These notes cover the basic principles and general instructions for use of section H.

I. Section H covers:
   a. basic electric elements, which cover all electric units and the general mechanical structure of apparatus and circuits, including the assembly of various basic elements into what are called printed circuits and also cover to a certain extent the manufacture of these elements (when not covered elsewhere);
   b. generation of electricity, which covers the generation, conversion, and distribution of electricity together with the controlling of the corresponding gear;
   c. applied electricity, which covers:
      i. general utilisation techniques, viz. those of electric heating and electric lighting circuits;
      ii. some special utilisation techniques, either electric or electronic in the strict sense, which are not covered by other sections of the Classification, including:
         1. electric light sources, including lasers;
         2. electric X-ray technique;
         3. electric plasma technique and the generation and acceleration of electrically charged particles or neutrons;
   d. basic electronic circuits and their control;
   e. radio or electric communication technique, including electromechanical transducers in general;
   f. the use of a specified material for the manufacture of the article or element described. In this connection, paragraphs 56 to 58 of the Guide should be referred to.

II. In this section, the following general rules apply:
   a. subject to the exceptions stated in I (c) above, any electric aspect or part peculiar to a particular operation, process, apparatus, object, or article classified in one of the sections of the Classification other than section H is always classified in the subclass for that operation, process, apparatus, object, or article, or where common characteristics concerning technical subjects of similar nature have been brought out at class level, it is classified, in conjunction with the operation, process, apparatus, object, or article in a subclass which covers entirely the general electrical applications for the technical subject in question;
   b. such electrical applications, either general or particular, include:
      i. the therapeutic processes and apparatus, in class A61;
      ii. the electric processes and apparatus used in various laboratory or industrial operations, in classes B01, B03, and subclass B23K;
      iii. the electricity supply, electric propulsion and electric lighting of vehicles in general and of particular vehicles, in the "Transporting" subsection of section B;
      iv. the electric ignition systems of internal-combustion engines, in subclass F02P, and of combustion apparatus in general, in subclass F23Q;
      v. the whole electrical part of section G, i.e. measuring devices including apparatus for measuring electric variables, checking, signalling, and calculating. Electricity in that section is generally dealt with as a means and not as an end in itself;
   c. all electrical applications, both general and particular, presuppose that the "basic electricity" aspect appears in section H (see 1 (a) above) as regards the electric "basic elements" which they comprise. This rule is also valid for applied electricity, referred to under 1 (c) above, which appears in section H itself.

H01 BASIC ELECTRIC ELEMENTS

Processes involving only a single technical art, e.g. drying, coating, for which provision exists elsewhere are classified in the relevant class for that art.

H01B CABLES; CONDUCTORS; INSULATORS; SELECTION OF MATERIALS FOR THEIR CONDUCTIVE, INSULATING OR DIELECTRIC PROPERTIES (selection for magnetic properties H01F 1/00; waveguides H01P; installations of cables or lines H02G; (printed circuits H05K))

Group H01B 12/00 takes precedence over groups H01B 5/00 - H01B 11/00.

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.
H01C RESISTORS

NOTES
1. In this subclass, the term “adjustable” means mechanically adjustable.
2. Variable resistors, the value of which is changed non-mechanically, e.g. by voltage or temperature, are classified in group H01C 7/00.

WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

H01F MAGNETS; INDUCTANCES; TRANSFORMERS; SELECTION OF MATERIALS FOR THEIR MAGNETIC PROPERTIES (ceramics based on ferrites C04B 35/26; alloys C22C; {construction of loading coils H01B}; thermomagnetic devices H01L 37/00; loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers H04R)

NOTE
In this subclass, inductances and transformers are regarded as being "for power supply" if they are intended for this purpose even in systems operating at frequencies above 60 cycles/sec.

WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

H01G CAPACITORS; CAPACITORS, RECTIFIERS, DETECTORS, SWITCHING DEVICES OR LIGHT-SENSITIVE DEVICES, OF THE ELECTROLYTIC TYPE (selection of specified materials as dielectric H01B 3/00; {ceramics C04B})

WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

H01H ELECTRIC SWITCHES; RELAYS; SELECTORS; EMERGENCY PROTECTIVE DEVICES (contact cables H01B 7/10; overvoltage protection resistors, resistive arresters H01C 7/12, H01C 8/04; electrolytic self-interrupters H01G 9/18; switching devices of the waveguide type H01P; devices for interrupted current collection H01R 39/00; overvoltage arresters using spark gaps H01T 4/00; emergency protective circuit arrangements H02H; switching by electronic means without contact-making H03K 17/00)

NOTES
1. Attention is drawn to the Notes following the titles of class B81 an subclass B81B relating to "microstructural devices” and "microstructural systems”
2. This subclass covers (in groups H01H 69/00 - H01H 87/00) devices for the protection of electric lines or electric machines or apparatus in the event of undesired change from normal electric working conditions, the electrical condition serving directly as the input to the device.
3. This subclass does not cover bases, casings, or covers accommodating two or more switching devices or for accommodating a switching device as well as another electric component, e.g. bus-bar, line connector. Those bases, casings or covers are covered by group H02B 1/26.
4. In this subclass, the following terms or expressions are used with the meanings indicated:
   • “relay” means a switching device having contacts which are operated from electric inputs which supply, directly or indirectly, all the mechanical energy necessary to cause both the closure and the opening of the contacts;
   • “driving mechanism” refers to the means by which an operating force applied to the switch is transmitted to the moving contact or contacts;
   • “operating” is used in a broader sense than “actuating” which is reserved for those parts not touched by hand to effect switching;
   • “acting” or “action” means a self-induced movement of parts at one stage of the switching.
   These connotations apply to all parts of the verbs “to operate”, “to actuate” and “to act” and to words derived therefrom, e.g. to “actuation”.
5. In this subclass, details are classified as follows:
H01H (continued)

- details of an unspecified type of switching device, or disclosed as applicable to two or more kinds of switching devices designated by the terms or expressions "switches", "relays", "selector switches", and "emergency protective devices", are classified in groups H01H 1/00 - H01H 9/00;
- details of an unspecified type of switch, or disclosed as applicable to two or more types of switches as defined by groups H01H 13/00 - H01H 43/00 and sub-groups H01H 35/02, H01H 35/06, H01H 35/14, H01H 35/18, H01H 35/24 and H01H 35/42, all hereinafter called basic types, are classified in groups H01H 1/00 - H01H 9/00;
- details of an unspecified type of relay, or disclosed as applicable to two or more types of relays as defined by groups H01H 51/00 - H01H 61/00, hereinafter called basic types are classified in H01H 45/00;
- details of an unspecified protective device, or applicable to two or more types of protective devices as defined by groups H01H 73/00 - H01H 83/00, hereinafter called basic types, are classified in H01H 71/00.

However, details only described with reference to, or clearly only applicable to, switching devices of a single basic type, are classified in the group appropriate to switching devices of that basic type, e.g. H01H 19/02, H01H 75/04;

- mechanical structural details of control members of switches or of keyboards such as keys, push-buttons, levers or other mechanisms for transferring the force to the activated elements are classified in this subclass, even when they are used for controlling electronic switches.

However, mechanical details directly producing electronic effects are classified in group H03K 17/94.

