

H02J

Circuit arrangements or systems for supplying or distributing electric power; System for storing electric energy (for digital computers G06F1/18; 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)

Definition statement

This subclass/group covers:

- ac and/or dc supplying systems
- ac and/or dc 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 arrangement providing remote indication and control of a network switch
- systems for supplying or distributing electric power by electromagnetic waves

References relevant to classification in this subclass

This subclass/group does not cover:

Aircraft networks	B64D
Vessels networks	B63J
Power supplies for movable barriers, electric doors, electric sunshades	E06B
Circuit arrangements for digital computers	G06F 1/18
Circuits or apparatus for the conversion of electric power, arrangements for control or regulation of such circuits or apparatus	H02M
Control of a single motor or generator, of the types covered by	H02N

subclass H02N	
Control of a single motor or generator	H02P
Control of high-frequency power	H03L

Informative references

Attention is drawn to the following places, which may be of interest for search:

Additional use of power line or power network for transmission of information	H04B
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Special rules of classification within this subclass

Claimed device, system, method has to be classified.

At least an Indexing Code is mandatory for additional information.

For example a battery protection circuitry in a docking station requires at least an Indexing Code [H02J 7/0044](#) besides the group symbol [H02J 7/0029+](#) .

Glossary of terms

In this subclass/group, the following terms (or expressions) are used with the meaning indicated:

The following terms (or expressions) are used with the meaning indicated:

Wireless energy transfer	non-conductive energy transfer, even if conductors can be used for implementing the separated sending and receiving units
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H02J 1/00

Circuit arrangements for dc mains or dc distribution networks

References relevant to classification in this group

This subclass/group does not cover:

Power supplies for computers	G06F 1/00
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Power supplies for vehicle components	B60R 16/00
Power supplies for memories	G05G
Power supplies for dc lamps	H05B 37/00
Load protection by tripping of the load for dc systems	H02H
Details for dc/dc converters	H02M 3/00
Fuel cells	H01M 8/00

Special rules of classification within this group

The following Indexing Codes are to be used for classifying additional information:

H02J 2001/002	dc supply with intermediated ac distribution
H02J 2001/008	dc supply with at least two different dc voltage levels (e.g: 14V and 42V in certain vehicles)
H02J 2001/004	use of fuel cells for ac or dc power generation (e. g. for UPS, load balancing, economic power management...)
T02J 7/00J	Provisions for temporary connection of dc sources of essentially the same voltage, e.g. jumpstart cables, etc.

H02J 1/02

Arrangements for reducing harmonics or ripples (in converters H02M1/14)

References relevant to classification in this group

This subclass/group does not cover:

Arrangements for reducing harmonics or ripples in converters	H02M 1/14
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H02J 1/10

Parallel operation of dc sources (involving batteries H02J7/34)

References relevant to classification in this group

This subclass/group does not cover:

Parallel operation of dc sources involving batteries	H02J 7/34
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H02J 1/102

[N: being switching converters (H02J1/108, H02J1/12 take precedence)]

References relevant to classification in this group

This subclass/group does not cover:

Parallel operation of dc sources using diodes blocking reverse current flow	H02J 1/108
Parallel operation of dc generators with converters, e.g. with mercury-arc rectifier	H02J 1/12

Informative references

Attention is drawn to the following places, which may be of interest for search:

Conversion of dc power input into dc power output without intermediate conversion into ac by static converters using semiconductor devices as final control devices for a single load	H02M 3/158
Single converters with a plurality of output stages connected in parallel	H02M 3/285

H02J 1/108

[N: using diodes blocking reverse current flow (H02J1/12 takes precedence)]

References relevant to classification in this group

This subclass/group does not cover:

Parallel operation of dc generators with converters, e.g. with mercury-arc rectifier	H02J 1/12
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H02J 1/14

Balancing the load in a network (by batteries H02J7/34)

Definition statement

This subclass/group covers:

Balancing the load in a DC distribution network

References relevant to classification in this group

This subclass/group does not cover:

Balancing the load in a network by batteries	H02J 7/34
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H02J 3/00

Circuit arrangements for ac mains or ac distribution networks

Definition statement

This subclass/group covers:

Arrangements for selectively connecting the load to one among a plurality of power lines or power sources

Arrangements for reducing harmonics or ripples

Arrangements 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

Arrangements for connecting networks of the same frequency but supplied from different sources

