

**ECLA****EUROPEAN CLASSIFICATION****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** (systems for regulating electric or magnetic variables in general, e.g. using transformers, reactors or choke coils, combination of such systems with static converters G05F; [N: digital function or clock generators] for digital computers G06F1/00, [N: G06F1/025, G06F1/04]; transformers H01F; connection or control of one converter with regard to conjoint operation with a similar or other source of supply H02J; dynamo-electric converters H02K47/00; controlling transformers, reactors or choke coils, control or regulation of electric motors, generators or dynamo-electric converters H02P; pulse generators H03K; [N: static converters specially adapted for igniting or operating discharge lamps H05B41/28]) [C0311]

[N: **WARNING** [C0803]

The following IPC groups are not used in the internal ECLA classification scheme. Subject matter covered by these groups is classified in the following ECLA groups :

H02M9/00 covered by H03K3/53  
 H02M9/02 covered by H03K3/53  
 H02M9/04 covered by H03K3/53  
 H02M9/06 covered by H03K3/53  
 ]

**Notes**

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

**H02M1/00****Details of apparatus for conversion****H02M1/00M**

- . [N: using discharge tubes]

**H02M1/02**

- . Circuits specially adapted for the generation of grid-control or igniter-control voltages for discharge tubes incorporated in static converters

**H02M1/04**

- . . for tubes with grid control

**H02M1/04C**

- . . . [N: wherein the phase of the control voltage is adjustable with reference to the

- AC voltage]
- H02M1/04C1 . . . . [N: for multiphase systems]
  - H02M1/04C2 . . . . [N: for ignition at the zero-crossing of voltage or current]
  - H02M1/06 . Circuits specially adapted for rendering non-conductive gas discharge tubes or equivalent semiconductor devices, e.g. thyratrons, thyristors
  - H02M1/06M . . [N: for discharge tubes]
  - H02M1/08 . Circuits specially adapted for the generation of control voltages for semiconductor devices incorporated in static converters
  - H02M1/08B . . [N: wherein the phase of the control voltage is adjustable with reference to the AC source]
  - H02M1/08B2 . . . [N: with digital control]
  - H02M1/08C . . [N: for the ignition at the zero crossing of the voltage or the current]
  - H02M1/084 . . using a control circuit common to several phases of a multi-phase system
  - H02M1/084B . . . [N: digitally controlled (or with digital control)]
  - H02M1/088 . . for the simultaneous control of series or parallel connected semiconductor devices
  - H02M1/092 . . . the control signals being transmitted optically
  - H02M1/096 . . . the power supply of the control circuit being connected in parallel to the main switching element ([H02M1/092 takes precedence](#))
  - H02M1/10 . Arrangements incorporating converting means for enabling loads to be operated at will from different kinds of power supplies, e.g. from ac or dc
  - H02M1/12 . Arrangements for reducing harmonics from ac input or output
  - H02M1/12F . . [N: using passive filters] [N0002]
  - H02M1/14 . Arrangements for reducing ripples from dc input or output
  - H02M1/14B . . [N: using compensating arrangements (for reducing noise from the supply in transmission systems [H04B15/00B](#))] [C9612]
  - H02M1/14M . . [N: using discharge tubes]
  - H02M1/15 . . using active elements
  - H02M1/16 . Means for providing current step on switching, e.g. with saturable reactor
  - H02M1/20 . Contact mechanisms of dynamic converters
  - H02M1/22 . . incorporating collectors and brushes
  - H02M1/24 . . incorporating rolling or tumbling contacts
  - H02M1/26 . . incorporating cam-operated contacts
  - H02M1/28 . . incorporating electromagnetically-operated vibrating contacts
  - H02M1/30 . . incorporating liquid contacts
  - H02M1/32 . Means for protecting converters other than automatic disconnection ([emergency protective circuit arrangements specially adapted for converters with automatic disconnection \[H02H7/10\]\(#\)](#)) [N0703]

[N: **WARNING**

[C0703]

