

# CPC COOPERATIVE PATENT CLASSIFICATION

## H ELECTRICITY

### NOTE

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 ELECTRIC ELEMENTS

### NOTES

1. 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.
2. Attention is drawn to the Notes following the titles of class [B81](#) and subclass [B81B](#) relating to "microstructural devices" and "microstructural systems".

## H01B CABLES; CONDUCTORS; INSULATORS; SELECTION OF MATERIALS FOR THEIR CONDUCTIVE, INSULATING OR DIELECTRIC PROPERTIES (selection for magnetic properties [H01F 1/00](#); waveguides [H01P](#) ; printed circuits [H05K](#) )

### NOTE

Group [H01B 12/00](#) takes precedence over groups [H01B 5/00](#) - [H01B 11/00](#).

### 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.

**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](#)}; loudspeakers, microphones, gramophone pick-ups or like acoustic electromechanical transducers [H04R](#); thermomagnetic devices [H10N 15/00](#))

**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, LIGHT-SENSITIVE OR TEMPERATURE-SENSITIVE DEVICES OF THE ELECTROLYTIC TYPE** (selection of specified materials as dielectric [H01B 3/00](#); capacitors having potential barriers [H10D 1/62](#), [H10K 10/10](#))

**NOTE**

In this subclass, group [H01G 11/00](#) takes precedence over groups [H01G 4/00](#) and [H01G 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.

**H01H ELECTRIC SWITCHES; RELAYS; SELECTORS; EMERGENCY PROTECTIVE DEVICES** (contact cables [H01B 7/10](#); electrolytic self-interrupters [H01G 9/18](#); emergency protective circuit arrangements [H02H](#); switching by electronic means without contact-making [H03K 17/00](#))

**NOTES**

1. 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.
2. 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](#).
3. 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".
4. In this subclass, details are classified as follows :
  - 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](#);

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(continued)

- 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:

|   |            |                             |
|---|------------|-----------------------------|
| <a href="#">H01H 13/708</a> - <a href="#">H01H 13/718</a> | covered by | <a href="#">H01H 13/702</a> |
| <a href="#">H01H 33/575</a>                               | covered by | <a href="#">H01H 33/56</a>  |
| <a href="#">H01H 33/825</a>                               | covered by | <a href="#">H01H 33/82</a>  |
| <a href="#">H01H 33/835</a>                               | covered by | <a href="#">H01H 33/83</a>  |
| <a href="#">H01H 33/867</a>                               | covered by | <a href="#">H01H 33/86</a>  |
| <a href="#">H01H 33/873</a>                               | covered by | <a href="#">H01H 33/86</a>  |
| <a href="#">H01H 33/915</a>                               | covered by | <a href="#">H01H 33/91</a>  |
| <a href="#">H01H 33/985</a>                               | covered by | <a href="#">H01H 33/98</a>  |
| <a href="#">H01H 33/99</a>                                | covered by | <a href="#">H01H 33/98</a>  |
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](#); electric arc lamps [H05B 31/00](#); 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 ultraviolet or infrared 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:
- "lamp" includes tubes emitting ultraviolet or infrared light.

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(continued)

### **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.

## **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](#))**

### **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 disconnectable and non-disconnectable electric line connecting devices, 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 on 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 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:

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(continued)

- 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](#), [H01R 12/00](#).
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.

#### **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.

### 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**

#### **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**

#### **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

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(continued)

### **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.

**H02J** **ELECTRIC POWER NETWORKS; CIRCUIT ARRANGEMENTS OR SYSTEMS FOR SUPPLYING OR DISTRIBUTING ELECTRIC POWER; SYSTEMS FOR STORING ELECTRIC ENERGY**

### **NOTES**

1. This subclass covers:
  - AC, DC or unspecified mains or power distribution networks;
  - remote operation of AC, DC or unspecified power networks;
  - circuit arrangements for charging or discharging batteries when the load has no particular limiting effect on the circuit arrangement;
  - long-term energy storage systems not otherwise provided for, having an interaction with AC or DC power networks;
  - circuit arrangements or systems for wireless supply or distribution of electric power;
  - operational aspects of smart grids, namely the integration of power, communications and information technologies for an improved electric power infrastructure serving loads while providing for evolution of end-use applications.
2. This subclass does not cover:
  - the control of a single motor, generator or dynamo-electric converter of the types covered by subclasses [H01F](#) or [H02K](#), which is covered by subclass [H02P](#);
  - the control of a single motor or generator, of the types covered by subclass [H02N](#), which is covered by subclass [H02N](#).
3. In this subclass, it is desirable to add the indexing codes of groups [H02J 2101/00](#) - [H02J 2207/00](#).