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

<table>
<thead>
<tr>
<th>IPC Group</th>
<th>Covered by</th>
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<tbody>
<tr>
<td>H01H 13/708 - H01H 13/718</td>
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<tr>
<td>H01H 33/99</td>
<td>H01H 33/98</td>
</tr>
</tbody>
</table>

2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

H01J ELECTRIC DISCHARGE TUBES OR DISCHARGE LAMPS (spark-gaps H01T; arc lamps with consumable electrodes H05B; particle accelerators H05H)

NOTES

1. This subclass covers only devices for producing, influencing, or using a flow of electrons or ions, e.g. for controlling, indicating, or switching of electric current, counting electric pulses, producing light or other electromagnetic oscillations, such as X-rays, or for separating or analysing radiation or particles, and having a closed or substantially closed casing containing a chosen gas, vapour, or vacuum, upon the pressure and nature of which the characteristics of the device depend. Light sources using a combination (other than covered by group H01J 61/96 of this subclass) of discharge and other kinds of light generation are dealt with in H05B 35/00.

2. In this subclass, groups H01J 1/00 - H01J 7/00 relate only to:
   i. details of an unspecified kind of discharge tube or lamp, or
   ii. details mentioned in a specification as applicable to two or more kinds of tubes or lamps as defined by groups H01J 11/00, H01J 13/00, H01J 15/00, H01J 17/00, H01J 21/00, H01J 25/00, H01J 27/00, H01J 31/00, H01J 33/00, H01J 35/00, H01J 37/00, H01J 40/00, H01J 41/00, H01J 47/00, H01J 49/00, H01J 61/00, H01J 63/00 or H01J 65/00, hereinafter called basic kinds. A detail only described with reference to, or clearly only applicable to, tubes or lamps of a single basic kind is classified in the detail group appropriate to tubes or lamps of that basic kind, e.g. H01J 17/04.

3. In this subclass, the following term is used with the meaning indicated:
   • "lamp" includes tubes emitting ultra-violet or infra-red light.

4. Attention is drawn to the definition of the expression "spark gaps" given in the Note following the title of subclass H01T.

5. Apparatus or processes specially adapted for the manufacture of electric discharge tubes, discharge lamps, or parts thereof are classified in group H01J 9/00.

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.
H01K ELECTRIC INCANDESCENT LAMPS (details, apparatus or processes for manufacture applicable to both discharge devices and incandescent lamps H01J; light sources using a combination of incandescent and other types of light generation H01J 61/96, H05B 35/00)

NOTE
In this subclass, the following term is used with the meaning indicated:
• “assembly” of a device is the building up of the device from its component constructional units and includes the provision of fillings in containers.

H01L SEMICONDUCTOR DEVICES; ELECTRIC SOLID STATE DEVICES NOT OTHERWISE PROVIDED FOR (use of semiconductor devices for measuring G01; resistors in general H01C; magnets, inductors, transformers H01F; capacitors in general H01G; electrolytic devices H01G 9/00; batteries, accumulators H01M; waveguides, resonators, or lines of the waveguide type H01P; line connectors, current collectors H01R; stimulated-emission devices H01S; electromechanical resonators H03H; loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers H04R; electric light sources in general H05B; printed circuits, hybrid circuits, casings or constructional details of electrical apparatus, manufacture of assemblages of electrical components H05K; use of semiconductor devices in circuits having a particular application, see the subclass for the application)

NOTES
1. This subclass covers:
• electric solid state devices which are not covered by any other subclass and details thereof, and includes: semiconductor devices adapted for rectifying, amplifying, oscillating or switching; semiconductor devices sensitive to radiation; electric solid state devices using thermoelectric, superconductive, piezo-electric, electrostrictive, magnetostRICTive, galvano-magnetic or bulk negative resistance effects and integrated circuit devices;
• photoresitors, magnetic field dependent resistors, field effect transistors, capacitors with potential-jump barrier, resistors with potential-jump barrier or surface barrier, incoherent light emitting diodes and thin-film or thick-film circuits;
• processes and apparatus adapted for the manufacture or treatment of such devices, except where such processes relate to single-step processes for which provision exists elsewhere.

2. In this subclass, the following terms or expressions are used with the meaning indicated:
• “wafer” means a slice of semiconductor or crystalline substrate material, which can be modified by impurity diffusion (doping), ion implantation or epitaxy, and whose active surface can be processed into arrays of discrete components or integrated circuits;
• “solid state body” means the body of material within which, or at the surface of which, the physical effects characteristic of the device occur. In thermoelectric devices, it includes all materials in the current path. Regions in or on the body of the device (other than the solid state body itself), which exert an influence on the solid state body electrically, are considered to be “electrodes” whether or not an external electrical connection is made thereto. An electrode may include several portions and the term includes metallic regions which exert influence on the solid state body through an insulating region (e.g. capacitive coupling) and inductive coupling arrangements to the body. The dielectric region in a capacitive arrangement is regarded as part of the electrode. In arrangements including several portions, only those portions which exert an influence on the solid state body by virtue of their shape, size, or disposition or the material of which they are formed are considered to be part of the electrode. The other portions are considered to be “arrangements for conducting electric current to or from the solid state body” or “interconnections between solid state components formed in or on a common substrate”, i.e., leads;
• “device” means an electric circuit element; where an electric circuit element is one of a plurality of elements formed in or on a common substrate it is referred to as a “component”;
• “complete device” is a device in its fully assembled state which may or may not require further treatment, e.g. electroforming, before it is ready for use but which does not require the addition of further structural units;
• “parts” includes all structural units which are included in a complete device;
• “container” is an enclosure forming part of the complete device and is essentially a solid construction in which the body of the device is placed, or which is formed around the body without forming an intimate layer thereon. An enclosure which consists of one or more layers formed on the body and in intimate contact therewith is referred to as an “encapsulation”;
• “integrated circuit” is a device where all components, e.g. diodes, resistors, are built up on a common substrate and form the device including interconnections between the components;
• “assembly” of a device is the building up of the device from its component constructional units and includes the provision of fillings in containers.

3. In this subclass, both the process or apparatus for the manufacture or treatment of a device and the device itself are classified, whenever both of these are described sufficiently to be of interest.
4. Attention is drawn to Note (3) after the title of section C, which Note indicates to which version of the periodic table of chemical elements the IPC refers. In this subclass, the Periodic System used is the 8 group system indicated by Roman numerals in the Periodic Table thereunder.

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

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</tr>
</tbody>
</table>

2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

H01M PROCESSES OR MEANS, e.g. BATTERIES, FOR THE DIRECT CONVERSION OF CHEMICAL ENERGY INTO ELECTRICAL ENERGY

NOTE

This subclass covers galvanic primary or secondary cells or batteries, fuel cells or stacks.

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

H01P WAVEGUIDES; RESONATORS, LINES, OR OTHER DEVICES OF THE WAVEGUIDE TYPE (operating at optical frequencies G02B; aerials H01Q; {modulating electromagnetic waves in transmission line, waveguide, cavity resonator or radiation field of aerial H03C 7/02}; networks comprising lumped impedance elements H03H)

NOTE

In this subclass, the following expression is used with the meaning indicated:

- "waveguide type" as applied to transmission lines includes only high-frequency coaxial cables or Lecher lines, and as applied to resonators, delay lines, or other devices includes all devices having distributed inductance and capacitance.