Constant-current supply systems

Arrangements for adjusting, eliminating, or compensating reactive power in networks

Arrangements for preventing or reducing oscillations of power in networks

Arrangements for eliminating or reducing asymmetry in polyphase networks

Arrangements for balancing of the load in a network by storage of energy

Arrangements for transfer of electric power between networks of substantially different frequency

Arrangements for transfer of electric power between ac networks via a high-tension dc link

Arrangements for parallelly feeding a single network by two or more generators, converters or transformers

References relevant to classification in this group

This subclass/group does not cover:

Electromechanical details	H02B
Computer systems for trading	G06Q 30/00
Systems, methods for trading (electricity/gas/water)	G06Q 50/00C
Harmonic reduction application for converters	H02M 1/12
Load protection by tripping of the load for ac systems	H02H
Details of switches for load protection	H01H
Mechanical details of connectors	H01R
Preventing/reducing oscillation with a single generator	H02P 9/00
Details of converters for reactive	H02M 7/48+

power compensation and ac power generation from dc sources	
Details of converters for hvdc	H02M 7/7575
Wind turbines	F03D 9/00
Photovoltaic panel	H01L 31/00

Informative references

Attention is drawn to the following places, which may be of interest for search:

When searching in H0J3/00T see also computer systems for trading	G06Q 30/00
When searching in H0J3/36	H02M 7/7575
H02J 3/38 : Parallel connections of dc/ac converters	H02M 7/493

Special rules of classification within this group

The Indexing Code [H02J 3/32](#) and/or [H02J 3/008](#) is assigned for covering the idea of using parked electric vehicle batteries for feeding the network during peak times and/or selling energy.

The following Indexing Codes are to be used for classifying additional information:

T02J 1/00L	methods and systems for forecasting future load demands
H02J 2003/001	methods to deal with contingencies in the widest meaning
H02J 2003/002	compensation of flicker introduced by nonlinear loads
H02J 2003/007	planning, simulating, CAD, modelling, reliability checks, etc.
H02J 2003/143	household appliances management

H02J 2003/146	switching loads on and off in function of energy prices
H02J 2003/365	means for the reduction or elimination of harmonics or oscillations in high voltage dc link (hvdc)
H02J 2003/388	Disconnection of a local power supply from the network

H02J 3/005

[N: Arrangements for selectively connecting the load to one among a plurality of power lines or power sources (for providing uninterruptable power supply H02J9/00)]

References relevant to classification in this group

This subclass/group does not cover:

Arrangements for providing uninterruptable power supply	H02J 9/00
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H02J 3/01

Arrangements for reducing harmonics or ripples (in converters H02M1/12)

References relevant to classification in this group

This subclass/group does not cover:

Arrangements for reducing harmonics or ripples in converters	H02M 1/12
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H02J 3/06

**Controlling transfer of power between connected networks;
Controlling sharing of load between connected networks**

References relevant to classification in this group

This subclass/group does not cover:

Controlling transfer of power, sharing load between a generator and the connected network	H02J 3/38
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H02J 3/18

Arrangements for adjusting, eliminating, or compensating reactive power in networks (for adjustment of voltage H02J3/12; use of Petersen coils H02H9/08)

Informative references

Attention is drawn to the following places, which may be of interest for search:

Arrangements for adjustment of voltage	H02J 3/12
Arrangements for use of Petersen coils	H02H 9/08

H02J 3/1842

[N: wherein at least one reactive element is actively controlled by a bridge converter, e.g. active filters]

Informative references

Attention is drawn to the following places, which may be of interest for search:

if the bridge combines both series and shunt compensators	H02J 3/1814
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H02J 3/24

Arrangements for preventing or reducing oscillations of power in networks (by control effected upon a single generator H02P9/00)

References relevant to classification in this group

This subclass/group does not cover:

Control effected upon a single generator	H02P 9/00
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H02J 3/38

Arrangements for parallelly feeding a single network by two or more generators, converters or transformers

References relevant to classification in this group

This subclass/group does not cover:

Parallel connections of dc/ac converters not for feeding a network, but a local load	H02M 7/493
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H02J 4/00

Circuit arrangements for mains of distribution networks not specified as ac or dc

Definition statement

This subclass/group covers:

Circuit arrangements for mains of distribution networks containing both ac and dc

H02J 5/00

Circuit arrangements for transfer of electric power between ac networks and dc networks (H02J3/36 takes precedence)