### **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.

**H02K** **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 is 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. Group [H02K 16/00](#) takes precedence over groups [H02K 17/00](#) - [H02K 53/00](#).  
{This Note corresponds to IPC Note (1) relating to [H02K 17/00](#) - [H02K 53/00](#).}
5. {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.

**H02M 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** (transformers [H01F](#); dynamo-electric converters [H02K 47/00](#); controlling transformers, reactors or choke coils, control or regulation of electric motors, generators or dynamo-electric converters [H02P](#))

**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 [H10](#), 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:
 

|                           |            |                           |
|---------------------------|------------|---------------------------|
| <a href="#">H02M 9/00</a> | covered by | <a href="#">H03K 3/53</a> |
| <a href="#">H02M 9/02</a> | covered by | <a href="#">H03K 3/53</a> |
| <a href="#">H02M 9/04</a> | covered by | <a href="#">H03K 3/53</a> |
| <a href="#">H02M 9/06</a> | covered by | <a href="#">H03K 3/53</a> |
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 class [H10](#) and subclasses [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, 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 INFRARED 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 [H10F](#); light sensitive organic semiconductor devices [H10K 30/00](#); thermoelectric devices [H10N 10/00](#); pyroelectric devices [H10N 15/00](#))

## **H03 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** (generators adapted for electrophonic musical instruments [G10H](#); masers or lasers [H01S](#); 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** (masers or lasers [H01S](#); coding, decoding or code conversion [H03M](#))

### **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.

### **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.

## **H03F AMPLIFIERS**

### **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.



## H

### H03F

(continued)

#### **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:

|                           |            |                           |
|---------------------------|------------|---------------------------|
| <a href="#">H03F 1/44</a> | covered by | <a href="#">H03F 1/42</a> |
| <a href="#">H03F 1/46</a> | covered by | <a href="#">H03F 1/42</a> |
| <a href="#">H03F 3/18</a> | covered by | <a href="#">H03F 3/00</a> |
| <a href="#">H03F 3/32</a> | covered by | <a href="#">H03F 3/30</a> |
| <a href="#">H03F 7/06</a> | covered by | <a href="#">H03F 7/00</a> |
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**

#### **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](#).

### H03H

## **IMPEDANCE NETWORKS, e.g. RESONANT CIRCUITS; RESONATORS** ([waveguides, resonators, lines or other devices of the waveguide type H01P](#))

#### **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**

#### **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;

## H

### H03K (continued)

- 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** ([generation of oscillations H03B](#))

#### **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. In this subclass, the following expression is used with the meaning indicated:
  - "automatic control" covers only closed loop systems.

### H03M **CODING; DECODING; CODE CONVERSION IN GENERAL** ([using fluidic means F15C 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 7/304](#), [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](#)  
[H03M 7/44](#) covered by [H03M 7/40](#)
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**

#### **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.

## H

### H04B

(continued)

#### **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](#))

##### **NOTE**

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.

##### **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.

### 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** (arrangements common to telegraphic and telephonic communication [H04M](#))

##### **NOTES**

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

## H

H04L

(continued)

