power supplies, recharges, voltage stabilizers;
  - for garden works;
  - for aquariums and garden ponds;
  - electric pumps;
  - lightning equipment and light-emissive devices;
  - wiring production;
  - extensions.
2. Personal electronic data processing machines (personal computers).
3. Low-voltage equipment connected to electronic data processing machines.
4. Electric hand tools (hand and portable electrical machinery).
5. Electro musical instruments.
6. Cables, wires and cords.
7. Automatic breakers, protective cutout devices.
8. Devices for electric energy distribution.
9. Electrical apparatus for electrotechnical sets control.