Group [H02M1/32](#) and its subgroup are not complete, see provisionally also

- P, [H02M3/00](#) and subgroups, [H02M7/00](#) and subgroups]
- [H02M1/34](#) . . . Snubber circuits [N0703]
- [H02M1/36](#) . Means for starting or stoping converters [N0703]
- [N: **WARNING**  
[C0703]  
Group [H02M1/36](#) is not complete, see provisionally also [H02M1/00S](#), [H02M3/00](#) and subgroups, [H02M7/00](#) and subgroups]
- [H02M1/38](#) . Means for preventing simultaneous conduction of switches [N0703]
- [N: **WARNING**  
[C0703]  
Group [H02M1/38](#) is not complete, see provisionally also [H02M1/00P2](#), [H02M3/337](#) and subgroups, [H02M7/538](#) and subgroups]
- [H02M1/40](#) . Means for preventing magnetic saturation [N0703]
- [N: **WARNING**  
[C0703]  
Group [H02M1/40](#) is not complete, see provisionally also [H02M3/335](#)]
- [H02M1/42](#) . Circuits or arrangements for compensating for or adjusting power factor in converters or inverters [N0703]
- [N: **WARNING**  
[C0703]  
Group [H02M1/42](#) is not complete, see provisionally also [H02M1/00P](#) and subgroups]
- [H02M1/42B](#) . . [N: Arrangements for improving power factor of AC input] [N0710]
- [H02M1/42B3](#) . . . [N: operating from a three-phase input voltage (H02M1/42B7 takes precedence)] [N0710]
- [H02M1/42B5](#) . . . [N: using a non-isolated boost converter] [N0710]
- [H02M1/42B7](#) . . . [N: using a bridge converter consisting of active switches] [N0710]
- [H02M1/42B9](#) . . . [N: using a resonant converter] [N0710]
- [H02M1/42B11](#) . . . [N: using a single converter stage both for correction of AC input power factor and generation of a high frequency AC output voltage] [N0710]
- [H02M1/42B12](#) . . . [N: using a single converter stage both for correction of AC input power factor and generation of a regulated and galvanically isolated DC output voltage (H02M1/42B9 takes precedence)] [N0710]
- [H02M1/42B13](#) . . . [N: using passive elements] [N0710]
- [H02M1/44](#) . Circuits or arrangements for compensating for electromagnetic interference in converters or inverters [N0703]
- [N: **WARNING**  
[C0703]  
Group [H02M1/44](#) is not complete, see provisionally also [H02M7/00](#) and subgroups]
- H02M3/00** **Conversion of dc power input into dc power output** [N: (converters specially adapted for use in combination with a battery [H02J7/00K1](#))] [C9911]

- H02M3/00K . [N: using Cuk converters] [N9511]
- H02M3/02 . without intermediate conversion into ac
- H02M3/04 . . by static converters
- H02M3/06 . . . using resistors or capacitors, e.g. potential divider
- H02M3/07 . . . . using capacitors charged and discharged alternately by semiconductor devices with control electrode, [N: e.g. charge pumps (for substrate bias voltage generators G05F3/20S; for static stores G11C5/14P, G11C16/06; charge pumping structures for internal polarisation H01L27/02B3B2)] [C9810]
- H02M3/07S . . . . . [N: Charge pumps of the SCHENKEL type]
- H02M3/08 . . . using discharge tubes without control electrode or semiconductor devices without control electrode
- H02M3/10 . . . using discharge tubes with control electrode or semiconductor devices with control electrode (H02M3/07 takes precedence)
- H02M3/125 . . . . using devices of a thyatron or thyristor type requiring extinguishing means
- H02M3/13 . . . . . using discharge tubes only
- H02M3/135 . . . . . using semiconductor devices only
- H02M3/137 . . . . . with automatic control of output voltage or current, e.g. switching regulators
- H02M3/139 . . . . . {7 dots} with digital control
- H02M3/142 . . . . . {7 dots} including plural semiconductor devices as final control devices for a single load
- H02M3/145 . . . . using devices of a triode or transistor type requiring continuous application of a control signal
- H02M3/15 . . . . . using discharge tubes only
- H02M3/155 . . . . . using semiconductor devices only
- H02M3/156 . . . . . with automatic control of output voltage or current, e.g. switching regulators
- H02M3/156B . . . . . {7 dots} [N: without using an external clock (H02M3/158 takes precedence)]
- H02M3/157 . . . . . {7 dots} with digital control
- H02M3/158 . . . . . {7 dots} including plural semiconductor devices as final control devices for a single load
- H02M3/158B . . . . . {8 dots} [N: Buck-boost converters (H02M3/158P takes precedence)] [N9511] [C9901]
- H02M3/158P . . . . . {8 dots} [N: with a plurality of power processing stages connected in parallel] [N9901]
- H02M3/158S . . . . . {8 dots} [N: comprising at least one synchronous rectifier element (H02M3/158B, H02M3/158P take precedence)] [N9904]
- H02M3/16 . . by dynamic converters
- H02M3/18 . . . using capacitors or batteries which are alternately charged and discharged, e.g. charged in parallel and discharged in series
- H02M3/20 . . by combination of static with dynamic converters; by combination of dynamo-electric with other dynamic or static converters
- H02M3/22 . with intermediate conversion into ac

