PUBLICLY
AVAILABLE
SPECIFICATION

IEC PAS 62400

First edition
2005-06

Structuring principles for technical products and technical product documentation –

Letter codes – Main classes and subclasses of objects according to their purpose and task

Reference number
IEC/PAS 62400:2005(E)

Publication numbering

As from 1 January 1997 all IEC publications are issued with a designation in the 60000 series. For example, IEC 34-1 is now referred to as IEC 60034-1.

Consolidated editions

The IEC is now publishing consolidated versions of its publications. For example, edition numbers 1.0, 1.1 and 1.2 refer, respectively, to the base publication, the base publication incorporating amendment 1 and the base publication incorporating amendments 1 and 2.

Further information on IEC publications

The technical content of IEC publications is kept under constant review by the IEC, thus ensuring that the content reflects current technology. Information relating to this publication, including its validity, is available in the IEC Catalogue of publications (see below) in addition to new editions, amendments and corrigenda. Information on the subjects under consideration and work in progress undertaken by the technical committee which has prepared this publication, as well as the list of publications issued, is also available from the following:

- **IEC Web Site (www.iec.ch)**

- **Catalogue of IEC publications**

  The on-line catalogue on the IEC web site (www.iec.ch/searchpub) enables you to search by a variety of criteria including text searches, technical committees and date of publication. On-line information is also available on recently issued publications, withdrawn and replaced publications, as well as corrigenda.

- **IEC Just Published**

  This summary of recently issued publications (www.iec.ch/online_news/ justpub) is also available by email. Please contact the Customer Service Centre (see below) for further information.

- **Customer Service Centre**

  If you have any questions regarding this publication or need further assistance, please contact the Customer Service Centre:

  Email: custserv@iec.ch
  Tel: +41 22 919 02 11
  Fax: +41 22 919 03 00

PUBLICLY
AVAILABLE
SPECIFICATION

IEC PAS 62400

First edition
2005-06

Structuring principles for technical products and technical product documentation –

Letter codes – Main classes and subclasses of objects according to their purpose and task

International Electrotechnical Commission, 3, rue de Varembé, PO Box 131, CH-1211 Geneva 20, Switzerland
Telephone: +41 22 919 02 11 Telefax: +41 22 919 03 00 E-mail: inmail@iec.ch Web: www.iec.ch

Commission Electrotechnique Internationale
International Electrotechnical Commission
Международная Электротехническая Комиссия

PRICE CODE XB

For price, see current catalogue

CONTENTS

INTERNATIONAL ELECTROTECHNICAL COMMISSION

_____

STRUCTURING PRINCIPLES FOR TECHNICAL PRODUCTS AND TECHNICAL PRODUCT DOCUMENTATION –

LETTER CODES – MAIN CLASSES AND SUBCLASSES OF OBJECTS ACCORDING TO THEIR PURPOSE AND TASK

FOREWORD

1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of 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, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). 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. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter.
5) IEC provides no marking procedure to indicate its approval and cannot be rendered responsible for any equipment declared to be in conformity with an IEC Publication.
6) All users should ensure that they have the latest edition of this publication.
7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

A PAS is a technical specification not fulfilling the requirements for a standard but made available to the public.

IEC-PAS 62400 has been processed by IEC technical committee 3: Information structures, documentation and graphical symbols.

The text of this PAS is based on the following document:

This PAS was approved for publication by the members of the committee concerned as indicated in the following document:

Draft PAS	Report on voting
3/746/NP	3/761/RVN

Following publication of this PAS, the technical committee will investigate the possibility of incorporating the contents of it into a part of IEC 61346, in the context of the maintenance of this standard.

This PAS shall remain valid for an initial maximum period of three years starting from 2005-06. The validity may be extended for a single three-year period, following which it shall be revised to become another type of normative document, or shall be withdrawn.

STRUCTURING PRINCIPLES FOR TECHNICAL PRODUCTS AND TECHNICAL PRODUCT DOCUMENTATION –

LETTER CODES – MAIN CLASSES AND SUBCLASSES OF OBJECTS ACCORDING TO THEIR PURPOSE AND TASK

1 Scope

This PAS extends the letter codes of the main classes for purposes or tasks of objects in accordance with IEC 61346-2, Table 1, with a second-letter code for subclasses. These specifications are generally applicable. They apply equally for all disciplines, such as construction, process and electrical engineering, and for standards, for example, for power generation, power distribution, process engineering facilities, naval architecture and ocean engineering. Additional letter codes may be specified for further subdivision of the classes.

Specification of letter codes for the main and subclasses for infrastructure objects in accordance with IEC 61346-2, Table 2, are not part of this document.

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 61346-2, *Industrial systems, installations and equipment and industrial products – Structuring principles and reference designations – Part 2: Classification of objects and codes for classes*

ISO 3511-1, *Process measurement, control functions and instrumentation – Symbolic representation – Part 1: Basic requirements*

ISO 14617-6:2002, *Graphical symbols for diagrams – Part 6: Measurement and control functions*

3 Specification of letter codes

Letter codes are specified and are generally applicable for objects fulfilling the following purposes or tasks.

– Control functions, functional allocation	= =	Functional allocation
– Functional equipment unit, equipment unit	=	Function, system
– Product, components	–	Product, component

4 Letter codes for objects based on their purpose or task

4.1 Overview of main classes of objects with associated letter codes

Table 1 – Letter codes for objects in accordance with IEC 61346-2 (main classes)

Letter code	Purpose or task of object
A	Two or more purposes or tasks
B	Conversion of an input variable (physical property, condition or event) to a specific signal for further processing
C	Storage of energy, information or material
D	*Reserved for future standardization*
E	Providing radiant or thermal energy
F	Direct (self-acting) protection of an energy or signal flow, of personnel or facilities from dangerous or unwanted conditions including systems and equipment for protective purposes
G	Initiation of an energy or material flow; generation of signals which are used as an information carrier or reference source
H	Production of a new type of material or products
J	*Reserved for future standardization*
K	Processing (receipt, processing and providing) signals or information (with the exception of objects for protection purposes; see class F)
L	*Reserved for future standardization*
M	Providing mechanical energy (rotational or linear mechanical motion) for driving purposes
N	*Reserved for future standardization*
P	Presentation of information
Q	Controlled switching or variation of a flow of energy, signal or material (see classes K and S for signals in closed/open feedback control loops)
R	Restricting or stabilization of movement or flow of energy, information or material
S	Conversion of a manual operation to a specific signal for further processing
T	Conversion of energy while maintaining the kind of energy, conversion of an established signal while maintaining the content of information, conversion of the form or shape of a material
U	Keeping objects in a defined position
V	Processing (handling) of material or products (including pre-treatment and post-treatment)
W	Conducting or routing energy, signals, materials or products from one location to another
X	Connecting objects
Y	*Reserved for future standardization*
Z	*Reserved for future standardization*

4.2 Rules for generating subclasses

The following rules have been observed for determining the letter codes for the subclasses (2nd data character).

- The main classes as defined in Table 1 are subdivided into subclasses as shown in Table 2, with the exception of the main class with the letter code B.
- The letter codes for subclasses of the main class with the letter code B are specified according to ISO 3511-1.

Table 2 – General assignment of groups of letter codes for subclasses to application areas

Letter code for subclasses	Object, task based on
A	Electrical energy
B	
C	
D	
E	
F	Information or signals
G	
H	
J	
K	
L	Mechanical engineering Structural engineering (Non-electrical engineering)
M	
N	
P	
Q	
R	
S	
T	
U	
V	
W	
X	
Y	
Z	Combined tasks

4.3 Definition of subclasses of objects

Table 3 – Definitions and letter codes of subclasses related to main classes

A[a]	**Purpose or task of object: two or more purposes or tasks**	
Class and subclass	**Task related to subclass**	**Examples of components**
AA	Free for the subdivision of objects, tasks obtained on electrical energy	
AB		
AC		
AD		
AE		
AF	Free for the subdivision of objects, tasks obtained on information or signals	
AG		
AH		
AJ		
AK		
AL	Free for the subdivision of objects, tasks obtained on mechanical engineering, structural engineering (non-electrical engineering)	
AM		
AN		
AP		
AQ		
AR		
AS		
AT		
AU		
AV		
AW		
AX		
AY		
AZ	Combined tasks	
[a] This class is only for objects for which no main purpose or no main task can be identified.		