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.
H01Q  ANTENNAS, i.e. RADIO AERIALS (radiators or antennas for microwave heating H05B 6/72)

NOTES
1. This subclass covers:
   • in addition to the primary active radiating elements,
     i. secondary devices for absorbing or for modifying the direction or polarisation of waves radiated from antennas, and
     ii. combinations with auxiliary devices such as earthing switches, lead-in devices, and lightning protectors;
   • both transmitting and receiving antennas.
2. This subclass does not cover devices of the waveguide type, such as resonators or lines, not designed as radiating elements, which are covered by subclass H01P.
3. In this subclass, the following expression is used with the meaning indicated:
   • “active radiating element” covers corresponding parts of a receiving antenna.

WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

H01R  ELECTRICALLY-CONDUCTIVE CONNECTIONS; STRUCTURAL ASSOCIATIONS OF A PLURALITY OF MUTUALLY-INSULATED ELECTRICAL CONNECTING ELEMENTS; COUPLING DEVICES; CURRENT COLLECTORS

NOTES
1. This subclass covers:
   • all kinds of contact-making disconnectible and non-disconnectible electric line connectors, coupling devices, lamp or similar holders or current collectors for all kinds of electric lines, cables or apparatus;
   • non-printed means for electric connections to or between printed circuits.
2. This subclass does not cover mounting of connections in or specified apparatus. Such mounting is covered by the relevant subclass for such apparatus, e.g. mounting in junction or distribution boxes is covered by subclass H02B or H02G. high-temperature connections for heating elements is covered by group H05B 3/08. Structural association of one part of a two-part coupling device with specific electric apparatus is classified with the apparatus e.g. association of cap with incandescent lamp is covered by subclass H01K.
3. In this subclass, the following expressions are used with the meaning indicated:
   • “pin” is a rigid or flexible conductor for engagement with an appropriately shaped socket to establish contact therewith;
   • “socket” is a rigid or flexible conductor for receiving an appropriate pin to establish electrical contact therewith;
   • “coupling devices” are devices having two or more parts specially adapted so as to be capable of ready and repeated physical engagement or disengagement, without the use of a tool, for the purpose of establishing or breaking an electrical path. Examples of such devices having more than two parts are:
     a. adapters for linking two coupling parts;
     b. rails or bus-bars provided with a plurality of discrete connecting locations for counterparts.
4. General details are classified in groups H01R 4/00, H01R 9/00, H01R 11/00.
5. [In this subclass, a contact in a coupling device is regarded as an additional earth contact only if this contact is clearly designed for that purpose.]

WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

H01S  DEVICES USING THE PROCESS OF LIGHT AMPLIFICATION BY STIMULATED EMISSION OF RADIATION [LASER] TO AMPLIFY OR GENERATE LIGHT; DEVICES USING STIMULATED EMISSION OF ELECTROMAGNETIC RADIATION IN WAVE RANGES OTHER THAN OPTICAL

NOTE
This subclass covers:
   a. devices using the stimulated emission of radiation by excited atoms or molecules to amplify or generate coherent monochromatic electromagnetic radiation;
   b. functions as modulating, demodulating, controlling or stabilising such coherent monochromatic electromagnetic radiation.

WARNINGS
1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

**H01T**

**SPARK GAPS; OVERVOLTAGE ARRESTERS USING SPARK GAPS; SPARKING PLUGS; CORONA DEVICES; GENERATING IONS TO BE INTRODUCED INTO NON-ENCLOSED GASES** *(overvoltage protection circuits H02H)*

**NOTE**

In this subclass, the term "spark gaps" is used with the following meaning:

- enclosed or non-enclosed discharge device having cold electrodes and used exclusively to discharge a quantity of electrical energy in a small time duration.

**H02**

**GENERATION; CONVERSION OR DISTRIBUTION OF ELECTRIC POWER**

**H02B**

**BOARDS, SUBSTATIONS, OR SWITCHING ARRANGEMENTS FOR THE SUPPLY OR DISTRIBUTION OF ELECTRIC POWER** *(basic electric elements, their assembly, including the mounting in enclosures or on bases, or the mounting of covers thereon, see the subclasses for such elements, e.g. transformers H01F, switches, fuses H01H, line connectors H01R; installation of lines, cables, or other conductors for supply or distribution H02G)*

**NOTE**

This subclass covers boards, switchyards, switchgear or their installation, or the association of switching devices with each other or with other devices, e.g. transformers, fuses, meters or distribution boards; such associations constitute substations or distribution points.

**WARNING**

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

**H02G**

**INSTALLATION OF ELECTRIC CABLES OR LINES, OR OF COMBINED OPTICAL AND ELECTRIC CABLES OR LINES** *(distribution points incorporating switches H02B; guiding telephone cords H04M 1/15; cable ducts or mountings for telephone or telegraph exchange installations H04Q 1/06)*

**NOTES**

1. This subclass covers installation of communication cables or lines, including those comprising a combination of optical and electrical conductors, or of lightning conductors as well as installation of power cables or lines.
2. This subclass does not cover installation of purely optical cables, which is covered by groups {G02B 6/4401}, G02B 6/46.
3. In this subclass, the following expression is used with the meaning indicated:
   - “electric cable” includes cables comprising optical conductors, e.g. fibres, in combination with electrical conductors.
4. In this subclass it is desirable to add indexing codes of group H02G 2200/00 whenever appropriate

**WARNING**

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

**H02H**

**EMERGENCY PROTECTIVE CIRCUIT ARRANGEMENTS** *(indicating or signalling undesired working conditions G01R, e.g. G01R 31/00, G08B; locating faults along lines G01R 31/08; emergency protective devices H01H)*

**NOTE**

This subclass covers only circuit arrangements for the automatic protection of electric lines or electric machines or apparatus in the event of an undesired change from normal working conditions

**WARNING**

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.
CIRCUIT ARRANGEMENTS OR SYSTEMS FOR SUPPLYING OR DISTRIBUTING ELECTRIC POWER; SYSTEMS FOR STORING ELECTRIC ENERGY

NOTES
1. This subclass covers:
   • ac or dc mains or distribution networks;
   • circuit arrangements for battery supplies, including charging or control thereof, or coordinated supply from two or more sources of any kind;
   • circuit arrangements or systems for wireless supply or distribution of electric power.
2. This subclass does not cover:
   • control of a single motor, generator or dynamo-electric converter, of the types covered by subclass H01F or H02K, which is covered by subclass H02P;
   • control of a single motor or generator, of the types covered by subclass H02N, which is covered by that subclass.

WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

DYNAMO-ELECTRIC MACHINES (dynamo-electric relays H01H 53/00; conversion of DC or AC input power into surge output power {H03K 3/53})

NOTES
1. This subclass covers the structural adaptation of dynamo-electric machines for the purpose of their control.
2. This subclass does not cover starting, regulating, electronically commutating, braking, or otherwise controlling motors, generators or dynamo-electric converters, in general, which are covered by subclass H02P.
3. Attention is drawn to the Notes following the titles of class B81 and subclass B81B relating to "microstructural devices" and "microstructural systems".
4. {In this subclass, it is desirable to add the indexing codes of H02K 2201/00-H02K 2213/12.}

WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

APPARATUS FOR CONVERSION BETWEEN AC AND AC, BETWEEN AC AND DC, OR BETWEEN DC AND DC, AND FOR USE WITH MAINS OR SIMILAR POWER SUPPLY SYSTEMS; CONVERSION OF DC OR AC INPUT POWER INTO SURGE OUTPUT POWER; CONTROL OR REGULATION THEREOF (systems for regulating electric or magnetic variables in general, e.g. using transformers, reactors or choke coils, combination of such systems with static converters G05F; {digital function or clock generators} for digital computers G06F 1/00, {G06F 1/025, G06F 1/04}; transformers H01F; connection or control of one converter with regard to conjoint operation with a similar or other source of supply H02J; dynamo-electric converters H02K 47/00; controlling transformers, reactors or choke coils, control or regulation of electric motors, generators or dynamo-electric converters H02P; pulse generators H03K; {static converters specially adapted for igniting or operating discharge lamps H05B 41/28})

NOTES
1. This subclass covers only circuits or apparatus for the conversion of electric power, or arrangements for control or regulation of such circuits or apparatus. The electrotechnical elements employed are dealt within the appropriate subclasses, e.g. inductors, transformers H01F, capacitors, electrolytic rectifiers H01G, mercury rectifying or other discharge tubes H01J, semiconductor devices H01L, impedance networks or resonant circuit not primarily concerned with the transfer of electric power H03H.
2. In this subclass, the following term is used with the meaning indicated:
   • "conversion", in respect of an electric variable, e.g. voltage or current, means the change of one or more of the parameters of the variable, e.g. amplitude, frequency, phase, polarity.

WARNINGS
1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
   H02M 9/00 covered by H03K 3/53
H

H02M  (continued)  covered by

H02M 9/02       H03K 3/53
H02M 9/04       H03K 3/53
H02M 9/06       H03K 3/53

2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

H02N  ELECTRIC MACHINES NOT OTHERWISE PROVIDED FOR

NOTES

1. This subclass covers:
   • electrostatic generators, motors, clutches, or holding devices;
   • other non-dynamo-electric generators or motors;
   • holding or levitation devices using magnetic attraction or repulsion;
   • arrangements for starting, regulating, braking, or otherwise controlling such machines unless in conjoint operation with a second machine.

2. Specific provision for generators, motors, or other means for converting between electric and other forms of energy also exists in other subclasses, e.g. in subclasses H01L, H01M, H02K, H04R.

WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

H02P  CONTROL OR REGULATION OF ELECTRIC MOTORS, ELECTRIC GENERATORS OR DYNAMO-ELECTRIC CONVERTERS; CONTROLLING TRANSFORMERS, REACTORS OR CHOKE COILS

NOTES

1. This subclass covers arrangements for starting, regulating, electronically commutating, braking, or otherwise controlling motors, generators, dynamo-electric converters, clutches, brakes, gears, transformers, reactors or choke coils, of the types classified in the relevant subclasses, e.g. H01F, H02K.

2. This subclass does not cover similar arrangements for the apparatus of the types classified in subclass H02N, which arrangements are covered by that subclass.

3. In this subclass, the following terms or expressions are used with the meanings indicated:
   • “control” means influencing a variable in any way, e.g. changing its direction or its value (including changing it to or from zero), maintaining it constant or limiting its range of variation;
   • “regulation” means maintaining a variable at a desired value, or within a desired range of values, by comparison of the actual value with the desired value.

4. In this subclass, it is desirable to add the indexing codes of groups H02P 2101/00 and H02P 2103/00

WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

H02S  GENERATION OF ELECTRIC POWER BY CONVERSION OF INFRA-RED RADIATION, VISIBLE LIGHT OR ULTRAVIOLET LIGHT, e.g. USING PHOTOVOLTAIC [PV] MODULES (obtaining electrical energy from radioactive sources G21H 1/12; light sensitive inorganic semiconductor devices H01L 31/00; thermoelectric devices H01L 35/00; pyroelectric devices H01L 37/00; light sensitive organic semiconductor devices H01L 51/42)

H03  BASIC ELECTRONIC CIRCUITRY
H03B  GENERATION OF OSCILLATIONS, DIRECTLY OR BY FREQUENCY-CHANGING, BY CIRCUITS EMPLOYING ACTIVE ELEMENTS WHICH OPERATE IN A NON-SWITCHING MANNER; GENERATION OF NOISE BY SUCH CIRCUITS (measuring, testing G01R; generators adapted for electrophonic musical instruments G10H; Speech synthesis G10L; masers, lasers H01S; dynamo-electric machines H02K; power inverter circuits H02M; by using pulse techniques H03K; automatic control of generators H03L; starting, synchronisation or stabilisation of generators where the type of generator is irrelevant or unspecified H03L; generation of oscillations in plasma H05H)

WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

H03C  MODULATION (measuring, testing G01R; masers, lasers H01S; modulators specially adapted for use in the amplifiers H03F 3/38; modulating pulses H03K 7/00; so-called modulators capable only of a switching between predetermined states of amplitude, frequency or phase H03K 17/00, H04L; coding, decoding or code conversion, in general H03M; synchronous modulators specially adapted for colour television H04N 9/65)

NOTES
1. This subclass covers only modulation, keying, or interruption of sinusoidal oscillations or electromagnetic waves, the modulating signal having any desired waveform.
2. In this subclass, circuits usable both as modulator and demodulator are classified in the group dealing with the type of modulator involved.

WARNING
The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
H03C 1/38 - H03C 1/44 covered by H03C 1/36

H03D  DEMODULATION OR TRANSFERENCE OF MODULATION FROM ONE CARRIER TO ANOTHER (masers, lasers H01S; circuits capable of acting both as modulator and demodulator H03C; details applicable to both modulators and frequency-changers H03C; demodulating pulses H03K 9/00; transforming types of pulse modulation H03K 11/00; coding, decoding or code conversion, in general H03M; repeater stations H04B 7/14; demodulators adapted for ac systems of digital information transmission H04L 27/00; synchronous demodulators adapted for colour television H04N 9/66)

NOTE
This subclass covers only:
• demodulation or transference of signals modulated on a sinusoidal carrier or on electromagnetic waves;
• comparing phase or frequency of two mutually-independent oscillations.