H02M3/24	. . .	by static converters
H02M3/26	. . .	using discharge tubes without control electrode or semiconductor devices without control electrode to produce the intermediate ac
H02M3/28	. . .	using discharge tubes with control electrode or semiconductor devices with control electrode to produce the intermediate ac
H02M3/28B	. . . .	[N: Single converters with a plurality of output stages connected in parallel (parallel operation of a plurality of converters in dc distribution networks <a href="#">H02J1/10</a> )] [N9807]
H02M3/305	. . . .	using devices of a thyatron or thyristor type requiring extinguishing means
H02M3/31	. . . . .	using discharge tubes only
H02M3/315	. . . . .	using semiconductor devices only
H02M3/315C	. . . . .	[N: with automatic control of the output voltage or current]
H02M3/325	. . . . .	using devices of a triode or a transistor type requiring continuous application of a control signal
H02M3/33	. . . . .	using discharge tubes only
H02M3/335	. . . . .	using semiconductor devices only
H02M3/335C	. . . . .	[N: with automatic control of the output voltage or current ( <a href="#">H02M3/335M</a> , <a href="#">H02M3/335S</a> take precedence)] [C9603]
H02M3/335C3	. . . . . . .	{7 dots} [N: with digital control] [C9603]
H02M3/335C4	. . . . . . .	{7 dots} [N: with galvanic isolation between input and output] [C9603]
H02M3/335D	. . . . . .	[N: having at least two simultaneously operating switches on the input side, e.g. "double forward" or "double (switched) flyback" converter]
H02M3/335F	. . . . . .	[N: of the forward type ( <a href="#">H02M3/335D</a> , <a href="#">H02M3/335S</a> take precedence)] [C9603]
H02M3/335F2	. . . . . . .	{7 dots} [N: with automatic control of the output voltage or current ( <a href="#">H02M3/335M</a> takes precedence)]
H02M3/335F2B	. . . . . . . .	{8 dots} [N: with galvanic isolation between input and output]
H02M3/335M	. . . . . .	[N: having more than one output with independent control]
H02M3/335S	. . . . . .	[N: having several active switching elements ( <a href="#">H02M3/335D</a> takes precedence)] [N9603]
H02M3/335S2	. . . . . . .	{7 dots} [N: having at least one active switching element at the secondary side of an isolation transformer] [N9603]
H02M3/335S2B	. . . . . . . .	{8 dots} [N: Bidirectional converters] [N9603]
H02M3/335S2S	. . . . . . . .	{8 dots} [N: having a synchronous rectifier circuit or a synchronous freewheeling circuit at the secondary side of an isolation transformer] [N9603]
H02M3/337	. . . . . .	in push-pull configuration [N: ( <a href="#">H02M3/335S2</a> takes precedence; with self-oscillating arrangements <a href="#">H02M3/338B</a> and <a href="#">H02M3/338C</a> )] [C9603]
H02M3/337B	. . . . . . .	{7 dots} [N: of the parallel type]
H02M3/337B2	. . . . . . . .	{8 dots} [N: with preregulator, e.g. current injected push-pull]
H02M3/337C	. . . . . . .	{7 dots} [N: with automatic control of output voltage or current]
H02M3/337C2	. . . . . . . .	{8 dots} [N: in a push-pull configuration of the parallel type ( <a href="#">H02M3/337B2</a> takes precedence)]
H02M3/338	. . . . . .	in a self-oscillating arrangement ( <a href="#">H02M3/337</a> takes precedence)
H02M3/338A	. . . . . . .	{7 dots} [N: using a single commutation path]