Table 3 (continued) B

B[b]	**Purpose or task of object: conversion of an input variable (physical property, condition or event) to a specific signal for further processing.**	
Class and subclass	**Task related to subclass**	**Examples of components**
BA	*Reserved for future standardization*	
BB	Conversion of input variables for protection purposes	Protection relay, overload relay (thermal), Buchholtz relay
BC	*Reserved for future standardization*	
BD	Density	
BE	Electrical units	Current transformer, measuring relay, voltage transformer, measuring transformer, measuring resistance (shunt)
BF	Flow, throughput	Measuring orifice, pressure difference transducer, flow meter, gas meter, water meter
BG	Distance, length, position, elongation, amplitude	(Radar), motion sensor, position switch, proximity switch, proximity sensor
BH	*Reserved for future standardization*	
BJ	Output	
BK	Time	Clock, time counter
BL	Height, level	Sonic depth finder, (sonar), sight glass
BM	Moisture content	Humidity meter
BN	Open	
BP	Pressure, vacuum	Pressure sensor, pressure gauge
BQ	Material property, quality parameter, analysis (except D, M, V), pH, SO_2 content	X-ray device
BR	Radiation values, neutron flux measurement	Photocell, flame detector, smoke detector
BS	Velocity, speed of rotation, frequency, vibration, oscillation	Vibration pick-up, speedometer, tachometer
BT	Temperature	Temperature sensor, thermometer
BU	Combined units, multiple variables	
BV[c]	Viscosity	
BW	Weight force, mass	
BX	Other units	Video camera, microphone
BY	*Reserved for future standardization*	
BZ	Number of events, amount	Switching cycle detector, (radar device)

[b] The letter codes in accordance with ISO 14617-6:2002, 7.3.1, were used for the subclasses. In accordance with the specifications of ISO 14617-6, subclass Z in the main class B is not available for "combined tasks".

[c] In accordance with ISO 14617-6:2002, 7.3.1, the letter code "V" is "released for use". No letter code is specified in this standard for measurements/measuring equipment for "viscosity". As it is necessary to designate measurements/measuring equipment for viscosity, the letter "V" is assigned to viscosity here for the letter B.

Table 3 (continued) C

C	Purpose or task of object: storage of energy, information or material	
Class and subclass	**Task related to subclass**	**Examples of components**
CA	Capacitive storage of electric energy	Capacitor
CB	Inductive storage of electric energy	Superconductor, coil
CC	Chemical storage of electric energy	Buffer battery, battery
CD		
CE		
CF	Storage of information	RAM, EPROM, CD-ROM, event recorder, hard disc, magnetic tape recorder, voltage recorder
CG		
CH		
CJ		
CK		
CL	Storage, collection and housing of materials (fixed location, open)	Pits, pools, bunkers, cisterns
CM	Storage, collection and housing of materials (fixed location, closed)	Containers, tanks, boilers, silos, gas holders, accumulators, buffers, flash tanks
CN	Storage, collection and housing of materials (mobile)	Containers, shipping containers, gas cylinder, drum
CP	Storage of thermal energy (heat and cold energy, direct)	Ice tank, hybrid heat storage, underground thermal energy storage, thermal energy storage, hot water storage, steam storage
CQ	Storage of mechanical energy	Flywheel
CR		
CS		
CT		
CU		
CV		
CW		
CX		
CY		
CZ	Combined tasks	

NOTE Storage batteries are assigned to main group "G".

Table 3 (continued) E

E	**Purpose or task of object: providing radiant or thermal energy**	
Class and subclass	**Task related to subclass**	**Examples of components**
EA	Generation of electromagnetic radiation for lighting purposes using electrical energy	Incandescent lamp, fluorescent tubes, UV radiators
EB	Generation of thermal energy (heat) by conversion of electrical energy	Heating wire, heating rod, electrical heating, electrical boiler, electrode steam boiler, electric furnace, infrared heating element, electric radiator
EC	Generation of thermal energy (cold) by conversion of electrical energy	Cooling unit, freezing unit, refrigerator, freezer, compression chiller, turbine-driven chiller
ED		
EE		
EF	Generation of other electromagnetic radiation	
EG		
EH		
EJ		
EK		
EL	Generation of electromagnetic radiation for lighting purposes by combustion of fossil fuels	Gas light, gas lamp
EM	Generation of thermal energy by conversion of chemical energy	Boiler, burner, furnace, combustion grate
EN	Generation of cold energy by conversion of chemical energy	Refrigerator, cold pump
EP	Generation of heat energy by energy transfer	Condenser, heat exchanger, evaporator, economizer, feed-water heater, steam generator, heat-recovery steam generator, radiator, boiler
EQ	Generation of cold energy by energy transfer	Refrigerator, freezer, cold pump
ER	Generation of heat by conversion of mechanical energy	
ES	Generation of cold by conversion of mechanical energy	Mechanical refrigerator
ET	Generation of thermal energy by nuclear fission	Nuclear reactor
EU	Generation of particle radiation	Neutron generator
EV		
EW		Heater, radiator, boiler, heating stove
EX		
EY		
EZ	Combined tasks	

Table 3 (continued) F

F	Purpose or task of object: direct (self-acting) protection of an energy or signal flow, of personnel or facilities from dangerous or unwanted conditions, including systems and equipment for protective purposes	
Class and subclass	**Task related to subclass**	**Examples of components**
FA	Free for subdivision of objects, tasks based on electrical energy	Fuse, arrester, Faraday cage, miniature circuit-breaker, surge arrester, thermal overload trip
FB		
FC		
FD		
FE		
FF	Free for subdivision of objects, tasks based on information and signals	
FG		
FH		
FJ		
FK		
FL	Protection of mechanical and building objects from hazardous pressure conditions	Rupture disc, safety valve, also automatic directly loaded air inlet and vent valve), automatic drains trap, vacuum breaker
FM	Protection of mechanical and building objects from effects of fire	Fire protection facilities (risk detection and initiation of protective measures), fire damper, fire protection door, locks
FN	Protection of mechanical and building objects from hazardous operating conditions or damage	Protective shield, protection device, protective sleeve for thermocouple, safety clutch, impact protection
FP	Protection of the environment from emissions (for example, radiation, chemical emissions, noise)	Reactor protection equipment
FQ	Protection of persons/animals	Railings, barriers, gates, fence, contact protection, vision protection, glare protection, escape door, escape window, airbag, safety belt
FR	Protection of mechanical and building objects from wear (for example, corrosion)	Protective anode (cathodic),
FS	Protection against environmental effects (for example, weather, geophysical effects)	Weather, avalanche protection, geophysical protection
FT		
FU		
FV		
FW		
FX		
FY		
FZ	Combined tasks	

Table 3 (continued) G

G[d]	Purpose or task of object: initiation of an energy or material flow; generation of signals which are used as information carrier or reference source	
Class and subclass	**Task related to subclass**	**Examples of components**
GA	Initiation of an electrical energy flow by use of mechanical energy	Generator, dynamo, motor-generator set
GB	Initiation of an electrical energy flow by chemical conversion	Fuel cell, battery, dry cell battery
GC	Initiation of an electrical energy flow using light	Solar cell
GD		
GE		
GF	Generation of signals as an information carrier	Signal generator, transducer
GG		
GH		
GJ		
GK		
GL	Initiation of a flow (conveyance) of solid materials (continuous)	Belt, chain conveyor, distributor
GM	Initiation of a flow (conveyance) of solid materials (discontinuous)	Crane, elevators, lifting gear, manipulator, lifting device
GN	Initiation of a flow (conveyance) of solid materials (mobile)	Forklift, mobile crane, truck, train
GP	Initiation of a flow (conveyance) of liquid and flowable substances (continuous)	Pump, screw conveyor
GQ	Initiation of a flow (conveyance) and compression of gaseous substances (continuous)	Blower (ventilator, fan), compressor, vacuum pump, aspirator
GR	Initiation of a flow (conveyance) of gaseous substances (mobile)	Tank car
GS	Initiation of a flow (conveyance) of liquid and gaseous materials (driven by driving medium)	Ejector, injector, jet
GT		
GU		
GV		
GW		
GX		
GY		
GZ	Combined tasks	

[d] The motor- generator set is also assigned to subgroup GA.

