

## SECTION H — ELECTRICITY

### H02 GENERATION, CONVERSION, OR DISTRIBUTION OF ELECTRIC POWER

**H02J CIRCUIT ARRANGEMENTS OR SYSTEMS FOR SUPPLYING OR DISTRIBUTING ELECTRIC POWER; SYSTEMS FOR STORING ELECTRIC ENERGY** (power supply circuits for apparatus for measuring X-radiation, gamma radiation, corpuscular radiation or cosmic radiation G01T 1/175; electric power supply circuits specially adapted for use in electronic time-pieces with no moving parts G04G 19/00; for digital computers G06F 1/18; for discharge tubes H01J 37/248; circuits or apparatus for the conversion of electric power, arrangements for control or regulation of such circuits or apparatus H02M; interrelated control of several motors, control of a prime-mover/generator combination H02P; control of high-frequency power H03L; additional use of power line or power network for transmission of information H04B)

#### Note(s)

1. This subclass covers:
  - ac or dc mains or distribution networks;
  - circuit arrangements for battery supplies, including charging or control thereof, or co-ordinated 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.

#### Subclass index

##### CIRCUIT ARRANGEMENTS

For distribution networks:

direct current; alternative current.....1/00, 3/00

combined; not specified.....5/00, 4/00

For batteries.....7/00

For emergency or stand-by power supply.....9/00

For power supply to auxiliaries of stations.....11/00

For providing remote indication of network conditions.....13/00

SYSTEMS FOR STORING ELECTRICAL ENERGY.....15/00

CIRCUIT ARRANGEMENTS OR SYSTEMS FOR WIRELESS SUPPLY OR DISTRIBUTION OF

ELECTRIC POWER.....50/00

#### **1/00 Circuit arrangements for dc mains or dc distribution networks [1, 2006.01]**

1/02 • Arrangements for reducing harmonics or ripples (in converters H02M 1/14) [1, 2006.01]

1/04 • Constant-current supply systems [1, 2006.01]

1/06 • Two-wire systems [1, 2006.01]

1/08 • Three-wire systems; Systems having more than three wires [1, 2006.01]

1/10 • Parallel operation of dc sources (involving batteries H02J 7/34) [1, 2006.01]

1/12 • • Parallel operation of dc generators with converters, e.g. with mercury-arc rectifier [1, 2006.01]

1/14 • Balancing the load in a network (by batteries H02J 7/34) [1, 2006.01]

1/16 • • using dynamo-electric machines coupled to flywheels [1, 2006.01]

#### **3/00 Circuit arrangements for ac mains or ac distribution networks [1, 2006.01]**

3/01 • Arrangements for reducing harmonics or ripples (in converters H02M 1/12) [3, 2006.01]

3/02 • using a single network for simultaneous distribution of power at different frequencies; using a single network for simultaneous distribution of ac power and of dc power [1, 2006.01]

3/04 • for connecting networks of the same frequency but supplied from different sources [1, 2006.01]

3/06 • • Controlling transfer of power between connected networks; Controlling sharing of load between connected networks [1, 2006.01]

3/08 • • Synchronising of networks [1, 2006.01]

3/10 • Constant-current supply systems [1, 2006.01]

3/12 • for adjusting voltage in ac networks by changing a characteristic of the network load [1, 2006.01]

3/14 • • by switching loads on to, or off from, network, e.g. progressively balanced loading [1, 2006.01]

3/16 • • by adjustment of reactive power [1, 2006.01]