H02M3/338B	. . . . . {7 dots} [N: in a push-pull circuit arrangement]
H02M3/338B2	. . . . . {8 dots} [N: of the parallel type]
H02M3/338C	. . . . . {7 dots} [N: with automatic control of output voltage or current ( <a href="#">H02M3/335M</a> takes precedence)]
H02M3/338C2	. . . . . {8 dots} [N: in a push-pull configuration]
H02M3/338C2B	. . . . . {9 dots} [N: of the parallel type]
H02M3/34	. . by dynamic converters
H02M3/36	. . . using mechanical parts to select progressively or to vary continuously the input potential
H02M3/38	. . . using mechanical contact-making and -breaking parts to interrupt a single potential
H02M3/40	. . . . wherein the parts are rotating and collectors co-operate with brushes or rollers
H02M3/42	. . . . with electromagnetically-operated vibrating contacts, e.g. chopper (self-interrupters in general <a href="#">H01H51/34</a> )
H02M3/44	. . by combination of static with dynamic converters; by combination of dynamo-electric with other dynamic or static converters

## **H02M5/00 Conversion of ac power input into ac power output, e.g. for change of voltage, for change of frequency, for change of number of phases**

H02M5/00M	. [N: using discharge tubes]
H02M5/02	. without intermediate conversion into dc
H02M5/04	. . by static converters ( <a href="#">controlling transformers, reactors or choke coils, e.g. by tap changing</a> <a href="#">H02P13/00</a> )
H02M5/06	. . . using impedances
H02M5/08	. . . . using capacitors only
H02M5/10	. . . using transformers
H02M5/12	. . . . for conversion of voltage or current amplitude only
H02M5/14	. . . . for conversion between circuits of different phase number
H02M5/16	. . . . for conversion of frequency
H02M5/18	. . . . for conversion of waveform
H02M5/20	. . . using discharge tubes without control electrode or semiconductor devices without control electrode
H02M5/22	. . . using discharge tubes with control electrode or semiconductor devices with control electrode
H02M5/22H	. . . . [N: comprising two stages of AC-AC conversion, e.g. having a high frequency intermediate link]
H02M5/25	. . . . using devices of a thyatron or thyristor type requiring extinguishing means ([N: <a href="#">H02M5/22H</a> ], <a href="#">H02M5/27</a> take precedence)
H02M5/253	. . . . . using discharge tubes only
H02M5/257	. . . . . using semiconductor devices only
H02M5/257C	. . . . . [N: with control circuit]
H02M5/257C2	. . . . . {7 dots} [N: with digital control]
H02M5/27	. . . . . for conversion of frequency