H03F  AMPLIFIERS (measuring, testing G01R; optical parametric amplifiers G02F; circuit arrangement with secondary emission tubes H01J 43/30; masers, lasers H01S; control of amplification H03G; coupling arrangements independent of the nature of the amplifiers, voltage dividers H03H; amplifiers capable only of dealing with pulses H03K; repeater circuits in transmission lines H04B 3/36, H04B 3/58; application of speech amplifiers in telephonic communication H04M 1/60, H04M 3/40)

NOTE
This subclass covers:
• linear amplification, there being linear relationship between the amplitudes of input and output, and the output having substantially the same waveform as the input;
• dielectric amplifiers, magnetic amplifiers, and parametric amplifiers when used as oscillators or frequency-changers;
• constructions of active elements of dielectric amplifiers and parametric amplifiers if no provision exists elsewhere.
WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

   - H03F 1/44 covered by H03F 1/42
   - H03F 1/46 covered by H03F 1/42
   - H03F 3/18 covered by H03F 3/30
   - H03F 3/32 covered by H03F 3/30
   - H03F 7/06 covered by H03F 7/00

2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

H03G CONTROL OF AMPLIFICATION (impedance networks, e.g. attenuators, H03H; control of transmission in lines H04B 3/04)

NOTES

1. This subclass covers:
   - control of gain of amplifiers or frequency-changers,
   - control of frequency range of amplifiers,
   - limiting amplitude or rate of change of amplitude

2. Attention is drawn to the Note following the title of subclass H03F.

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

H03H IMPEDANCE NETWORKS, e.g. RESONANT CIRCUITS; RESONATORS (measuring, testing G01R; arrangements for producing a reverberation or echo sound G10K 15/08; impedance networks or resonators consisting of distributed impedances, e.g. of the waveguide type, H01P; control of amplification, e.g. bandwidth control of amplifiers, H03G; tuning resonant circuits, e.g. tuning coupled resonant circuits, H03J; networks for modifying the frequency characteristics of communication systems H04B)

NOTES

1. This subclass covers:
   - networks comprising lumped impedance elements;
   - networks comprising distributed impedance elements together with lumped impedance elements;
   - networks comprising electromechanical or electro-acoustic elements;
   - networks simulating reactances and comprising discharge tubes or semiconductor devices;
   - constructions of electromechanical resonators.

2. In this subclass, the following expression is used with the meaning indicated:
   "passive elements" means resistors, capacitors, inductors, mutual inductors or diodes.

3. Attention is drawn to the Notes following the titles of class B81 and subclass B81B relating to "microstructural devices" and "microstructural systems".

4. In this subclass, main groups with a higher number take precedence.

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

H03J TUNING RESONANT CIRCUITS; SELECTING RESONANT CIRCUITS (indicating arrangements for measuring G01D; measuring, testing G01R; remote-control in general G05, G08; automatic control or stabilisation of generators H03L)

NOTE

This subclass covers also the control of tuning, including the combined control of tuning and other functions, e.g. combinations of tuning control and volume control, combinations of control of local oscillator and of supplementary resonant circuits.

WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.
**H03K** **PULSE TECHNIQUE** (measuring pulse characteristics G01R; modulating sinusoidal oscillations with pulses H03C; transmission of digital information H04L; discriminator circuits detecting phase difference between two signals by counting or integrating cycles of oscillation H03D 3/04; automatic control, starting, synchronisation or stabilisation of generators of electronic oscillations or pulses where the type of generator is irrelevant or unspecified H03L; coding, decoding or code conversion, in general H03M)

**NOTES**

1. This subclass covers:
   - methods, circuits, devices, or apparatus using active elements operating in a discontinuous or switching manner for generating, counting, amplifying, shaping, modulating, demodulating, or otherwise manipulating signals;
   - electronic switching not involving contact-making and braking;
   - logic circuits handling electric pulses.
2. In this subclass, the following expression is used with the meaning indicated:
   - "active element" exercises control over the conversion of input energy into an oscillation or a discontinuous flow of energy.
3. In this subclass, where the claims of a patent document are not limited to a specific circuit element, the document is classified at least according to the elements used in the described embodiment.

**WARNINGS**

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
   ```
   H03K 17/695 covered by H03K 17/687
   ```
2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

**H03L** **AUTOMATIC CONTROL, STARTING, SYNCHRONISATION, OR STABILISATION OF GENERATORS OF ELECTRONIC OSCILLATIONS OR PULSES** (of dynamo-electric generators H02P)

**NOTES**

1. This subclass covers:
   - automatic control circuits for generators of electronic oscillations or pulses;
   - starting, synchronisation, or stabilisation circuits for generators where the type of generator is irrelevant or unspecified.
2. This subclass does not cover stabilisation or starting circuits specially adapted to only one specific type of generator, which are covered by subclasses H03B, H03K.
3. In this subclass, the following expression is used with the meaning indicated:
   - "automatic control" covers only closed loop systems.

**WARNING**

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

**H03M** **CODING; DECODING; CODE CONVERSION IN GENERAL** (using fluidic means F15G 4/00; optical analogue/digital converters G02F 7/00; coding, decoding or code conversion, specially adapted for particular applications, see the relevant subclasses, e.g. G01D, G01R, G06F, G06T, G09G, G10L, G11B, G11C, H04B, H04L, H04M, H04N; ciphering or deciphering for cryptography or other purposes involving the need for secrecy G09C)

**WARNINGS**

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
   ```
   H03M 7/32 covered by H03M 7/3002, H03M 7/3004, H03M 7/3006, H03M 7/3008, H03M 7/3011, H03M 7/3013, H03M 7/3015, H03M 7/3017, H03M 7/302, H03M 7/3024, H03M 7/3028, H03M 7/3031, H03M 7/3033, H03M 7/3035, H03M 7/3037, H03M 7/3038, H03M 7/3042, H03M 7/3048
   H03M 7/34 covered by H03M 7/3051
   H03M 7/36 covered by H03M 7/3022, H03M 7/3026, H03M 7/3044
   H03M 7/38 covered by H03M 7/3046
   ```
2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

H04 ELECTRIC COMMUNICATION TECHNIQUE

NOTE
This class covers electrical communication systems with propagation paths employing light (optical communication), infrared, ultrasonic, sonic, or infrasonic waves.

H04B TRANSMISSION (transmission systems for measured values, control or similar signals G08C; coding, decoding, code conversion, in general H03M; broadcast communication H04H; multiplex systems H04J; secret communication H04K; transmission of digital information H04L)

NOTE
This subclass covers the transmission of information-carrying signals, the transmission being independent of the nature of the information, and includes monitoring and testing arrangements and the suppression and limitation of noise and interference.

WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

H04H BROADCAST COMMUNICATION (multiplex communication H04J; pictorial communication aspects of broadcast systems H04N)

NOTES
1. In this subclass, the following terms or expressions are used with the meaning indicated:
   • “broadcast” is simultaneous distribution of identical signals to plural receiving stations. The term “broadcast” does not include distribution to receiving stations which is controlled by requests or responses from the receiving stations;
   • “broadcast information” covers all kinds of information distributed by broadcast systems;
   • “broadcast-related information” is information required by services provided via broadcast systems, other than broadcast information;
   • “broadcast time” is a time when particular broadcast information exists and is available;
   • “broadcast channel” is a channel via which broadcast information is distributed, e.g. carrier waves, time slots, cables or wireless broadcast service areas;
   • “broadcast space” is either a set of broadcast channels in which particular broadcast information exists and is available or a geographical area determined by the set of broadcast channels;
   • “broadcast space-time” is space-time determined by broadcast space and broadcast time in which particular broadcast information exists and is available;
   • “broadcast system” is a system which consists of transmitter, transponder and receiver for broadcast;
   • “broadcast-related system” is a system which is directly affected by generation, broadcast, reception or use of broadcast information;
   • “broadcast service” is a service directly provided by a broadcast system, i.e. distribution service of broadcast information;
   • “broadcast-related service” is a service provided by broadcast-related systems;
   • “A with a direct linkage to B” means that A directly affects B or that A is directly affected by B.
2. In this subclass, multi-aspect classification is applied, so that subject matter characterised by aspects covered by more than one of its groups, which is considered to represent information of interest for search, may also be classified in each of those groups.