Table 3 (continued) H

H	Purpose or task of object: production of a new type of material or products	
Class and subclass	**Task related to subclass**	**Examples of components**
HA		
HB		
HC		
HD		
HE		
HF		
HG		
HH		
HJ		
HK		
HL	Separation of mixtures of substances by classification	Screen, rake, grate
HM	Separation of mixtures of substances by centrifugal force	Cyclone device, centrifuge
HN	Separation of mixtures of substances by gravity	Settling tank, dewatering
HP	Separation of mixtures of substances by thermal processes	Distillation column, extraction system, dewatering, drying (Munters air dryer)
HQ	Separation of mixtures of substances by filtering	Fluid filter, gas filter
HR	Separation of mixtures of substances by electrostatic or magnetic forces	Magnetic separator, electrostatic precipitator
HS	Separation of mixtures of substances by physical processes	Absorption washer, active charcoal adsorber, ion exchanger wet scrubber
HT	Generation of new gaseous substances	Gasifier
HU	Crushing to generate a new form of solid materials	Mill, crusher
HV	Coarsening to generate a new form of solid materials	Briquette maker, pellet maker, tablet maker, sintering facility
HW	Mixing to generate new solid, liquid, flowable and gaseous substances	Mixer, mixing vessel, kneader, static mixer, emulsifier, stirrer, (steam) humidifier
HX	Generation of new substances by chemical reaction	Reactor, reaction furnace
HY	Generation of new substances by biological reaction	Fermenter, composter
HZ	Combined tasks	

Table 3 (continued) K

K	Purpose or task of object: processing (receipt, processing and providing) signals or information (excluding objects for protection purposes, see class F)	
Class and subclass	**Task related to subclass**	**Examples of components**
KA		
KB		
KC		
KD		
KE		
KF	Generation of electrical and electronic signals	Relay, transistor, binary elements, delay systems, controller, input/output module, receiver, transmitter, optocoupler
KG	Processing of optical and acoustical signals	Mirror, controller, test unit
KH	Processing of fluid and pneumatic signals	Valve assembly, pilot valve, controller (valve position controller)
KJ	Processing of mechanical signals	Linkages, controller
KK	Processing of various input/output information carriers (for example, electrical/pneumatic)	Electro-hydraulic converter, controller, electric pilot valve
KL		
KM		
KN		
KP		
KQ		
KR		
KS		
KT		
KU		
KV		
W		
KX		
KY		
KZ	Combined tasks	

Table 3 (continued) M

M	**Purpose or task of object: providing mechanical energy (rotational or linear mechanical motion) for driving purposes**	
Class and subclass	**Task related to subclass**	**Examples of components**
MA	Driving by electric motor	Electric motor, linear motor
MB	Electromagnetic driving	Magnetic drive
MC		
MD		
ME		
MF		
MG		
MH		
MJ		
MK		
ML	Mechanical driving	Weight, spring force, actuator (mechanical), stored-energy spring actuator, friction wheel drive
MM	Fluid and pneumatic driving	Actuator, servomotor (fluid drive, fluid motor, fluid cylinder, hydraulic cylinder)
MN	Driving by steam flow	Steam turbine
MP	Driving by gas flow	Gas turbine
MQ	Driving by wind force	Wind turbine
MR	Driving by fluid flow	Hydraulic turbine
MS	Driving by chemical conversion	Combustion motor
MT	Driving and control of ships by conversion of driven machine output	Propeller system, jet system (jet vane), paddle-wheel system
MU		
MV		
MW		
MX		
MY		
MZ	Combined tasks	

Table 3 (continued) P

P	Purpose or task of object: presentation of information	
Class and subclass	**Task related to subclass**	**Examples of components**
PA		
PB		
PC		
PD		
PE		
PF	Presentation of information (permanent)	Printer, recorder, plotter
PG	Presentation of information (non-permanent)	Detector, monitor, voltmeter, alarm lamp
PH		
PJ		
PK		
PL		
PM		
PN		
PP		
PQ		
PR		
PS		
PT		
PU		
PV		
PW		
PX		
PY		
PZ	Combined tasks	

Table 3 (continued) Q

Q	Purpose or task of object: controlled switching or variation of a flow of energy, signal or material (see classes K and S for signals in closed/open feedback control loops)	
Class and subclass	**Task related to subclass**	**Examples of components**
QA	Switching and variation of electrical energy circuits	Circuit-breaker, contactor, thyristor, motor starter
QB	Isolation of electrical energy circuits	Isolating switch, load-break switch
QC	Earthing (grounding) of electrical energy circuits	Earthing (grounding) switch
QD	By-passing of electrical energy circuits	By-pass circuit-breaker
QE		
QF		
QG		
QH		
QJ		
QK		
QL	Braking in mechanical power transmission systems	Brakes
QM	Limiting of flow in closed enclosures for variable flows of gaseous, liquid and flowable substances	Shut-off valves (also drain valves), blanking plate, blank, dampers
QN	Setting and control of flow in closed enclosures for variable flows of gaseous, liquid or flowable substances	Control valve, gas control path, control dampers
QP	Limiting of flow in open enclosures for liquid substances	Lock gate, weirs, dam plates
QQ	Opening, closing of inlets or access (persons, material, light, air) to bounded areas	Door, gate, window, cover, turnstile, bar (lock)
QR	Shutoff open/closed of flows of liquid and flowable substances (no valves)	Isolation device, rotary locks for open/closed
QS		
QT		
QU		
QV		
QW		
QX		
QY		
QZ	Combined tasks	

Table 3 (continued) R

R	Purpose or task of object: restricting or stabilization of movement or flow of energy, information or material	
Class and subclass	**Task related to subclass**	**Examples of components**
RA	Limiting flow of electrical energy	Resistance, reactance coil, diode
RB		
RC		
RD		
RE		
RF	Stabilization of signals	Low-pass, equalizer, filter
RG		
RH		
RJ		
RK		
RL	Prevention of unauthorized operation and/or movements (mechanical)	Blocking device, stop, latch, lock
RM	Prevention of return flow of gaseous, liquid and flowable substances	Check valve
RN	Limiting flow of liquid and gaseous substances	Venturi nozzle, flow restrictor
RP	Shielding and insulation of noise	Noise protection, sound absorber
RQ	Shielding and insulation of heat or cold	Thermal insulation louver damper, insulation, jacket, lagging, lining
RR	Shielding and insulation of mechanical effects	Brick lining, compensator, vibration absorption,
RS	Shielding and insulation of chemical effects	Brick lining, explosion protection, gas penetration protection, splash protection
RT	Shielding and insulation of light	Shutter, blind, screen
RU	Limiting and stabilizing movement in areas/in site	Fence
RV		
RW		
RX		
RY		
RZ	Combined tasks	

Table 3 (continued) S

S	Purpose or task of object: conversion of a manual operation to a specific signal for further processing	
Class and subclass	**Task related to subclass**	**Examples of components**
SA		
SB		
SC		
SD		
SE		
SF	Conversion of a manual operation to electrical signals	Switch, light pen, keyboard, control switch, discrepancy switch, push-button switch, selector switch, set-point adjuster
SG	Conversion of a manual operation to electromagnetic, optical and acoustical signals	Cordless mouse
SH	Conversion of a manual operation to mechanical signals	Hand wheel, selector switch
SJ	Conversion of a manual operation to fluid or pneumatic signals	
SK		
SL		
SM		
SN		
SP		
SQ		
SR		
SS		
ST		
SU		
SV		
SW		
SX		
SY		
SZ	Combined tasks	

Table 3 (continued) T

T	Purpose or task of object: conversion of energy while maintaining the kind of energy, conversion of an established signal while maintaining the content of information, conversion of the form or shape of a material	
Class and subclass	**Task related to subclass**	**Examples of components**
TA	Conversion of electrical energy while retaining the energy type and energy form	Transformer, d.c./d.c. converter, frequency converter
TB	Conversion of electrical energy while retaining the energy type and changing the energy form	Rectifier, inverter
TC		
TD		
TE		
TF	Conversion of signals (retention of information content)	Amplifier, isolating converter, electrical transducer, impulse amplifier, aerial
TG		
TH		
TJ		
TK		
TL	Conversion of speed of rotation, torque, force	Speed, torque converter, control coupling with primary task of changing speed, indexing and automatic gears, pressure amplifier
TM	Forming, machining	Machine tool, shear, saw
TN	Handling and processing, chipless (cold)	Balancing machine, burnisher (surface treatment without machining)
TP	Deforming, chipless (cold)	Deep drawing equipment, cold rolling equipment, cold drawing equipment
TQ	Deforming, chipless (hot)	Casting, forging, extrusion, hot rolling, hot drawing equipment,
TR	Conversion of radiation energy while retaining energy form	Magnifying glass, parabolic mirror
TS		
TT		
TU		
TV		
TW		
TX		
TY		
TZ	Combined tasks	