2. In this subclass, it is desirable to add the indexing codes of group [H04L 2101/00](#).

### **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:

|                            |            |  |
|----------------------------|------------|--|
| <a href="#">H04L 9/18</a>  | covered by | <a href="#">H04L 9/065</a>   |
| <a href="#">H04L 9/20</a>  | covered by | <a href="#">H04L 9/0656</a>  |
| <a href="#">H04L 9/22</a>  | covered by | <a href="#">H04L 9/0662</a>  |
| <a href="#">H04L 9/24</a>  | covered by | <a href="#">H04L 9/0662</a>  |
| <a href="#">H04L 9/26</a>  | covered by | <a href="#">H04L 9/0668</a>  |
| <a href="#">H04L 9/28</a>  | covered by | <a href="#">H04L 9/002</a> , <a href="#">H04L 9/008</a> , <a href="#">H04L 9/06</a> ,<br><a href="#">H04L 9/08</a> , <a href="#">H04L 9/30</a> , <a href="#">H04L 9/32</a> |
| <a href="#">H04L 12/20</a> | covered by | <a href="#">H04L 69/00</a>   |
| <a href="#">H04L 25/04</a> | covered by | <a href="#">H04L 25/03</a>   |
| <a href="#">H04L 25/17</a> | covered by | <a href="#">H04L 25/02</a> - <a href="#">H04L 25/0298</a>  |
| <a href="#">H04L 25/18</a> | covered by | <a href="#">H04L 25/027</a>  |
| <a href="#">H04L 25/28</a> | covered by | <a href="#">H04L 25/0268</a>   |
| <a href="#">H04L 25/30</a> | covered by | <a href="#">H04L 25/061</a>  |
| <a href="#">H04L 25/32</a> | covered by | <a href="#">H04L 25/49</a>   |
| <a href="#">H04L 25/34</a> | covered by | <a href="#">H04L 25/4917</a>   |
| <a href="#">H04L 25/48</a> | covered by | <a href="#">H04L 25/49</a>   |
| <a href="#">H04L 25/52</a> | covered by | <a href="#">H04L 25/20</a>   |
| <a href="#">H04L 25/54</a> | covered by | <a href="#">H04L 25/20</a>   |
| <a href="#">H04L 25/56</a> | covered by | <a href="#">H04L 25/202</a>  |
| <a href="#">H04L 25/58</a> | covered by | <a href="#">H04L 25/20</a>   |
| <a href="#">H04L 25/60</a> | covered by | <a href="#">H04L 25/207</a>  |
| <a href="#">H04L 25/62</a> | covered by | <a href="#">H04L 25/205</a>  |
| <a href="#">H04L 25/64</a> | covered by | <a href="#">H04L 25/245</a>  |
| <a href="#">H04L 25/66</a> | covered by | <a href="#">H04L 25/247</a>  |

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:

|                            |            |                             |
|----------------------------|------------|-----------------------------|
| <a href="#">H04M 7/02</a>  | covered by | <a href="#">H04Q 3/00</a>   |
| <a href="#">H04M 7/04</a>  | covered by | <a href="#">H04Q 3/00</a>   |
| <a href="#">H04M 7/10</a>  | covered by | <a href="#">H04Q 3/00</a>   |
| <a href="#">H04M 15/02</a> | covered by | <a href="#">H04M 15/888</a> |

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 :

- 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 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 [H10F 39/806](#));}
  - {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 electric image signal into an optical signal using an electronic spatial light modulator;

## H

### H04N (continued)

- "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. The subject matter for these IPC groups is classified in the following CPC groups:

|                             |            |                            |
|-----------------------------|------------|----------------------------|
| <a href="#">H04N 5/761</a>  | covered by | <a href="#">H04N 5/782</a> |
| <a href="#">H04N 5/7613</a> | covered by | <a href="#">H04N 5/782</a> |
| <a href="#">H04N 5/7617</a> | covered by | <a href="#">H04N 5/782</a> |
| <a href="#">H04N 5/922</a>  | covered by | <a href="#">H04N 5/92</a>  |
| <a href="#">H04N 5/924</a>  | covered by | <a href="#">H04N 5/92</a>  |
| <a href="#">H04N 9/815</a>  | covered by | <a href="#">H04N 9/81</a>  |
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](#); wireless communication networks [H04W](#))

#### **NOTES**

1. This subclass covers:
  - methods, circuits, or apparatus for stablishing selectively a connect ion 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; ELECTRIC HEARING AIDS; PUBLIC ADDRESS SYSTEMS** (producing sounds with frequency not determined by supply frequency [G10K](#))

#### **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

## H

### H04S

(continued)

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 ASSOCIATED WITH CLASS [H04](#), RELATING TO STANDARDS FOR ELECTRIC COMMUNICATION TECHNIQUE**

#### **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 [H04T 2001/00](#) - [H04T 2001/231](#)

Standards related to data switching

networks in general [H04T 2012/00](#) - [H04T 2012/00](#)

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](#).