H02M5/27B	. . . . . [N: from a three phase input voltage]
H02M5/27C	. . . . . [N: for variable speed constant frequency systems]
H02M5/27D	. . . . . [N: with digital control]
H02M5/275	. . . . using devices of a triode or transistor type requiring continuous application of a control signal ([N: <a href="#">H02M5/22H</a> ], <a href="#">H02M5/297</a> take precedence)
H02M5/29	. . . . . using discharge tubes only
H02M5/293	. . . . . using semiconductor devices only
H02M5/297	. . . . . for conversion of frequency
H02M5/32	. . by dynamic converters
H02M5/34	. . . using mechanical contact-making and -breaking parts
H02M5/36	. . . . wherein the parts are rotating and collectors co-operate with brushes or rollers
H02M5/38	. . by combination of static with dynamic converters; by combination of dynamo-electric with other dynamic or static converters
H02M5/40	. with intermediate conversion into dc
H02M5/42	. . by static converters
H02M5/44	. . . using discharge tubes or semiconductor devices to convert the intermediate dc into ac
H02M5/443	. . . . using devices of a thyatron or thyristor type requiring extinguishing means
H02M5/447	. . . . . using discharge tubes only
H02M5/45	. . . . . using semiconductor devices only
H02M5/45B	. . . . . [N: having a rectifier with controlled elements]
H02M5/451	. . . . . with automatic control of output voltage or frequency
H02M5/452	. . . . . with automatic control of output waveform
H02M5/453	. . . . using devices of a triode or transistor type requiring continuous application of a control signal
H02M5/456	. . . . . using discharge tubes only
H02M5/458	. . . . . using semiconductor devices only
H02M5/458B	. . . . . [N: having a rectifier with controlled elements]
H02M5/46	. . by dynamic converters
H02M5/48	. . by combination of static with dynamic converters; by combination of dynamo-electric with other dynamic or static converters
<b>H02M7/00</b>	<b>Conversion of ac power input into dc power output; Conversion of dc power input into ac power output</b>
H02M7/00D	. [N: Constructional details, e.g. physical layout, assembly, wiring, busbar connections] [N9505]
H02M7/00M	. [N: using discharge tubes]
H02M7/02	. Conversion of ac power input into dc power output without possibility of reversal
H02M7/04	. . by static converters
H02M7/04B	. . . [N: using transformers or inductors only]
H02M7/04M	. . . [N: using discharge tubes]



H02M7/06	. . .	using discharge tubes without control electrode or semiconductor devices without control electrode
H02M7/06A	. . . .	[N: Avoiding or suppressing excessive transient voltages or currents] [C9701]
H02M7/06B	. . . .	[N: with several outputs]
H02M7/06C	. . . .	[N: particular circuits having a special characteristic]
H02M7/06T	. . . .	[N: mounted on a transformer]
H02M7/08	. . . .	arranged for operation in parallel
H02M7/10	. . . .	arranged for operation in series, e.g. for multiplication of voltage
H02M7/10B	. . . . .	[N: Containing passive elements (capacitively coupled) which are ordered in cascade on one source]
H02M7/10B2	. . . . .	[N: With physical arrangement details]
H02M7/12	. . .	using discharge tubes with control electrode or semiconductor devices with control electrode
H02M7/12A	. . . .	[N: Avoiding or suppressing excessive transient voltages or currents] [C9701]
H02M7/145	. . . .	using devices of a thyatron or thyristor type requiring extinguishing means
H02M7/15	. . . . .	using discharge tubes only
H02M7/15C	. . . . .	[N: with automatic control ( <a href="#">H02M7/15P</a> takes precedence)]
H02M7/15P	. . . . .	[N: arranged for operation in parallel]
H02M7/155	. . . . .	using semiconductor devices only
H02M7/155B	. . . . .	[N: in a biphasic or polyphase arrangement (voltage multipliers <a href="#">H02M7/19</a> )]
H02M7/155C	. . . . .	[N: with control circuit]
H02M7/155C1	. . . . .	{7 dots} [N: with automatic control of the output voltage or current]
H02M7/162	. . . . .	in a bridge configuration
H02M7/162C	. . . . .	{7 dots} [N: with control circuit]
H02M7/162C1	. . . . .	{8 dots} [N: with automatic control of the output voltage or current]
H02M7/17	. . . . .	arranged for operation in parallel
H02M7/19	. . . . .	arranged for operation in series, e.g. for voltage multiplication
H02M7/21	. . . .	using devices of a triode or transistor type requiring continuous application of a control signal
H02M7/213	. . . . .	using discharge tubes only
H02M7/217	. . . . .	using semiconductor devices only
H02M7/217B	. . . . .	[N: in a biphasic or polyphase circuit arrangement ( <a href="#">H02M7/217S</a> takes precedence; voltage multipliers <a href="#">H02M7/25</a> )] [C9904]
H02M7/217S	. . . . .	[N: comprising a passive stage to generate a rectified sinusoidal voltage and a controlled switching element in series between such stage and the output] [N9904]
H02M7/219	. . . . .	in a bridge configuration
H02M7/23	. . . . .	arranged for operation in parallel [N: ( <a href="#">H02M7/217S</a> takes precedence)] [C9904]
H02M7/25	. . . . .	arranged for operation in series, e.g. for multiplication of voltage
H02M7/26	. . .	using open-spark devices, e.g. Marx rectifier
H02M7/28	. . .	using electrolytic rectifiers