Table 3 (continued) U

U	Purpose or task of object: keeping objects in a defined position	
Class and subclass	**Task related to subclass**	**Examples of components**
UA	Holding and supporting electrical energy equipment	Post-insulator, supporting structure
UB	Holding and supporting electrical energy cables and conductors	Portal, mast, insulator, cable rack, cable trough, cable duct, cable tray, post insulator
UC	Enclosure of electrical energy equipment	Housing, encapsulation
UD		
UE		
UF	Holding, supporting, enclosing I&C and communications objects	Transducer rack, sub-rack, printed circuit board
UG	Holding and supporting I&C and communications cables and conductors (to be used only if separate from UB)	Cable rack, cable duct
UH	Enclosing I&C equipment	Cabinet
UJ		
UK		
UL	Holding and supporting machinery objects	Machine foundation
UM	Holding and supporting structural objects	Building foundation, structural elements (for example, lintel, joist, suspender beam, column), shaft, duct (not cable duct, see UG)
UN	Holding and supporting piping objects	Bracket for pipes, pipe bridge
UP	Holding and routing shafts and rotors	Roller bearing, ball bearing, sliding bearing
UQ	Holding and routing objects for fabrication and erection	Clamping, centring device
UR	Fastening and anchoring machinery objects	Bracket, carrier, erection plate, erection frame, anchor plate
US		
UT		
UU		
UV		
UW		
UX		
UY		
UZ	Combined tasks	

Table 3 (continued) V

V	Purpose or task of object: processing (handling) of materials or products (including pre-treatment and post-treatment)	
Class and subclass	**Task related to subclass**	**Examples of components**
VA		
VB		
VC		
VD		
VE		
VF		
VG		
VH		
VJ		
VK		
VL	Filling of materials	Sack, drum, tank car filling equipment
VM	Packaging of products	Wrapping machines, palletizer, packaging machines
VN	Treatment of surfaces	Grinding, polishing machine, painting machine
VP	Handling of materials or products using thermal energy	Annealing furnace, blast furnace, melting furnace
VQ	Cleaning of materials, products or facilities	Vacuum cleaner, washing machine, building cleaning equipment
VR		
VS		
VT		
VU		
VV		
VW		
VX		
VY		
VZ	Combined tasks	

Table 3 (continued) W

W	**Purpose or task of object: conducting or routing energy, signals, materials or products from one location to another**	
Class and subclass	**Task related to subclass**	**Examples of components**
WA	Distribution of electrical energy ≥ 1 kV	Bus bar ≥ 1 kV
WB	Transporting electrical energy ≥ 1 kV	Cable, conductor ≥ 1 kV Bushing ≥ 1 kV
WC	Distributing electrical energy < 1 kV	Bus bar < 1 kV
WD	Transporting electrical energy < 1 kV	Cable, conductor < 1 kV Bushing < 1 kV
WE	Conducting ground potential or reference potential	
WF	Distribution of electrical or electronic signals	Data bus
WG	Transporting electrical or electronic signals	Control cables, measuring cables, data line
WH	Transporting and routing optical signals	Glass fibre cable, optical wave guide
WJ		
WK		
WL	Transporting materials and products (not driven)	Inclined plane, roller table, conductor
WM	Conducting and routing flows of liquid and flowable substances (open enclosures)	Channel, trough
WN	Conducting and routing flows of liquid, flowable and gaseous substances (closed, flexible enclosures)	Hose
WP	Conducting and routing flows of liquid, flowable and gaseous substances (closed, rigid enclosures)	Pipe, air duct, stack
WQ	Transfer of mechanical energy	Shaft, rotor, V-belt, chain, linkage
WR	Conducting and routing rail transport equipment	Rails, points
WS	Conducting and routing persons (access equipment)	Platform, stair, catwalk
WT	Conducting and routing mobile transport equipment (transport routes)	Path, road, shipping routes, railways
WU		
WV		
WW		
WX		
WY		
WZ	Combined tasks	

Table 3 (continued) X

X	Purpose or task of object: connecting objects	
Class and subclass	**Task related to subclass**	**Examples of components**
XA		
XB	Connections ≥ 1 kV	Terminal, cable sealing end, junction box
XC		
XD	Connections < 1 kV	Terminal, cable sealing end, junction box, socket
XE	Connecting to ground potential or reference potential	Grounding terminal, shield connection terminal
XF		
XG	Connecting signals (electrical)	Signal distributor, plug connector, connection element
XH	Connecting signals (optical)	Optical connection
XJ		
XK		
XL	Connecting rigid enclosures for flows of gaseous, liquid and flowable substances	Piping parts, for example, flange, fittings, couplings
XM	Connecting flexible enclosures for flows of gaseous, liquid and flowable substances	Hose connection, hose coupling
XN	Connecting objects for transfer of mechanical energy (rigid)	Coupling, rigid
XP	Connecting objects for transfer of mechanical energy (switchable / variable)	Disengaging coupling, control coupling
XQ	Connecting objects (permanent)	Welded, soldered connection, bonded connection
XR	Connecting objects (temporary)	Hook, lug
XS		
XT		
XU		
XV		
XW		
XX		
XY		
XZ	Combined tasks	

Annex A
(informative)

List of terms

Table A.1 lists the terms contained in Table 3 (designations for objects, purposes, tasks and derived terms) in alphabetical order. Depending on purpose and task, the objects, purposes or tasks may be assigned to the function aspect (=) and/or the product aspect (-).

Table A.2 lists the terms contained in Table 3 in alphabetical order of the letter codes.

Table A.1 – List of terms for objects, alphabetically ordered by object

Object (fulfilling purpose or task)	Letter code
Absorption washer	HS
Access system	WS
Accumulator	CM
Accumulator, pressure	CM
Acidity measurement	BQ
Acoustic signal (electrical)	PG
Acoustic signalling device (mechanical)	PG
Activated carbon adsorber	HS
Actuator	MM
Actuator (fluid)	MM
Actuator (mechanical)	ML
Aerial	TF
Air conditioner	ER
Air conditioning system	ER
Air conditioning with combustion of fossil fuels (mechanical energy) by generation of thermal energy	EP
Air duct	WP
Airbag	FN
Ammeter	PG
Amount, measurement	BZ
Amplifier	TF
Amplitude measurement	BG
Analysis measurement	BQ
Anchor plate	UR
Anchoring	UR
Annealing furnace	VP
Arrester	FA … FE
Aspirator	GQ
Audio transmission	BX
Automatic drains trap	FL
Automatic gear	TL
Auxiliary contactor	KF
Auxiliary equipment for fabrication and erection	UQ

Object (fulfilling purpose or task)	Letter code
Avalanche protection	FS
Baffle (flow restriction in open enclosures)	QP
Balance	PG
Balancing machine	TN
Ball bearing	UP
Barrier	FQ
Battery	GB
Battery (buffer, storage)	CC
Battery (dry cell)	GB
Bell (electrical)	PG
Bell (mechanical)	PG
Bellows expansion joint	RS
Belt conveyor	GL
Binary elements	KF
Binary module	KF
Blank	QM
Blanking plate	QM
Blast furnace	VP
Blind	RT
Blocking device	RL
Blow-down (settling)	HN
Blower	GQ
Boiler (combustion of fossil fuels)	EP
Boiler (generation of heat energy by energy transfer)	EP
Boiler (generation of thermal energy by conversion of chemical energy)	EM
Boiler (steam)	CM
Boiler, electrical	EB
Boiler, heat recovery steam generator	EN
Bonded connection	XQ
Bracket	UR
Bracket for piping	UN
Brake	QL
Breaker (power, safety)	QB
Brick lining (against chemical effects)	RS
Brick lining (against mechanical effects)	RR
Briquette maker	HV
Buchholtz relay	BB
Buffer battery	CC
Building cleaning equipment	VQ
Building foundation	UM
Bunker	CL
Burette	PG
Burner	EM