#### **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.

### H05

## **ELECTRIC TECHNIQUES NOT OTHERWISE PROVIDED FOR**

### H05B

## **ELECTRIC HEATING; ELECTRIC LIGHT SOURCES NOT OTHERWISE PROVIDED FOR; CIRCUIT ARRANGEMENTS FOR ELECTRIC LIGHT SOURCES, IN GENERAL**

#### **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**

**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.

**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.

**H05G X-RAY TECHNIQUE** (investigating or analysing materials by the use of X-rays [G01N 23/00](#); apparatus for X-ray photography [G03B 42/02](#); 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:  

|                           |            |                           |
|---------------------------|------------|---------------------------|
| <a href="#">H05G 1/61</a> | covered by | <a href="#">H05G 1/60</a> |
|---------------------------|------------|---------------------------|
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** (apparatus or processes specially adapted for producing X-rays [H05G 2/00](#)); **PRODUCTION OF ACCELERATED ELECTRICALLY-CHARGED PARTICLES OR OF NEUTRONS; PRODUCTION OR ACCELERATION OF NEUTRAL MOLECULAR OR ATOMIC BEAMS**

**NOTES**

1. This subclass covers:
  - a. generating or handling plasma;
  - b. devices for accelerating electrons, ion beams or neutral particles;
  - c. devices for producing neutral particle beams;
  - d. targets for (a), (b) or (c).
2. This subclass does not cover devices for producing, accelerating, influencing or using a flow of electrons or ions within electric discharge tubes or discharge lamps, which are covered by subclass [H01J](#).

**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.

**H05K PRINTED CIRCUITS; CASINGS OR CONSTRUCTIONAL DETAILS OF ELECTRIC APPARATUS; MANUFACTURE OF ASSEMBLAGES OF ELECTRICAL COMPONENTS**

**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:

## H

### H05K (continued)

- "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 [2D] 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.

## **H10 SEMICONDUCTOR DEVICES; ELECTRIC SOLID-STATE DEVICES NOT OTHERWISE PROVIDED FOR**

### **H10B ELECTRONIC MEMORY DEVICES**

#### **NOTE**

In this subclass, the periodic system used is the I to VIII group system indicated in the Periodic Table under Note (3) of section [C](#).

### **H10D INORGANIC ELECTRIC SEMICONDUCTOR DEVICES**

#### **NOTES**

1. This subclass covers electric semiconductor devices having inorganic semiconductor bodies. This includes the following kind of devices:
  - inorganic semiconductor devices specially adapted for rectifying, amplifying, oscillating or switching, e.g. transistors or diodes;
  - individual inorganic resistors or capacitors having potential barriers;
  - individual resistors, capacitors or inductors having no potential barriers, and specially adapted for integration with other semiconductor components;
  - semiconductor bodies, or regions thereof, of devices covered by this subclass;
  - electrodes of devices covered by this subclass;
  - integrated devices, e.g. CMOS integrated devices;
  - processes or apparatus specially adapted for the manufacture or treatment of such devices.
2. This subclass does not cover:
  - electronic memory devices, which are covered by subclass [H10B](#);
  - semiconductor devices sensitive to infrared radiation, light, electromagnetic radiation of shorter wavelength or corpuscular radiation, which are covered by subclass [H10F](#);
  - light-emitting semiconductor devices having at least one potential barrier, which are covered by subclass [H10H](#);
  - thermoelectric, thermomagnetic, piezoelectric, electrostrictive, magnetostrictive, magnetic-effect, superconducting or other electric solid-state devices, which are covered by subclass [H10N](#);
  - constructional details other than semiconductor bodies or electrodes, which are covered by subclass [H10W](#).
3. In this subclass, the periodic system used is the I to VIII group system indicated in the Periodic Table under Note (3) of section [C](#).

### **H10F INORGANIC SEMICONDUCTOR DEVICES SENSITIVE TO INFRARED RADIATION, LIGHT, ELECTROMAGNETIC RADIATION OF SHORTER WAVELENGTH OR CORPUSCULAR RADIATION**

#### **NOTES**

1. This subclass covers inorganic radiation-sensitive semiconductor devices insofar as these devices are specially adapted for:
  - the conversion of the radiation energy into electrical energy; or
  - the control of electrical energy by such radiation.
2. In this subclass, infrared radiation includes wavelengths between about 700 nm and about 1 mm.
3. In this subclass, the periodic system used is the I to VIII Group system indicated in the Periodic Table under Note (3) of section [C](#).