- 3/18 • Arrangements for adjusting, eliminating, or compensating reactive power in networks (for adjustment of voltage H02J 3/12; use of Petersen coils H02H 9/08) [1, 2006.01]
- 3/20 • • in long overhead lines [1, 2006.01]
- 3/22 • • in cables [1, 2006.01]
- 3/24 • Arrangements for preventing or reducing oscillations of power in networks (by control effected upon a single generator H02P 9/00) [1, 2006.01]
- 3/26 • Arrangements for eliminating or reducing asymmetry in polyphase networks [1, 2006.01]
- 3/28 • Arrangements for balancing the load in a network by storage of energy [1, 2006.01]
- 3/30 • • using dynamo-electric machines coupled to flywheels [1, 2006.01]
- 3/32 • • using batteries with converting means [1, 2006.01]
- 3/34 • Arrangements for transfer of electric power between networks of substantially different frequency (frequency converters H02M) [1, 2006.01]
- 3/36 • Arrangements for transfer of electric power between ac networks via a high-tension dc link [1, 2006.01]
- 3/38 • Arrangements for parallelly feeding a single network by two or more generators, converters, or transformers [1, 2006.01]
- 3/40 • • Synchronising a generator for connection to a network or to another generator [1, 2006.01]
- 3/42 • • • with automatic parallel connection when synchronism is achieved [1, 2006.01]
- 3/44 • • • with means for ensuring correct phase sequence [1, 2006.01]
- 3/46 • • Controlling the sharing of output between the generators, converters, or transformers [1, 2006.01]
- 3/48 • • • Controlling the sharing of the in-phase component [1, 2006.01]
- 3/50 • • • Controlling the sharing of the out-of-phase component [1, 2006.01]
- 4/00 **Circuit arrangements for mains or distribution networks not specified as ac or dc [2, 2006.01]**
- 5/00 *Circuit arrangements for transfer of electric power between ac networks and dc networks (H02J 3/36 takes precedence) [1, 2006.01, 2016.01]*
- 7/00 **Circuit arrangements for charging or depolarising batteries or for supplying loads from batteries [1, 2006.01]**
- 7/02 • for charging batteries from ac mains by converters [1, 2006.01, 2016.01]
- 7/04 • • Regulation of the charging current or voltage [1, 2006.01]
- 7/06 • • • using discharge tubes or semiconductor devices [1, 2006.01]
- 7/08 • • • • using discharge tubes only [1, 2006.01]
- 7/10 • • • • using semiconductor devices only [1, 2006.01]
- 7/12 • • • using magnetic devices having controllable degree of saturation, i.e. transducers [1, 2006.01]
- 7/14 • for charging batteries from dynamo-electric generators driven at varying speed, e.g. on vehicle [1, 2006.01]
- 7/16 • • Regulation of the charging current or voltage by variation of field [1, 2006.01]
- 7/18 • • • due to variation of ohmic resistance in field circuit, using resistance switching in or out of circuit step by step [1, 2006.01]
- 7/20 • • • due to variation of continuously-variable ohmic resistor [1, 2006.01]
- 7/22 • • • due to variation of make-to-break ratio of intermittently-operating contacts, e.g. using Tirrill regulator [1, 2006.01]
- 7/24 • • • using discharge tubes or semiconductor devices [1, 2006.01]
- 7/26 • • • using magnetic devices with controllable degree of saturation [1, 2006.01]
- 7/28 • • • using magnetic devices with controllable degree of saturation in combination with controlled discharge tube or controlled semiconductor device [1, 2006.01]
- 7/30 • • • using armature-reaction-excited machines [1, 2006.01]
- 7/32 • for charging batteries from a charging set comprising a non-electric prime mover [1, 2006.01]
- 7/34 • Parallel operation in networks using both storage and other dc sources, e.g. providing buffering (H02J 7/14 takes precedence) [1, 4, 2006.01]
- 7/35 • • with light sensitive cells [4, 2006.01]
- 7/36 • Arrangements using end-cell switching [1, 2006.01]
- 9/00 **Circuit arrangements for emergency or stand-by power supply, e.g. for emergency lighting (with provision for charging standby battery H02J 7/00) [1, 2006.01]**
- 9/02 • in which an auxiliary distribution system and its associated lamps are brought into service [1, 2006.01]
- 9/04 • in which the distribution system is disconnected from the normal source and connected to a standby source [1, 2006.01]
- 9/06 • • with automatic change-over [1, 2006.01]
- 9/08 • • • requiring starting of a prime-mover [1, 2006.01]
- 11/00 **Circuit arrangements for providing service supply to auxiliaries of stations in which electric power is generated, distributed, or converted (emergency or standby arrangements H02J 9/00) [1, 2006.01]**
- 13/00 **Circuit arrangements for providing remote indication of network conditions, e.g. an instantaneous record of the open or closed condition of each circuitbreaker in the network; Circuit arrangements for providing remote control of switching means in a power distribution network, e.g. switching in and out of current consumers by using a pulse code signal carried by the network [1, 2006.01]**
- 15/00 **Systems for storing electric energy (mechanical systems therefor F01-F04; in chemical form H01M) [2, 2006.01]**
- 50/00 **Circuit arrangements or systems for wireless supply or distribution of electric power [2016.01]**  
Note(s) [2016.01]
  1. In this main group, the specific types of wireless technology used for the power transmission are covered in groups H02J 50/05-H02J 50/30, while aspects relevant to the circuit arrangements or systems thereof are covered in groups H02J 50/40-H02J 50/90.
  2. In this main group, multi-aspect classification is applied, so that subject matter characterised by aspects covered by more than one of its groups should be classified in each of those groups.

- 50/05 • using capacitive coupling **[2016.01]**
- 50/10 • using inductive coupling **[2016.01]**
- 50/12 • • of the resonant type **[2016.01]**
- 50/15 • using ultrasonic waves **[2016.01]**
- 50/20 • using microwaves or radio frequency waves **[2016.01]**
- 50/23 • • characterised by the type of transmitting antennas, e.g. directional array antennas or Yagi antennas **[2016.01]**
- 50/27 • • characterised by the type of receiving antennas, e.g. rectennas **[2016.01]**
- 50/30 • using light, e.g. lasers **[2016.01]**
- 50/40 • using two or more transmitting or receiving devices (H02J 50/50 takes precedence) **[2016.01]**
- 50/50 • using additional energy repeaters between transmitting devices and receiving devices **[2016.01]**
- 50/60 • responsive to the presence of foreign objects, e.g. detection of living beings **[2016.01]**
- 50/70 • involving the reduction of electric, magnetic or electromagnetic leakage fields **[2016.01]**
- 50/80 • involving the exchange of data, concerning supply or distribution of electric power, between transmitting devices and receiving devices **[2016.01]**
- 50/90 • involving detection or optimisation of position, e.g. alignment **[2016.01]**