Object (fulfilling purpose or task)	Letter code
Burnisher (chipless surface treatment)	TN
Bus bar (conducting electrical energy)	WA
Bus bar < 1kV (distribution of electrical energy)	WC
Bus bar ≥ 1 kV (distribution of electrical energy)	WA
Bushing < 1 kV (transporting electrical energy)	WD
Bushing ≥ 1 kV (transporting electrical energy)	WB
By-pass circuit-breaker	QD
Cabinet (enclosure of electrical I&C equipment)	UH
Cabinet (for I&C objects)	UF
Cable duct (for I&C cables, conductors; to be used only if separate from UB)	UG
Cable rack	UB
Cable rack (for I&C cables, conductors; to be used only if separate from UB)	UG
Cable sealing end < 1kv	XD
Cable sealing end ≥ 1 kv	XB
Cable tray	UB
Cable trough	UB
Cable, conductor <1 kv	WD
Cable, conductor ≥1 kv	WB
Capacitor	CA
Carrier	UR
Casting equipment	TQ
Catwalk	WS
CD-ROM	CF
Centring device	UQ
Central processing unit (cpu)	KF
Centrifuge	HM
Chain	WQ
Chain conveyor	GL
Channel (open enclosure for conveying and conducting liquid and flowable liquids)	WM
Check valve	RM
Chillers (compression, turbine-driven)	EC
Chipless (cold) deformation	TP
Chipless (cold) handling and processing	TN
Chipless (hot) deformation	TQ
Circuit-breaker	QA
Cistern	CL
Clamp (<1 kV)	XB
Cleaning	VQ
Clock (electrical)	PG
Clock (mechanical)	PG
Coil	CB
Cold drawing equipment	TP
Cold energy generation by conversion of electrical energy	EC

Object (fulfilling purpose or task)	Letter code
Cold energy storage	CP
Cold energy to heat energy, conversion	ER
Cold pump (generation of cold energy by conversion of chemical energy)	EN
Cold pump (generation of cold energy by energy transfer)	EQ
Cold pump (generation of heat by conversion of mechanical energy)	ER
Cold rolling equipment	TP
Column (structural element)	UM
Combined values, measurement	BU
Combustion grate	EL
Combustion grate	EM
Combustion grate	WL
Combustion motor	MS
Combustion of fossil fuels (mechanical energy) for generation of thermal energy	EL
Compensator	RR
Composter	HY
Compression and conveyance, continuous, of gaseous substances	GQ
Compression chillers	EC
Compressor	GQ
Condenser	EP
Conducting ground potential or reference potential	WE
Conductor (conducting electrical energy)	WA
Conductor, cable <1 kv	WD
Conductor, cable ≥1 kv	WB
Conduit	UB
Connecting element (connection (electrical) of signals)	XG
Connecting objects <1kv	XD
Connecting objects ≥1 kv	XB
Connecting to objects <1 kV	XB
Connecting to objects ≥1 kV	XA
Connection (electrical) of signals	XG
Connection (optical) of signals	XH
Connection element (connecting signals)	XF
Connection of ground potential or reference potential	XE
Connection, permanent	XQ
Connection, temporary	XR
Connector, optical (connection (optical) of signals)	XH
Contact protection	FQ
Container (fixed location)	CM
Container (mobile)	CN
Control cable	WG
Control coupling	XP
Control coupling with primary task of changing speed	TL
Control damper	QN

Object (fulfilling purpose or task)	Letter code
Control switch	SF
Control valve	QN
Controller	KF
Controller (generation of various information carriers at input and output)	KK
Controller (in sense of signal processing mechanical)	KJ
Controller (in sense of signal processing, electrical)	KF
Controller (in sense of signal processing, fluid, pneumatic)	KH
Controller (in sense of signal processing, optical)	KG
Controller (valve position controller) (in the sense of signal processing, fluid, pneumatic)	KH
Conversion of a manual operation to fluid or pneumatic signals	SJ
Conversion of a manual operation to mechanical signals	SH
Converter	TF
Converter, frequency	TF
Converter, signal	TF
Conveyance and compression, continuous, of gaseous substances	GQ
Conveyance of liquid and gaseous substances with driving by driving medium	GS
Conveyance, continuous, of liquid and flowable substances	GP
Conveyance, continuous, of solid materials	GL
Conveyance, discontinuous, of solid materials	GM
Conveyance, mobile, of gaseous substances	GR
Conveyance, mobile, of solid materials	GN
Conveyor (not driven)	WL
Cooling unit	EC
Cordless mouse	SG
Coupling	XL
Coupling, controllable	XP
Coupling, disengaging	XP
Coupling, rigid	XN
Cover	QU
Crane	GM
Crusher	HU
Current measurement	BE
Current transformer	BE
Cycle detector	BZ
Cyclone device	HM
Dam plates (flow restriction in open enclosures)	QP
Damping	RR
Data bus	WF
Data line	WG
DC/DC converter	TA
Deep drawing equipment, cold rolling, cold drawing equipment	TP
Deformation, chipless, cold	TP
Deformation, chipless, hot	TQ

Object (fulfilling purpose or task)	Letter code
Deformation, machining	TM
Delay systems	KF
Demodulator	TF
Density measurement	BD
Depth sounder (sonar)	EF
Detector	PG
Dewatering	HP
Diode	RA
Discrepancy switch	SF
Disengaging coupling	XP
Distance measurement	BG
Distillation column	HP
Distributor	GL
Door (open/closed)	QQ
Door, escape	FQ
Drain valve	QM
Drum	CN
Drum filling equipment	VL
Dry cell battery	GB
Drying	HP
Duct (structural elements; not cable duct, see UG)	UM
Dynamo	GA
Earthing switch	QC
Economizer	EN
Economizer	EP
EHC	TF
Ejector	GS
Electric furnace	EB
Electric motor	MA
Electrical transducer	TF
Electrical boiler	EB
Electrical heater	EB
Electrical units, measurement	BE
Electrode steam boiler	EB
Electro-hydraulic converter	KK
Electromechanical indicator	PG
Electronic valve	KF
Electrostatic precipitator	HR
Elevator	GM
Emulsifier	HW
Encapsulation (enclosure of electrical energy equipment)	UC
Energy transfer by generation of thermal energy	EN
Energy, storage of mechanical	CQ

Object (fulfilling purpose or task)	Letter code
Energy, storage of thermal	CP
EPROM	CF
Equalizer	RF
Erection frame	UR
Erection plate	UR
Escape door	FQ
Escape window	FQ
Evaporator	EP
Event counter	PG
Event recorder	CF
Events, number of, measurement	BZ
Explosion protection (against chemical effects)	RS
Extraction equipment	HP
Extrusion equipment	TQ
Fan	GQ
Faraday cage	FA ... FE
Feed-water heater	EP
Fence (limiting and stabilizing movement in areas/in site)	RU
Fence (safety)	FQ
Fermenter	HY
Filling	VL
Filter	RF
Fire dampers	FM
Fire protection door	FM
Fire protection facilities (detection of risk and initiation of protective measures)	FM
Fitting	XL
Flange	XL
Flash tank	CM
Flow measurement	BF
Flow meter	PG
Flow restrictor	RN
Fluid cylinder	MM
Fluid drive	MM
Fluid filter	HQ
Fluid motor	MM
Fluorescent tube	EA
Flywheel	CQ
Forging equipment	TQ
Forklift	GN
Freezer (electrical)	EC
Freezer (mechanical)	EQ
Freezer unit	EC
Frequency converter (electrical)	TA

Object (fulfilling purpose or task)	Letter code
Frequency converter (information and signals)	TF
Frequency measurement	BS
Fuel cell	GB
Furnace (blast)	EM
Furnace (combustion of fossil fuels)	EL
Furnace, electric	EB
Furnace, reaction	HX
Fuse	FA .. FE
Gas control path	QN
Gas cylinder	CN
Gas filter	HQ
Gas holder	CM
Gas lamp	EL
Gas light	EL
Gas meter	PG
Gas penetration protection (against chemical effects)	RS
Gas turbine	MP
Gasifier	HT
Gate	FQ
Gate (for example, for persons, animals)	QQ
Gate (open/closed)	QQ
Gear, automatic	TL
Gear, switchable	TL
Geiger counter	PG
Generation of cold by conversion of mechanical energy	ES
Generation of cold energy by conversion of chemical energy	EN
Generation of cold energy by energy transfer	EQ
Generation of electromagnetic radiation for lighting purposes by combustion of fossil fuels	EL
Generation of heat by conversion of mechanical energy	ER
Generation of heat energy by energy transfer	EP
Generation of other electromagnetic radiation	EF
Generation of particle radiation	EU
Generation of thermal energy by conversion of chemical energy	EM
Generation of thermal energy by nuclear fission	ET
Generator	GA
Generator lead (>1 kV)	WB
Generator, heat recovery steam	EP
Generator, neutron	EU
Geophysical protection	FS
Glare protection	FQ
Glass fibre cable	WH
Grate firing	EM
Grinding machine	VN