H04J MULTIPLEX COMMUNICATION (transmission in general H04B; peculiar to transmission of digital information H04L 5/00; systems for the simultaneous or sequential transmission of more than one television signal H04N 7/08; in exchanges H04Q 11/00; stereophonic systems H04S)

NOTE
This subclass covers
   • circuits or apparatus for combining or dividing signals for the purpose of transmitting them simultaneously or sequentially over the same transmission path;
   • monitoring arrangements therefor.
WARNING

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

H04K  SECRET COMMUNICATION; JAMMING OF COMMUNICATION

NOTE

In this subclass, the following expression is used with the meaning indicated:

• "secret communication" includes secret line and radiation transmission systems, i.e. those in which apparatus at the transmitting station modifies the signal in such a way that the information cannot be intelligibly received without corresponding modifying apparatus at the receiving station.

H04L  TRANSMISSION OF DIGITAL INFORMATION, e.g. TELEGRAPHIC COMMUNICATION (typewriters B41J; order telegraphs, fire or police telegraphs G08B; visual telegraphy G08B, G08C; teleautographic systems G08C; ciphering or deciphering apparatus per se G09C; coding, decoding or code conversion, in general H03M; arrangements common to telegraphic and telephonic communication H04M; selecting H04Q)

NOTE

This subclass covers transmission of signals having been supplied in digital form and includes data transmission, telegraphic communication and methods or arrangements for monitoring.

WARNINGS

1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

- H04L 9/18 covered by H04L 9/065
- H04L 9/20 covered by H04L 9/0656
- H04L 9/22 covered by H04L 9/0663
- H04L 9/24 covered by H04L 9/0663
- H04L 9/26 covered by H04L 9/0668
- H04L 12/20 covered by H04L 29/00
- H04L 12/24 covered by H04L 41/00
- H04L 12/26 covered by H04L 43/00
- H04L 12/58 covered by H04L 51/00
- H04L 12/60-H04L 12/62 covered by H04L 12/54
- H04L 12/70 covered by H04L 47/00
- H04L 12/701 covered by H04L 45/00
- H04L 12/703 covered by H04L 45/28
- H04L 12/705 covered by H04L 45/18
- H04L 12/707 covered by H04L 45/22, H04L 45/24
- H04L 12/709 covered by H04L 45/245
- H04L 12/711 covered by H04L 45/22, H04L 45/24
- H04L 12/713 covered by H04L 45/586
- H04L 12/715 covered by H04L 45/004, H04L 45/46, H04L 45/64
- H04L 12/717 covered by H04L 45/42
- H04L 12/723 covered by H04L 45/50-H04L 45/507
- H04L 12/725 covered by H04L 45/30-H04L 45/308
- H04L 12/727 covered by H04L 45/121
- H04L 12/729 covered by H04L 45/125
- H04L 12/733 covered by H04L 45/122, H04L 45/126, H04L 45/20
- H04L 12/735 covered by H04L 45/128-H04L 45/1287
- H04L 12/741 covered by H04L 45/54, H04L 45/74, H04L 45/745
- H04L 12/743 covered by H04L 45/7453, H04L 45/7457
- H04L 12/745 covered by H04L 45/748
- H04L 12/747 covered by H04L 45/742
| H04L 12/925 | covered by H04L 47/722 |
| H04L 12/927 | covered by H04L 47/80, H04L 47/808, H04L 49/20, H04L 49/208, H04L 49/35, H04L 49/50, H04L 49/60, H04L 49/70 |
| H04L 12/931 | covered by H04L 47/80, H04L 47/808, H04L 49/55, H04L 49/557, H04L 49/558, H04L 49/560, H04L 49/566 |
| H04L 12/933 | covered by H04L 49/10, H04L 49/1592 |
| H04L 12/935 | covered by H04L 49/30, H04L 49/309 |
| H04L 12/937 | covered by H04L 49/253, H04L 49/255 |
| H04L 12/939 | covered by H04L 49/55, H04L 49/557, H04L 49/558 |
| H04L 12/943 | covered by H04L 49/55, H04L 49/557, H04L 49/558 |
| H04L 12/945 | covered by H04L 49/25, H04L 49/251, H04L 49/252, H04L 49/256, H04L 49/257, H04L 49/258 |
| H04L 12/947 | covered by H04L 2012/5603, H04L 2012/5687 |
| H04L 12/951 | covered by H04L 2012/5603, H04L 2012/5687 |
| H04L 12/953 | covered by H04L 2012/5603, H04L 2012/5687 |
| H04L 12/955 | covered by H04L 2012/5603, H04L 2012/5687 |
| H04L 25/04 | covered by H04L 25/03 |
| H04L 25/17 | covered by H04L 25/02, H04L 25/0298 |
| H04L 25/18 | covered by H04L 25/027 |
| H04L 25/28 | covered by H04L 25/0268 |
| H04L 25/30 | covered by H04L 25/061 |
| H04L 25/32 | covered by H04L 25/49 |
| H04L 25/34 | covered by H04L 25/4917 |
| H04L 25/48 | covered by H04L 25/49 |
| H04L 25/52 | covered by H04L 25/20 |
| H04L 25/54 | covered by H04L 25/20 |
| H04L 25/56 | covered by H04L 25/202 |
| H04L 25/58 | covered by H04L 25/20 |
| H04L 25/60 | covered by H04L 25/207 |
| H04L 25/62 | covered by H04L 25/205 |
| H04L 25/64 | covered by H04L 25/245 |
| H04L 25/66 | covered by H04L 25/247 |

2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

H04M TELEPHONIC COMMUNICATION (circuits for controlling other apparatus via a telephone cable and not involving telephone switching apparatus G08)

NOTES
1. This subclass covers:
   - substation equipment;
   - telephonic communication systems combined with other electrical systems;
   - testing arrangements peculiar to telephonic communication systems.

2. In this subclass, the following terms or expressions are used with the meanings indicated:
   - "subscriber" is a general term for terminal equipment, e.g. fixed, wireless, mobile or cellular phones, or for a user of terminal equipment;
   - "substation" means a subscriber or monitoring equipment which may connect a single subscriber to a line without choice as to subscriber;
   - "satellite" is a type of exchange the operation of which depends upon control signals received from a supervisory exchange;
   - "switching centres' include exchanges and satellites.

WARNINGS
1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
   - H04M 7/02 covered by H04Q 3/00
   - H04M 7/04 covered by H04Q 3/00
   - H04M 7/10 covered by H04Q 3/00
   - H04M 15/02 covered by H04M 15/888

2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

H04N PICTORIAL COMMUNICATION, e.g. TELEVISION

NOTES
1. This subclass covers:
H

H04N
(continued)

- transmission of pictures or their transient or permanent reproduction either locally or remotely [and the corresponding electronic image capture and reproduction process employing image representative electric signals], by methods involving both of [or at least one of] the following steps:
  a. the [electronic acquisition or] scanning of a picture {or scene}, i.e. resolving the whole picture-containing area into individual picture-elements and the derivation of picture-representative electric signals related thereto, simultaneously or in sequence {, e.g. by reading an electronic solid-state image sensor [SSIS] pickup device, e.g. CCD or CMOS image sensor, as electronic image sensor converting optical image information into said electrical signals};
  b. the reproduction of the whole picture-containing area {or scene} by the reproduction of individual picture-elements into which the picture is resolved by means of picture-representative electric signals derived therefrom, simultaneously or in sequence;
- in group H04N 1/00, systems for the transmission or the reproduction of arbitrarily composed pictures or patterns in which the local light variations composing a picture are not subject to variation with time, e.g. documents, maps, charts, photographs other than cinematograph films;
- circuits specially designed for dealing with pictorial communication signals, e.g. television signals, as distinct from merely signals of a particular frequency range.