### **H10H INORGANIC LIGHT-EMITTING SEMICONDUCTOR DEVICES HAVING POTENTIAL BARRIERS**

#### **NOTES**

1. This subclass covers inorganic light-emitting semiconductor devices that emit visible, infrared [IR] or ultraviolet [UV] light. This includes light-emitting diodes [LED] and superluminescent diodes [SLD].
2. This subclass does not cover semiconductor lasers, which are covered by group [H01S 5/00](#).

## H

### H10H

(continued)

3. In this subclass, the periodic system used is the I to VIII group system indicated in the Periodic Table under Note (3) of section [C](#).

## H10K ORGANIC ELECTRIC SOLID-STATE DEVICES

### NOTES

1. This subclass covers:
  - individual organic electric solid-state devices, i.e. electric solid-state devices comprising organic material in the active part;
  - integrated devices, or assemblies of multiple devices, comprising such elements.
2. This subclass does not cover:
  - organic electronic memory devices, which are covered by subclass [H10B](#);
  - organic thermoelectric devices, organic thermomagnetic devices, organic piezoelectric devices, organic electrostrictive devices, organic magnetostrictive devices, organic galvanomagnetic devices, organic Hall-effect devices, organic superconducting devices or organic solid-state devices having no potential barriers, and specially adapted for rectifying, amplifying, oscillating or switching, which are covered by subclass [H10N](#);
  - organic resistors having no potential barriers and not specially adapted for integrated devices, which are covered by subclass [H01C](#);
  - organic capacitors having no potential barriers and not specially adapted for integrated devices, which are covered by subclass [H01G](#).
3. In this subclass, the periodic system used is the I to VIII group system indicated in the Periodic Table under Note (3) of section [C](#).
4. In this subclass, it is desirable to add the indexing codes of groups {[H10K 2101/00](#) - [H10K 2102/00](#)}.

## H10N ELECTRIC SOLID-STATE DEVICES NOT OTHERWISE PROVIDED FOR

### NOTE

In this subclass, the periodic system used is the I to VIII group system indicated in the Periodic Table under Note (3) of section [C](#).

## H10P GENERIC PROCESSES OR APPARATUS FOR THE MANUFACTURE OR TREATMENT OF DEVICES COVERED BY CLASS [H10](#)

### NOTES

1. This subclass covers processes or apparatus specially adapted for the manufacture or treatment of devices, or parts thereof, covered by class [H10](#), which are generically applicable to these devices.
2. Attention is drawn to the following:
  - a. processes or apparatus specially adapted for the manufacture or treatment of devices, or parts thereof, which are covered by a single subclass of [H10B](#) - [H10N](#), are classified in the subclass in question. For example, the manufacture of a transistor is classified in subclass [H10D](#);
  - b. processes or apparatus specially adapted for the manufacture or treatment of generic packages, interconnections, connectors or other constructional details of devices, which are covered by subclass [H10W](#), are classified in the subclass in question. For example, the formation of a copper pillar bump connector is classified in subclass [H10W](#).

## H10W GENERIC PACKAGES, INTERCONNECTIONS, CONNECTORS OR OTHER CONSTRUCTIONAL DETAILS OF DEVICES COVERED BY CLASS [H10](#)

### NOTES

1. This subclass covers:
  - a. packages of devices and parts of such packages;
  - b. interconnections of devices in chips, wafers, substrates or packages;
  - c. connectors of devices in packages;
  - d. other constructional details of devices in chips, wafers, substrates or packages, e.g. isolation regions between components of integrated devices;
  - e. detachable holders for supporting packaged chips in operation;
  - f. the manufacture or treatment of aspects (a)-(e);when aspects (a)-(e) are
  - (1) applicable to devices covered by subclass [H10B](#);
  - (2) applicable to devices covered by subclass [H10D](#), except for semiconductor bodies or electrodes thereof, which are covered by subgroups [H10D 62/00](#) or [H10D 64/00](#); or
  - (3) generically applicable to devices covered by subclasses [H10B](#), [H10D](#), [H10E](#), [H10H](#), [H10K](#) or [H10N](#).
2. {In this subclass, the periodic system used is the I to VIII group system indicated in the Periodic Table under Note (3) of section [C](#).}

## **H**

### **H99 SUBJECT MATTER NOT OTHERWISE PROVIDED FOR IN THIS SECTION**

#### **H99Z 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.