References relevant to classification in this group

This subclass/group does not cover:

Circuit arrangements for dc mains or dc distribution networks	H02J 1/00
Arrangements for balancing of the load in a network by storage of energy using batteries with converting means	H02J 3/32
Arrangements for transfer of electric power between ac networks via a high-tension dc link	H02J 3/36

Arrangements for parallelly feeding a single network by two or more generators, converters or transformers	H02J 3/38
Details for sending and receiving coils	H01F
Ac/dc or dc/ac converters	H02M 7/00

Special rules of classification within this group

[CpcRefSymbol=A] system used for feeding an ac distribution network from the output of dc power source like fuel cells, solar panels belongs to [H02J 3/38](#) and not to [H02J 5/00](#), even if a dc to ac transfer is involved.

H02J 5/005

[N: with inductive power transfer (for charging H02J7/025)]

Definition statement

This subclass/group covers:

This group covers :

Circuit arrangements for transfer of electric power between ac networks and dc networks by inductive transfer, i.e. the sending coil being part of the source and the receiving coil being part of the load and coupling is in the near field region.

References relevant to classification in this group

This subclass/group does not cover:

Circuit arrangements for charging or depolarising batteries using non-contact coupling, e.g. inductive, capacitive	H02J 7/025
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Informative references

Attention is drawn to the following places, which may be of interest for search:

Long distance wireless transmission	H02J 17/00
Transmission involving transformers	H02J 3/00

Near-field transmission systems, e.g. inductive loop type	H04B 5/00
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H02J 7/00

Circuit arrangements for charging or depolarising batteries or for supplying loads from batteries

References relevant to classification in this group

This subclass/group does not cover:

Transmission involving transformers	H02J 7/02 , H02J 7/04
Long distance wireless transmission	H02J 17/00
Batteries mechanical, chemical details	H01M
Details of converter	H02M
Testing of batteries	G01R 36/00
Control of alternators	H02P 9/00
Vehicle starting circuits	F02D
Electrical circuits for vehicles	B60R
Charging electric/hybrid vehicles	B60L B60K
Perpetuum mobile	H02N
Mechanical details of battery charger alternators	H02K
Details of telephone stands	H04M

Informative references

Attention is drawn to the following places, which may be of interest for search:

Near-field transmission systems, e.g.	H04B 5/00
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inductive loop type	
For over-discharge protection	H02H 7/18

Special rules of classification within this group

It is mandatory to assign a combination of the Indexing Code [H02J 7/345](#) and ECLA group symbols which would apply if the capacitor was replaced with a battery.

The following Indexing Codes are to be used for classifying additional information:

H02J/00A	Circuits in which a system component (battery, battery charger...) checks compatibility with another component (power source...)
H02J 2007/0067	managing load supply from one or more batteries, e.g.: discharge current reduction at low state of charge, sequential battery discharge in plural battery systems
H02J 2007/0095	means for power supply of control circuit
H02J 2007/0096	charger exchanges data with telephone or electronic device whose internal battery are being charged
H02J 2007/0098	data exchange between smart battery and charger
H02J 2007/0037	overcharge protection
H02J 2007/0039	overcurrent protection
H02J 2007/004	overdischarge protection
H02J 2007/0049	detection of fully charged condition
H02J 2007/005	remaining charge detection
H02J 2007/0059	characterised by the converter

H02J 2007/006	charge provided using dc bus or data bus of computer
H02J 2007/0062	charge provided using USB port connectors
H02J 2007/0095	means for power supply of control circuit
H02J 2007/0096	charger exchanges data with telephone or electronic device whose internal battery are being charged
H02J 2007/0098	data exchange between smart battery and charger
H02J 2007/143	multiple generators

H02J 7/0027

[N: Stations for charging mobile units, e.g. of electric vehicles, of mobile telephones (H02J7/0021, H02J7/0026 take precedence)]

References relevant to classification in this group

This subclass/group does not cover:

Monitoring or indicating circuits	H02J 7/0021
Safety or protection circuits, e.g. overcharge/discharge disconnection	H02J 7/0026
Charging electric vehicles	B60L 11/1809

H02J 7/0077

[N: the charge cycle being terminated in response to electric parameters (H02J7/0093 takes precedence)]

Definition statement

This subclass/group covers:

This group covers :

- Controlling charge in response to current
- Controlling charge in response to voltage
- Controlling charge in response to both current and voltage

References relevant to classification in this group

This subclass/group does not cover:

Regulation of charging current or voltage with introduction of pulses during the charging process	H02J 7/0093
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Synonyms and Keywords

In the definition [H02J 7/0077](#) and subgroups the word "terminated" has to be interpreted as "controlled"

H02J 7/025

[N: using non-contact coupling, e.g. inductive, capacitive]

Definition statement

This subclass/group covers:

This group covers :

non-contact coupling, i.e. the sending coil or the first capacitor plate being part of the supplying source and the receiving coil or the second capacitor plate being part of the energy receiving circuit and coupling is in the near field region.