2. This subclass does not cover:
- circuits or other parts of systems which form the subject of other subclasses, which are covered by the corresponding subclasses, e.g. H03C, H03F, H03J, H04B, H04H;
- systems in which legible alphanumeric or like character forms are analysed according to step (a) of Note (1) to derive an electric signal from which the character is recognised by comparison with stored information, which are covered by subclass G06K;
- systems for the direct photographic copying of an original picture in which an electric signal representative of the picture is derived according to the said step (a) and employed to modify the operation of the system, e.g. to control exposure, which are covered by class G03;
- systems for the reproduction according to step (b) of Note (1) of pictures comprising alphanumeric or like character forms but involving the production of the equivalent of a signal which would be derived according to the above-mentioned step (a), e.g. by cams, punched card or tape, coded control signal, or other means, which are covered by the subclass for the application, e.g. G01D, G06T, H04L;
- systems for the reproduction according to the above-mentioned step (b) of pictures comprising alphanumeric or like character forms and involving the generation according to the above-mentioned step (a) of picture-representative electric signals from a pre-arranged assembly of such characters, or records thereof, forming an integral part of the systems, which are covered by the subclass for the application, e.g. B41B, G06K, subject to those applications which are covered by this subclass;
- printing, duplication or marking processes, or materials or processes therefor, which are covered by the relevant subclasses, e.g. B41C, B41J, B41M, G03C, G03F, G03G;
- [apparatus or methods for taking photographs using light sensitive film for image capture, apparatus/methods for printing, for projecting or viewing images using film stock, photographic film or slides by optical means, e.g. mounting of optical elements, flashes, and their related controls, e.g. exposure, focus, (opto-)mechanical motion blur (anti-shake), cooling, beam shaping;]
- [aspects of apparatus or methods for taking photographs using an electronic image sensor [EIS] for image capture, insofar as they correspond to those of said apparatus/methods for taking photographs using light sensitive film, i.e. insofar as not peculiar to the presence of the EIS, e.g. mounting of optical elements or flashes not peculiar to the presence of the EIS, and their related controls insofar as they are not peculiar to the presence or use of the EIS, e.g. exposure, focus, (opto-)mechanical motion blur (anti-shake);]
- [aspects of apparatus or methods for projecting or viewing images using an electronic spatial light modulator [ESLM], insofar as they correspond to those of said apparatus/methods for projecting or viewing images using film stock, photographic film or slides, i.e. insofar as not peculiar to the presence of the ESLM, e.g. mounting of optical elements not peculiar to the presence of the ESLM, and their related controls not peculiar to the presence of the ESLM, e.g. cooling, beam shaping, optical keystoning correction;]
- [(opto-)mechanical image enhancement in printers or projectors, e.g. keystone correction;]
- [optical viewfinders;]}
- [remote control of cameras and projectors insofar not peculiar to the EIS or ESLM, e.g. not affecting their operation, or being based on a generated image signal;]
- [optical aspects of camera modules using electronic image sensors and related constructional details (optical elements or arrangements associated with solid state imager structures H01L 27/14625);]
- [constructional aspects of projectors, e.g. cooling, beam shaping, light integrating means not peculiar to the ESLM;]

3. In this subclass, the following expression is used with the meaning indicated:
- "television systems" means those systems for the (electronic generation,) transmission and reproduction of arbitrarily composed pictures in which the local light variations composing a picture may change with time, e.g. natural "live" scenes, [electronic] recordings of such scenes such as cinematograph films.

4. In this subclass, as in subclass G03B, the following terms are used with the meaning indicated:
- "camera": a device capturing image information represented by light patterns reflected or emitted from objects, and exposing a light sensitive film or a main electronic image sensor during a timed exposure, usually through a photographic lens, and producing an image on a light sensitive film or an electrical image information signal respectively;
- "projector": a device displaying image information by projection of light patterns, usually through an optical lens, wherein the light patterns are generated by illuminating an image, e.g. film or slide, or by converting an electronic image signal into an optical signal using an electronic spatial light modulator;
• "electronic image sensor [EIS]": optoelectronic transducer, converting optical image information into an electrical signal susceptible of being processed, stored, transmitted or displayed;
• "additional sensor": a sensor, other than the main electronic image sensor, used for controlling a camera;
• "electronic spatial light modulator [ESLM]": optoelectronic transducer converting electric signals representing image information into optical image information.

WARNINGS
1. The following IPC groups are not in the CPC scheme. Subject matter for these IPC groups is classified in the following CPC groups:

| H04N 5/761 | covered by | H04N 5/782 |
| H04N 5/7613 | covered by | H04N 5/782 |
| H04N 5/7617 | covered by | H04N 5/782 |
| H04N 5/922 | covered by | H04N 5/92 |
| H04N 5/924 | covered by | H04N 5/92 |
| H04N 9/815 | covered by | H04N 9/81 |

2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

H04Q SELECTING (switches, relays, selectors H01H; electronic switches H03K 17/00)

NOTES
1. This subclass covers:
• methods, circuits, or apparatus for establishing selectively a connection between a desired number of stations (normally two), or between a main station and a desired number of substations (normally one) for the purpose of transferring information via this connection after it has been established;
• selective calling arrangements over connections already established.
In either case, the connection may be made by means of electric conductors or electromagnetic waves.

2. In this subclass, the following terms or expressions are used with the meanings indicated:
• "subscriber" is a general term for terminal equipment, e.g. telephone for public use;
• "substation" means a subscriber or monitoring equipment which may connect a single subscriber to a line without choice as to subscriber;
• "satellite" is a kind of exchange the operation of which depends upon control signals received from a supervisory exchange;
• "switching centres" includes exchanges and satellites.

WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

H04R LOUDSPEAKERS, MICROPHONES, GRAMOPHONE PICK-UPS OR LIKE ACOUSTIC ELECTROMECHANICAL TRANSDUCERS; DEAF-AID SETS; PUBLIC ADDRESS SYSTEMS (generating mechanical vibrations in general B06B; transducers for measuring particular variables G01; transducers in clocks G04; producing sounds with frequency not determined by supply frequency G10K; transducers in recording or reproducing heads G11B; transducers in motors H02)

NOTE
This subclass covers:
• loudspeakers, microphones, [acoustic] transducers [therefor] producing acoustic waves or variations of electric current or voltage, or gramophone pick-ups;
• arrangements actuated by variations of electric current or voltage for cutting grooves in records;
• circuits for the above-mentioned [loudspeakers, microphones, acoustic transducers, gramophone pick-ups or] arrangements;
• monitoring or testing [of the above-mentioned loudspeakers, microphones, acoustic transducers, gramophone pick-ups or arrangements]

WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.
### H04S  STEREOPHONIC SYSTEMS

**NOTES**

1. In this subclass, the following term is used with the meaning indicated:
   - "stereophonic systems" covers quadraphonic or similar systems
2. In this subclass, it is desirable to add the indexing codes of **H04S 2400/00** and **H04S 2420/00**.