- H02M7/30 . . . by dynamic converters
- H02M7/32 . . . . using mechanical contact-making and -breaking parts
- H02M7/34 . . . . wherein the parts are rotating and collectors co-operate with brushes or rollers
- H02M7/36 . . . . with electromagnetically-operated vibrating contacts, e.g. chopper  
(self-interrupters in general [H01H51/34](#))
- H02M7/38 . . . . using one or more sparking electrodes rotating over counterelectrodes
- H02M7/40 . . . by combination of static with dynamic converters; by combination of dynamo-electric with other dynamic or static converters
  
- H02M7/42 . Conversion of dc power input into ac power output without possibility of reversal
- H02M7/44 . . . by static converters
- H02M7/44M . . . . [N: using discharge tubes]
- H02M7/46 . . . . using discharge tubes without control electrode or semiconductor devices without control electrode
- H02M7/48 . . . . using discharge tubes with control electrode or semiconductor devices with control electrode
- H02M7/48H . . . . . [N: having a high frequency intermediate AC stage]
- H02M7/48R . . . . . [N: operating from a resonant DC source, i.e. the DC input voltage varies periodically, e.g. resonant DC-link inverters]
- H02M7/483 . . . . . Converters with outputs that each can have more than two voltages levels  
[N0703]
- H02M7/487 . . . . . Neutral point clamped inverters [N0703]
- H02M7/49 . . . . . Combination of the output voltage waveforms of a plurality of converters  
[N0703]
- H02M7/493 . . . . . the static converters being arranged for operation in parallel [N0703]
- H02M7/497 . . . . . sinusoidal output voltages being obtained by combination of several voltages being out of phase [N0703]
- H02M7/501 . . . . . sinusoidal output voltages being obtained by the combination of several pulse-voltages having different amplitude and width [N0703]
- H02M7/505 . . . . . using devices of a thyatron or thyristor type requiring extinguishing means  
[N: ([H02M7/48H](#), [H02M7/483](#), [H02M7/493](#) and [H02M7/48R](#) take precedence)]
- H02M7/51 . . . . . using discharge tubes only
- H02M7/515 . . . . . using semiconductor devices only
- H02M7/515H . . . . . . [N: with separate extinguishing means]
- H02M7/515H2 . . . . . . . {7 dots} [N: wherein each commutation element has its own extinguishing means]
- H02M7/515K . . . . . . . [N: wherein the extinguishing of every commutation element will be obtained by means of a commutation inductance, by starting another main commutation element in series with the first]
- H02M7/516 . . . . . . Self-oscillating arrangements [N0703]
- H02M7/517 . . . . . . with special starting equipment
- H02M7/519 . . . . . . in a push-pull configuration ([H02M7/517](#) takes precedence)
- H02M7/521 . . . . . . in a bridge configuration
- H02M7/523 . . . . . . with LC-resonance circuit in the main circuit
- H02M7/523B . . . . . . . {7 dots} [N: the commutation elements being in a push-pull