Informative references

Attention is drawn to the following places, which may be of interest for search:

Near-field transmission systems, e.g. inductive loop type	H04B 5/00
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Special rules of classification within this group

[H02J 7/025](#) should be applied even if charging source is not ac mains or not

better specified. For example if the charging source is a photovoltaic cell, not only [H02J 7/35](#) has to be applied, but also [H02J 7/025](#).

H02J 7/34

Parallel operation in networks using both storage and other dc sources, e.g. providing buffering (H02J7/14 takes precedence)

References relevant to classification in this group

This subclass/group does not cover:

Circuit arrangements for charging batteries from dynamo-electric generators driven at varying speed	H02J 7/14
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H02J 9/00

Circuit arrangement for emergency or standby power supply (with provision for charging standby battery H02J7/00)

Definition statement

This subclass/group covers:

Plural power sources such as uninterruptible power supplies [UPS] and back-up power supplies

References relevant to classification in this group

This subclass/group does not cover:

Circuit arrangement for emergency or standby power supply with provision for charging standby battery	H02J 7/00
UPS for computers	G06F 1/00
UPS for communication stations	H04M
Details of lamp	H05B 37/00

Special rules of classification within this group

The following Indexing Codes are to be used for calssifying additional

information:

T02J 9/00S11	power saving operation when no load is present
H02J 2009/063	common neutral
H02J 2009/067	using a single transformer with multiple primaries (one for each ac energy source) and a secondary for the loads
H02J 2009/068	electronic means for switching from one power supply to another, avoiding parallel connection

in which an auxiliary distribution system and its associated lamps are brought into service

H02J 9/02

Informative references

Attention is drawn to the following places, which may be of interest for search:

A lamp not being an emergency lamp, but a lamp which is normally fed by the mains and during contingency by a battery, even if no dc/ac converters are not involved	H02J 9/065
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H02J 9/061

[N: characterised by the use of electronic means (H02J9/062 and H02J9/065 take precedence)]

Definition statement

This subclass/group covers:

Electronic means in the load supplying circuit for UPS

References relevant to classification in this group

This subclass/group does not cover:

Electronic means consisting of non	H02J 9/062
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rotating dc/ac converter	
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H02J 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 H02J9/00)

References relevant to classification in this group

This subclass/group does not cover:

Emergency or standby arrangements	H02J 9/00
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H02J 13/00

Circuit arrangements for providing remote indication of network conditions, e.g. an instantaneous record of the open or closed condition of each circuit-breaker 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 [N: (circuits for indication of single switches H01H9/167; circuits specially adapted for remote switching of lighting via the power line H05B37/0263)]

References relevant to classification in this group

This subclass/group does not cover:

Electricity meters involved	G01R 31/00
Details of switches	H01H
Circuits for indication of single switches	H01H 9/167
Remote switching of lightings	H05B 37/00
Circuits specially adapted for remote switching of lighting via the power line	H05B 37/0263

Informative references

Attention is drawn to the following places, which may be of interest for search:

Measured data transmission systems	G08C
Communication using power lines	H04B
Details of data switching networks	H04L 12/2803

H02J 15/00

Systems for storing electric energy

Definition statement

This subclass/group covers:

Systems for storing electric energy in the form of hydraulic energy

Systems for storing electric energy in the form of pneumatic energy

References relevant to classification in this group

This subclass/group does not cover:

Batteries mechanical, chemical details	H01M
Details of mechanical systems	F01 - F04
Details of accumulators for supplying fluids under pressure	F15B 1/04

H02J 17/00

Systems for supplying or distributing electric power by electromagnetic waves

References relevant to classification in this group

This subclass/group does not cover:

Inductive or near field energy transmission, even if electro-magnetic waves are present	H02J 7/025 H02J 5/005
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Antennas	H04Q
Near-field transmission systems	H04B 5/00