**WARNING**

In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

### H04T  INDEXING SCHEME RELATING TO STANDARDS FOR ELECTRIC COMMUNICATION TECHNIQUE (CLASS H04)

**NOTES**

1. This scheme constitutes an non-associated internal scheme for indexing exclusively documents issued by standardisation bodies (herein called standards) for electric communication technique (H04).

   As standardisation bodies organize their documents in different ways, the present scheme is subdivided into main groups related to a particular CPC range to allow different indexing approaches.

2. Scheme index:

   3. Wireless communication standards
      - Standards related to data switching
        - networks in general
          - **H04T 2001/00** - H04T 2001/231
        - Internet standards
          - **H04T 2029/00** - H04T 2029/06

### H04W  WIRELESS COMMUNICATION NETWORKS (broadcast communication H04H; communication systems using wireless links for non-selective communication, e.g. wireless extensions H04M 1/72)

**NOTES**

1. This subclass covers:
   - communication networks for selectively establishing one or a plurality of wireless communication links between a desired number of users or between users and network equipment, for the purpose of transferring information via these wireless communication links;
   - networks deploying an infrastructure for mobility management of wireless users connected thereto, e.g. cellular networks, WLAN [Wireless Local Area Network], wireless access networks, e.g. WLL [Wireless Local Loop] or self-organising wireless communication networks, e.g. ad hoc networks;
   - planning or deployment specially adapted for the above-mentioned wireless networks;
   - services or facilities specially adapted for the above-mentioned wireless networks;
   - arrangements or techniques specially adapted for the operation of the above-mentioned wireless networks.

2. This subclass does not cover:
   - communication systems using wireless extensions, i.e. wireless links without selective communication, e.g. cordless telephones, which are covered by group H04M 1/72;
   - broadcast communication, which is covered by subclass H04H.

3. In this subclass, the first place priority rule is applied, i.e. at each hierarchical level, in the absence of an indication to the contrary, classification is made in the first appropriate place.

### H05  ELECTRIC TECHNIQUES NOT OTHERWISE PROVIDED FOR

#### H05B  ELECTRIC HEATING; ELECTRIC LIGHTING NOT OTHERWISE PROVIDED FOR

**NOTE**

In this subclass, the following special cases occur:

a. Among the general applications covered by sections other than section **H**, it is worth noting that electric heating in general is covered by subclasses **F24D** or **F24H** or class **F27**, and that electric lighting in general is partly covered by class **F21** since in section **H** (see Note IIc) after the title of section **H** there are places in **H05B** which cover the same technical subjects;

b. In the two cases referred to in Note (a) above, the subclasses of section **F**, which deal with the respective subjects, essentially cover in the first place the whole mechanical aspect of the apparatus or devices, whereas the electrical aspect, as such, is covered by subclass **H05B**.

c. In the case of lighting, this mechanical aspect should be taken to cover the material arrangement of the various electric elements, i.e. their geometrical or physical position in relation to one another; this aspect is covered by subclasses of
class F21, the elements themselves and the primary circuits remaining in section H. The same applies to electric light sources, when combined with light sources of a different kind. These are covered by subclass H05B, whereas the physical arrangement which their combination constitutes is covered by subclasses of class F21.

d. As regards heating, not only the electric elements and circuitry designs, as such, are covered by subclass H05B, but also the electric aspects of their arrangement, where these concern cases of general application; electric furnaces being considered as such. The physical disposition of the electric elements in furnaces is covered by section E. If a comparison is made with electric welding circuits, which are covered by subclass B23K in connection with welding, it can be seen that electric heating is not covered by the general rule stated in Note II after the title of section H.

WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

H05C ELECTRIC CIRCUITS OR APPARATUS SPECIALLY DESIGNED FOR USE IN EQUIPMENT FOR KILLING, STUNNING, OR GUIDING LIVING BEINGS (stationary means for catching or killing insects by electric means A01M 1/22; apparatus for the destruction of noxious animals, other than insects, by electricity A01M 19/00; electric traps for animals A01M 23/38; scaring devices for animals A01M 29/00; slaughtering or stunning by electric current A22B 3/06)

WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

H05F STATIC ELECTRICITY; NATURALLY-OCCURRING ELECTRICITY (electrostatic machines H02N; uses of electricity in performing operations, e.g. precipitation, see the relevant subclasses for the operations)

NOTES
1. This subclass covers methods or arrangements for preventing the formation of electrostatic charges on bodies or for carrying-off these charges after their formation.
2. This subclass does not cover specific applications of the above-mentioned methods or arrangements, e.g. during the manufacture of artificial fibres or films, which are covered by the relevant subclasses.

H05G X-RAY TECHNIQUE (apparatus for radiation diagnosis A61B 6/00; X-ray therapy A61N; testing by X-rays G01N; apparatus for X-ray photography G03B; filters, conversion screens, microscopes G21K; X-ray tubes H01J 35/00; TV systems having X-ray input H04N 5/321)

WARNINGS
1. The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:
   H05G 1/61 covered by H05G 1/60
2. In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

H05H PLASMA TECHNIQUE (fusion reactors G21B; ion-beam tubes H01J 27/00; magnetohydrodynamic generators H02K 44/08; producing X-rays involving plasma generation H05G 2/00; PRODUCTION OF ACCELERATED ELECTRICALLY-CHARGED PARTICLES OR OF NEUTRONS (obtaining neutrons from radioactive sources G21, e.g. G21B, G21C, G21G); PRODUCTION OR ACCELERATION OF NEUTRAL MOLECULAR OR ATOMIC BEAMS (atomic clocks G04F 5/14; devices using stimulated emission H01S; frequency regulation by comparison with a reference frequency determined by energy levels of molecules, atoms, or subatomic particles H03L 7/26)

WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.
NOTES
1. This subclass covers:
   • combinations of a radio or television receiver with apparatus having a different main function;
   • printed circuits structurally associated with non-printed electric components.

2. In this subclass, the following expression is used with the meaning indicated:
   • "printed circuits" covers all kinds of mechanical constructions of circuits that consist of an insulating base or support carrying the conductor and are combined structurally with the conductor throughout their length, especially in a two-dimensional plane, the conductors of which are secured to the base in a non-dismountable manner, and also covers the processes or apparatus for manufacturing such constructions, e.g. forming the circuit by mechanical or chemical treatment of a conductive foil, paste, or film on an insulating support.

WARNING
In this subclass non-limiting references (in the sense of paragraph 39 of the Guide to the IPC) may still be displayed in the scheme.

SUBJECT MATTER NOT OTHERWISE PROVIDED FOR IN THIS SECTION

NOTE
This subclass covers subject matter that:
  a. Is not provided for, but is most closely related to, the subject matter covered by the subclasses of this section, and
  b. Is not explicitly covered by any subclass of another section.