Object (fulfilling purpose or task)	Letter code
Ground potential or reference potential, conducting	WE
Ground potential or reference potential, connection of	XE
Grounding switch	QC
Grounding bus	WD
Grounding clamp	XC
Grounding terminal	XE
Guide for rail conveyors	WR
Hand wheel	SH
Handling and processing, chipless, cold	TN
Hard disc	CF
Heat energy from nuclear fission	EM
Heat energy generation by conversion of electrical energy	EB
Heat energy storage	CP
Heat energy to cold energy, conversion	ER
Heat exchanger	EN
Heat exchanger	EP
Heat pump	ER
Heat recovery steam generator	EN
Heat recovery steam generator	EP
Heat stove (combustion)	EP
Heat treatment	VP
Heater, electrical	EB
Heater, radiator, boiler, heat stove	EP
Heating rod	EB
Heating wire	EB
High-voltage cable (>1 kV)	WB
Hook	XR
Hose	WN
Hose connection	XM
Hose coupling	XM
Hot drawing equipment	TQ
Hot rolling equipment	TQ
Hot water storage	CP
Housing (enclosure of electrical energy equipment)	UC
Humidifier (steam)	HW
Humidity meter	BM
Hybrid heat storage	CP
Hydraulic cylinder	MM
Hydraulic turbine	MR
Ice tank	CP
Image transmission	BX
Impact protection	FN
Impulse amplifier	TF

Object (fulfilling purpose or task)	Letter code
Incandescent lamp	EA
Inclined plane	WL
Indexing gear	TL
Indicator (mechanical)	PG
Indicator, electromechanical	PG
Infrared beam	SG
Infrared heating element	EB
Infrared radiation units	EF
Injector	GS
Input/output modules	KF
Insulation (heat/cold insulation)	RQ
Insulator	UB
Inverter	TB
Ion exchanger	HS
Isolating converter	TF
Isolating switch	QB
Isolation device (for liquid and flowable substances; no valve)	QR
Isolation/shutoff valve	QM
Jacketing (heat/cold insulation)	RQ
Jet (in sense of conveyance of liquid and gaseous substances)	GS
Jet system (for ships)	MT
Jet vane (for ships)	MT
Joist (structural element)	UM
Junction box	XB
Keyboard	SF
Kneader	HW
Lagging (heat/cold insulation)	RQ
Laser (conducting, routing of optical signals and energy)	WH
Latch	RL
Led	PG
Length measurement	BG
Lifting gear	GM
Light barrier	SG
Light pen	SF
Lighting purposes with combustion of fossil fuels by generation of electromagnetic radiation	EQ
Lighting purposes with electrical energy by generation of electromagnetic radiation	EA
Linear motor	MA
Lining (heat/cold insulation)	RQ
Linkage (generation of electrical and electronic signals)	KJ
Linkage (transfer of mechanical energy)	WQ
Lintel (structural element)	UM
Load isolator	QB
Lock (prevention of unauthorized operation and/or movement(mechanical))	RL

Object (fulfilling purpose or task)	Letter code
Lock gate	QP
Lock, rotary for open/closed	QR
Locks (in sense of fire protection)	FM
Loudspeaker	PG
Louver damper for thermal insulation	RQ
Louver damper (light shielding)	RT
Low-pass	RF
Lug	XR
Machine foundation	UL
Machine tool	TM
Machining	TM
Magnetic drive	MB
Magnetic separator	HR
Magnetic tape recorder	CF
Magnifying glass	TR
Manipulator	GM
Manual operation to fluid or pneumatic signals, conversion	SJ
Manual operation to mechanical signals, conversion	SH
Mass measurement	BW
Mast	UB
Material property measurement	BQ
Measurement of acidity	BQ
Measurement of amplitude	BG
Measurement of analysis values	BQ
Measurement of combined values	BU
Measurement of density	BD
Measurement of distance	BG
Measurement of electrical units	BE
Measurement of elongation/strain	BG
Measurement of flow, throughput	BF
Measurement of frequency	BS
Measurement of length	BG
Measurement of mass	BW
Measurement of material property	BQ
Measurement of moisture content	BM
Measurement of multiple variables	BU
Measurement of neutron flux	BR
Measurement of number of events	BZ
Measurement of position	BG
Measurement of power	BJ
Measurement of pressure	BP
Measurement of quality parameters	BQ
Measurement of radiation values	BR

Object (fulfilling purpose or task)	Letter code
Measurement of speed	BS
Measurement of status (also of interface)	BL
Measurement of temperature	BT
Measurement of time	BK
Measurement of vacuum	BP
Measurement of velocity	BS
Measurement of vibration	BS
Measurement of vibration	BS
Measurement of viscosity	BV
Measurement of weight force	BW
Measuring cable	WG
Measuring orifice	BF
Measuring relay	BE
Measuring resistance (shunt)	BE
Measuring transformer	BE
Mechanical energy, storage	CQ
Melting furnace	VP
Microphone	BX
Microprocessor	KF
Mill	HU
Mirror (processing of optical and acoustical signals)	KG
Mirror, parabolic	TR
Mixer	HW
Mixing vessel	HW
Mobile crane	GN
Modulator	TF
Moisture content measurement	BM
Monitor	PG
Motion sensor	BG
Motor starter	QA
Motor-generator set	GA
Multiple variables, measurement	BU
Munters air dryer	HP
Neutron flux measurement	BR
Neutron generator	EU
Noise protection	RP
Non-return valve	RM
Nuclear reactor	ET
Number of events, measurement	BZ
Optical connector (connection (optical) of signals)	XH
Optical signalling device	PG
Optical wave guide	WH
Optocoupler	KF

Object (fulfilling purpose or task)	Letter code
Output/input modules	KF
Overhead line	WB
Overload trip, thermal	FA … FE
Overload relay (thermal)	BD
Packaging	VM
Packaging machine	VM
Paddlewheel system (for ships)	MT
Painting machine	VN
Palletizer	VM
Parabolic mirror	TR
Paralleling connector	KF
Particle radiation, generation of	ES
Path	WT
Pellet maker	HV
Permanent connection	XQ
pH measurement	BQ
Photocell	BR
Pilot valve (electric) (processing of various input/output information carriers, for example, electrical/pneumatic)	KK
Pilot valve (processing of fluid and pneumatic signals)	KH
Pin (>1 kV)	XA
Pipe	WP
Pipe bridge	UN
Pipe part	XL
Pipes, bracket for	UN
Pit	CL
Platform	WS
Plotter	PF
Plug connector (connecting signals)	XF
Plug connector (connection (electrical) of signals)	XG
Points system	WR
Polishing machine	VN
Pools	CL
Portal	UA
Position measurement	BG
Position switch	BG
Post insulator (holding and supporting electrical cables and conductors)	UB
Post insulator (holding and supporting electrical energy equipment)	UA
Power cable (<1 kV)	WC
Power circuit-breaker	QA
Power measurement	BJ
Power transistor	QA
Pre-heater	EN
Pressure accumulator	CM

Object (fulfilling purpose or task)	Letter code
Pressure amplifier	TL
Pressure difference measurement	BF
Pressure gauge	BP
Pressure measurement	BP
Pressure sensor	BP
Printed circuit-board	UF
Printer	PF
Process computer	KF
Program controller	KF
Propeller system (for ships)	MT
Protection device	FN
Protection of mechanical objects from wear	FR
Protection of the environment	FP
Protection relay	BB
Protective anode, cathodic	FR
Protective shield	FN
Protective sleeve for thermocouples	FN
Proximity sensor	BG
Proximity switch	BG
Pump	GP
Push-button switch	SF
Quality parameter measurement	BQ
Radar (distance measurement)	BG
Radar (height, level)	BL
Radar unit (measurement of number of events, quantity)	BZ
Radiation value measurement	BR
Radiator	EP
Radiator (combustion of fossil fuels)	EP
Radiator (electric)	EB
Rail equipment	WR
Railing	FQ
Railways	WR
Rake	HL
RAM	CF
Reactance coil	RA
Reaction furnace	HX
Reactor	HX
Reactor protection unit	FP
Reactor, nuclear	ET
Receiver	KF
Recorder	PF
Recorder (strip chart, voltage)	PF
Rectifier	TB

Object (fulfilling purpose or task)	Letter code
Reference potential or ground potential, conducting	WE
Reference potential or ground potential, connection of	XE
Refrigerator (chemical energy)	EN
Refrigerator (electrical)	EC
Refrigerator (energy transfer)	EQ
Refrigerator (mechanical)	ES
Relay	KF
Relay (switching, time)	KF
Relay, Buchholtz	BB
Relay, overload (thermal)	BB
Relay, protection	BB
Resistance	RA
Restraint	RR
Road	WT
Roller bearing	UP
Roller table	WL
Rotary lock for open/closed	QR
Rotor	WQ
Rupture disk	FL
Sack filling equipment	VL
Safety belt	FN
Safety breaker	QB
Safety coupling	FN
Safety switch	QB
Safety valve	FL
Saw	TM
Screen	RT
Screen/strainer	HL
Screw conveyor	GP
Selector switch	SF
Selector switch (mechanical signals)	SH
Sensor, motion	BG
Sensor, pressure	BP
Sensor, proximity	BG
Servomotor	MM
Set-point adjuster	SF
Settling tank	HN
Shaft	UM
Shaft (engine)	WQ
Shaft (structural element)	UM
Shear	TM
Shield connection terminal	XE
Shielding connection bus	WD

Object (fulfilling purpose or task)	Letter code
Shipping container	CN
Shipping routes	WT
Shock absorber	RP
Shock absorption	RR
Shunt (measuring resistance)	BE
Shutter	RT
Sight glass	PG
Signal connector	XG
Signal converter	TF
Signal distributor	XF
Signal generator	GF
Signal lamp	PG
Signal transducer	TF
Signalling device, acoustic (electrical)	PG
Signalling device, acoustic (mechanical)	PG
Signalling device, optical	PG
Signalling device, vibration	PG
Signalling unit (interlocked signals) (in sense of signal processing, electrical)	KF
Signalling unit (interlocked signals) (in sense of signal processing, optical)	KG
Signalling unit (interlocked signals) (in sense of signal processing, fluid, pneumatic)	KH
Signalling unit (interlocked signals) (in sense of signal processing, mechanical)	KJ
Silo	CM
Sintering facility	HV
Sleeve <1 kv	XD
Sliding bearing	UP
Slip-ring short-circuiter	OD
Socket	XD
Socket (<1 kV)	XB
Solar cell	GC
Soldered connection	XQ
Sonic depth finder	BL
Sound absorber	RP
Speed converter	TL
Speed measurement	BS
Spherical cap	PG
Splash protection (against chemical effects)	RS
Spring force drive	ML
Stack	WP
Stair	WS
Static mixer	HW
Status measurement (also of interface)	BL
Steam boiler	CM
Steam generator	EP

Object (fulfilling purpose or task)	Letter code
Steam humidifier	HW
Steam storage	CP
Steam turbine	MN
Stirrer	HW
Stop	RL
Storage battery	CC
Storage device for electrical energy	CA
Storage of thermal energy	CP
Storage of cold energy	CP
Storage of heat energy	CP
Storage of hybrid heat	CP
Storage of mechanical energy	CQ
Storage of underground thermal energy	CP
Storage, chemical	CC
Storage, hot water	CP
Storage, inductive	CB
Storage, steam	CP
Stored-energy spring actuator	ML
Stove, heat (combustion of fossil fuels)	EP
Strain/elongation measurement	BG
Strip chart recorder	PF
Structural element (for example, lintel, joist, suspender beam, column)	UM
Sub-rack	UF
Superconductor	CB
Support	UA
Supporting structure	UA
Surface treatment	VN
Surge arrester	FA ... FE
Suspender beam (structural element)	UM
Switch (conversion of a manual operation to electrical signals)	SF
Switch, position	BG
Switch, proximity	BG
Switching relay	KF
Synchronizing unit	KF
Synchronoscope	PG
Tablet maker	HV
Tank	CM
Tank of ice	CP
Tank truck	GR
Tank truck filling equipment	VL
Telephone	TF
Temperature measurement	BT
Temporary connection	XR

Object (fulfilling purpose or task)	Letter code
Tensioning device	UQ
Terminal <1 kv	XD
Terminal ≥1 kv	XB
Test unit (in sense of signal processing, electrical)	KF
Test unit (in sense of signal processing, fluid, pneumatic)	KH
Test unit (in sense of signal processing, mechanical)	KJ
Test unit (in sense of signal processing, optical)	KG
Thermal energy storage system	CP
Thermal insulation louver damper	RQ
Thermal overload trip	FA ... FE
Thermometer	PG
Thickening	HN
Through-put measurement	BF
Thyristor	QA
Time measurement	BK
Time relay	KF
Torque converter	TL
Transducer	GF
Transducer rack	UF
Transducer, electrical	TF
Transducer, signal	TF
Transfer of mechanical energy	WQ
Transformer	TA
Transformer, AC/DC	TB
Transistor	KF
Transmitter	KF
Transport route	WT
Trough	WM
Truck	GN
Truck	GN
Turnstile	QQ
Underground thermal energy storage	CP
UV radiator	EA
Vacuum breaker	FL
Vacuum cleaner	VQ
Vacuum measurement	BP
Vacuum pump	GQ
Values, combined, measurement	BU
Valve	QM
Valve assembly	KH
V-belt	WQ
Velocity measurement	BS
Vent valve (also automatic directly loaded)	FL

Object (fulfilling purpose or task)	Letter code
Vent valve (also automatic directly loaded)	FL
Venturi nozzle	RN
Vibration absorption	RR
Vibration damping	RS
Vibration measurement	BS
Vibration measurement	BS
Vibration signalling device	PG
Video camera	BX
Viscosity measurement	BV
Vision protection	FQ
Voltage measurement	BE
Voltage recorder (presentation of information, permanent)	PF
Voltage recorder (storage of information)	CF
Voltage transformer	BE
Voltmeter	PG
Washing machine	VQ
Water meter	PG
Watt-hour meter	PG
Wear, protection of mechanical objects against	FR
Weather protection	FS
Weight drive	ML
Weight force measurement	BW
Weir	QP
Weld	XQ
Wet scrubber	HS
Whip restraint	RS
Wind turbine	MQ
Window (open/closed)	QQ
Window, escape	FQ
Wrapping machines	VM
X-ray unit	BQ
X–ray unit	EF

Table A.2 – List of terms for objects, alphabetically ordered by letter code

Letter code	Object (fulfilling purpose or task)
BB	Buchholtz relay
BB	Protection relay
BB	Relay, Buchholtz
BB	Relay, overload (thermal)
BB	Relay, protection
BD	Density measurement
BD	Measurement of density
BD	Overload relay (thermal)
BE	Current measurement
BE	Current transformer
BE	Electrical units, measurement
BE	Measurement of electrical units
BE	Measuring relay
BE	Measuring resistance (shunt)
BE	Measuring transformer
BE	Shunt (measuring resistance)
BE	Voltage measurement
BE	Voltage transformer
BF	Flow measurement
BF	Measurement of flow, through-put
BF	Measuring orifice
BF	Pressure difference measurement
BF	Through-put measurement
BG	Amplitude measurement
BG	Distance measurement
BG	Length measurement
BG	Measurement of amplitude
BG	Measurement of distance
BG	Measurement of elongation/strain
BG	Measurement of length
BG	Measurement of position
BG	Motion sensor
BG	Position measurement
BG	Position switch
BG	Proximity sensor
BG	Proximity switch
BG	Radar (distance measurement)
BG	Sensor, motion
BG	Sensor, proximity
BG	Strain/elongation measurement
BG	Switch, position
BG	Switch, proximity

Letter code	Object (fulfilling purpose or task)
BJ	Measurement of power
BJ	Power measurement
BK	Measurement of time
BK	Time measurement
BL	Measurement of status (also of interface)
BL	Radar (height, level)
BL	Sonic depth finder
BL	Status measurement (also of interface)
BM	Humidity meter
BM	Measurement of moisture content
BM	Moisture content measurement
BP	Measurement of pressure
BP	Measurement of vacuum
BP	Pressure gauge
BP	Pressure measurement
BP	Pressure sensor
BP	Sensor, pressure
BP	Vacuum measurement
BQ	Acidity measurement
BQ	Analysis measurement
BQ	Material property measurement
BQ	Measurement of acidity
BQ	Measurement of analysis values
BQ	Measurement of material property
BQ	Measurement of quality parameters
BQ	pH measurement
BQ	Quality parameter measurement
BQ	X-ray unit
BR	Measurement of neutron flux
BR	Measurement of radiation values
BR	Neutron flux measurement
BR	Photocell
BR	Radiation value measurement
BS	Frequency measurement
BS	Measurement of frequency
BS	Measurement of speed
BS	Measurement of velocity
BS	Measurement of vibration
BS	Measurement of vibration
BS	Speed measurement
BS	Velocity measurement
BS	Vibration measurement
BS	Vibration measurement

Letter code	Object (fulfilling purpose or task)
BT	Measurement of temperature
BT	Temperature measurement
BU	Combined values, measurement
BU	Measurement of combined values
BU	Measurement of multiple variables
BU	Multiple variables, measurement
BU	Values, combined, measurement
BV	Measurement of viscosity
BV	Viscosity measurement
BW	Mass measurement
BW	Measurement of mass
BW	Measurement of weight force
BW	Weight force measurement
BX	Audio transmission
BX	Image transmission
BX	Microphone
BX	Video camera
BZ	Amount, measurement
BZ	Cycle detector
BZ	Events, number of, measurement
BZ	Measurement of number of events
BZ	Number of events, measurement
BZ	Radar unit (measurement of number of events, quantity)
CA	Capacitor
CA	Storage device for electrical energy
CB	Coil
CB	Storage, inductive
CB	Superconductor
CC	Battery (buffer, storage)
CC	Buffer battery
CC	Storage battery
CC	Storage, chemical
CF	CD-ROM
CF	EPROM
CF	Event recorder
CF	Hard disk
CF	Magnetic tape recorder
CF	RAM
CF	Voltage recorder (storage of information)
CL	Bunker
CL	Cistern
CL	Pit
CL	Pools

Letter code	Object (fulfilling purpose or task)
CM	Accumulator
CM	Accumulator, pressure
CM	Boiler (steam)
CM	Container (fixed location)
CM	Flash tank
CM	Gas holder
CM	Pressure accumulator
CM	Silo
CM	Steam boiler
CM	Tank
CN	Container (mobile)
CN	Drum
CN	Gas cylinder
CN	Shipping container
CP	Cold energy storage
CP	Energy, storage of thermal
CP	Heat energy storage
CP	Hot water storage
CP	Hybrid heat storage
CP	Ice tank
CP	Steam storage
CP	Storage of thermal energy
CP	Storage of cold energy
CP	Storage of heat energy
CP	Storage of hybrid heat
CP	Storage of underground thermal energy
CP	Storage, hot water
CP	Storage, steam
CP	Tank of ice
CP	Thermal energy storage system
CP	Underground thermal energy storage
CQ	Energy, storage of mechanical
CQ	Flywheel
CQ	Mechanical energy, storage
CQ	Storage of mechanical energy
EA	Fluorescent tube
EA	Incandescent lamp
EA	Lighting purposes with electrical energy by generation of electromagnetic radiation
EA	UV radiator
EB	Boiler, electrical
EB	Electric furnace
EB	Electrical boiler
EB	Electrical heater

Letter code	Object (fulfilling purpose or task)
EB	Electrode steam boiler
EB	Furnace, electric
EB	Heat energy generation by conversion of electrical energy
EB	Heater, electrical
EB	Heating rod
EB	Heating wire
EB	Infrared heating element
EB	Radiator (electric)
EC	Chillers (compression, turbine-driven)
EC	Cold energy generation by conversion of electrical energy
EC	Compression chillers
EC	Cooling unit
EC	Freezer (electrical)
EC	Freezer unit
EC	Refrigerator (electrical)
EF	Depth sounder (sonar)
EF	Generation of other electromagnetic radiation
EF	Infrared radiation units
EF	X-ray unit
EL	Combustion grate
EL	Combustion of fossil fuels (mechanical energy) for generation of thermal energy
EL	Furnace (combustion of fossil fuels)
EL	Gas lamp
EL	Gas light
EL	Generation of electromagnetic radiation for lighting purposes by combustion of fossil fuels
EM	Boiler (generation of thermal energy by conversion of chemical energy)
EM	Burner
EM	Combustion grate
EM	Furnace (blast)
EM	Generation of thermal energy by conversion of chemical energy
EM	Grate firing
EM	Heat energy from nuclear fission
EN	Boiler, heat recovery steam generator
EN	Cold pump (generation of cold energy by conversion of chemical energy)
EN	Economizer
EN	Energy transfer by generation of thermal energy
EN	Generation of cold energy by conversion of chemical energy
EN	Heat exchanger
EN	Heat recovery steam generator
EN	Pre-heater
EN	Refrigerator (chemical energy)
EP	Air conditioning with combustion of fossil fuels (mechanical energy) by generation of thermal energy
EP	Boiler (combustion of fossil fuels)

Letter code	Object (fulfilling purpose or task)
EP	Boiler (generation of heat energy by energy transfer)
EP	Condenser
EP	Economizer
EP	Evaporator
EP	Feed-water heater
EP	Generation of heat energy by energy transfer
EP	Generator, heat recovery steam
EP	Heat exchanger
EP	Heat recovery steam generator
EP	Heat stove (combustion)
EP	Heater, radiator, boiler, heat stove
EP	Radiator
EP	Radiator (combustion of fossil fuels)
EP	Steam generator
EP	Stove, heat (combustion of fossil fuels)
EQ	Cold pump (generation of cold energy by energy transfer)
EQ	Freezer (mechanical)
EQ	Generation of cold energy by energy transfer
EQ	Lighting purposes with combustion of fossil fuels by generation of electromagnetic radiation
EQ	Refrigerator (energy transfer)
ER	Air conditioner
ER	Air conditioning system
ER	Cold energy to heat energy, conversion
ER	Cold pump (generation of heat by conversion of mechanical energy)
ER	Generation of heat by conversion of mechanical energy
ER	Heat energy to cold energy, conversion
ER	Heat pump
ES	Generation of cold by conversion of mechanical energy
ES	Particle radiation, generation of
ES	Refrigerator (mechanical)
ET	Generation of thermal energy by nuclear fission
ET	Nuclear reactor
ET	Reactor, nuclear
EU	Generation of particle radiation
EU	Generator, neutron
EU	Neutron generator
FA ... FE	Arrester
FA ... FE	Faraday cage
FA ... FE	Fuse
FA ... FE	Miniature circuit-breaker
FA ... FE	Overload trip, thermal
FA ... FE	Surge arrester
FA ... FE	Thermal overload trip

Letter code	Object (fulfilling purpose or task)
FL	Automatic drains trap
FL	Rupture disk
FL	Safety valve
FL	Vacuum breaker
FL	Vent valve (also automatic directly loaded)
FL	Vent valve (also automatic directly loaded)
FM	Fire dampers
FM	Fire protection door
FM	Fire protection facilities (detection of risk and initiation of protective measures)
FM	Locks (in sense of fire protection)
FN	Airbag
FN	Impact protection
FN	Protection device
FN	Protective shield
FN	Protective sleeve for thermocouples
FN	Safety belt
FN	Safety coupling
FP	Protection of the environment
FP	Reactor protection unit
FQ	Barrier
FQ	Contact protection
FQ	Door, escape
FQ	Escape door
FQ	Escape window
FQ	Fence (safety)
FQ	Gate
FQ	Glare protection
FQ	Railing
FQ	Vision protection
FQ	Window, escape
FR	Protection of mechanical objects from wear
FR	Protective anode, cathodic
FR	Wear, protection of mechanical objects against
FS	Avalanche protection
FS	Geophysical protection
FS	Weather protection
GA	Dynamo
GA	Generator
GA	Motor-generator set
GB	Battery
GB	Battery (dry cell)
GB	Dry cell battery
GB	Fuel cell

Letter code	Object (fulfilling purpose or task)
GC	Solar cell
GF	Signal generator
GF	Transducer
GL	Belt conveyor
GL	Chain conveyor
GL	Conveyance, continuous, of solid materials
GL	Distributor
GM	Conveyance, discontinuous, of solid materials
GM	Crane
GM	Elevator
GM	Lifting gear
GM	Manipulator
GN	Conveyance, mobile, of solid materials
GN	Forklift
GN	Mobile crane
GN	Truck
GN	Truck
GP	Conveyance, continuous, of liquid and flowable substances
GP	Pump
GP	Screw conveyor
GQ	Aspirator
GQ	Blower
GQ	Compression and conveyance, continuous, of gaseous substances
GQ	Compressor
GQ	Conveyance and compression, continuous, of gaseous substances
GQ	Fan
GQ	Vacuum pump
GR	Conveyance, mobile, of gaseous substances
GR	Tank truck
GS	Conveyance of liquid and gaseous substances with driving by driving medium
GS	Ejector
GS	Injector
GS	Jet (in sense of conveyance of liquid and gaseous substances)
HL	Rake
HL	Screen/strainer
HM	Centrifuge
HM	Cyclone device
HN	Blow-down (settling)
HN	Settling tank
HN	Thickening
HP	Dewatering
HP	Distillation column
HP	Drying