									arrangement]
H02M7/523B2	.	.	.	.	.	.	.	.	{8 dots} [N: in a series push-pull arrangement]
H02M7/525	.	.	.	.	.	.	.	.	with automatic control of output waveform or frequency ( <a href="#">H02M7/517</a> to <a href="#">H02M7/523</a> take precedence)
H02M7/527	.	.	.	.	.	.	.	.	{7 dots} by pulse width modulation
H02M7/529	.	.	.	.	.	.	.	.	{8 dots} using digital control
H02M7/53	.	.	.	.	.	.	.	.	using devices of a triode or transistor type requiring continuous application of a control signal [N: ( <a href="#">H02M7/48H</a> , <a href="#">H02M7/48P</a> and <a href="#">H02M7/48R</a> take precedence)]
H02M7/533	.	.	.	.	.	.	.	.	using discharge tubes only
H02M7/537	.	.	.	.	.	.	.	.	using semiconductor devices only, e.g. single switched pulse inverters [C0703]
H02M7/5375	.	.	.	.	.	.	.	.	with special starting equipment [N0705]
									[N: <b>WARNING</b> [C0802] Incomplete, see also <a href="#">H02M1/36</a> ]
H02M7/538	.	.	.	.	.	.	.	.	in a push-pull configuration ( <a href="#">H02M7/5375</a> takes precedence; [N: with oscillating arrangements <a href="#">H02M7/5383B</a> , <a href="#">H02M7/5383C2</a> ])
H02M7/538C	.	.	.	.	.	.	.	.	{7 dots} [N: with automatic control of output voltage or current]
H02M7/538C2	.	.	.	.	.	.	.	.	{8 dots} [N: in a push-pull configuration of the parallel type]
H02M7/5381	.	.	.	.	.	.	.	.	{7 dots} Parallel type [N0703]
H02M7/5383	.	.	.	.	.	.	.	.	in a self-oscillating arrangement ( <a href="#">H02M7/538</a> takes precedence)
H02M7/5383B	.	.	.	.	.	.	.	.	{7 dots} [N: in a push-pull arrangement]
H02M7/5383B4	.	.	.	.	.	.	.	.	{8 dots} [N: of the parallel type]
H02M7/53838	.	.	.	.	.	.	.	.	{7 dots} using a single commutation path [N0703]
H02M7/53846	.	.	.	.	.	.	.	.	{7 dots} Control circuits [N0703] [N: WARNING Group H02M7/53846 and subgroups is not complete, see provisionally also H02M7/5383 and subgroups] [C0703]
H02M7/53846H	.	.	.	.	.	.	.	.	{8 dots} [N: for thyristor type converters] [N0703]
H02M7/53846R	.	.	.	.	.	.	.	.	{8 dots} [N: for transistor type converters] [N0703]
H02M7/53854	.	.	.	.	.	.	.	.	{8 dots} using thyristor type converters [N0703]
H02M7/53862	.	.	.	.	.	.	.	.	{8 dots} using transistor type converters [N0703]
H02M7/5387	.	.	.	.	.	.	.	.	in a bridge configuration
H02M7/5387C	.	.	.	.	.	.	.	.	{7 dots} [N: with automatic control of output voltage or current]
H02M7/5387C2	.	.	.	.	.	.	.	.	{8 dots} [N: with digital control]
H02M7/5387C3	.	.	.	.	.	.	.	.	{8 dots} [N: with analogue control of three-phase output] [N9607]
H02M7/5388	.	.	.	.	.	.	.	.	{7 dots} with asymmetrical configuration of switches [N0703] [N: WARNING Group H02M7/5388 is not complete, see provisionally also H02M7/5387 and subgroups] [C0703]
H02M7/539	.	.	.	.	.	.	.	.	with automatic control of output wave form or frequency ( <a href="#">H02M7/5375</a> to <a href="#">H02M7/5387</a> take precedence)
H02M7/5395	.	.	.	.	.	.	.	.	{7 dots} by pulse-width modulation
H02M7/54	.	.	.	.	.	.	.	.	by dynamic converters
H02M7/56	.	.	.	.	.	.	.	.	using mechanical parts to select progressively, or to vary continuously, the input potential

- H02M7/58 . . . using mechanical contact-making and -breaking parts to interrupt a single potential
- H02M7/60 . . . . wherein the parts are rotating and collectors co-operate with brushes or rollers
- H02M7/62 . . . . with electromagnetically-operated vibrating contacts, e.g. chopper  
(self-interrupters in general [H01H51/34](#))
- H02M7/64 . . by combination of static with dynamic converters; by combination of dynamo-electric with other dynamic or static converters
- H02M7/66 . with possibility of reversal
- H02M7/68 . . by static converters
- H02M7/70 . . . using discharge tubes without control electrode or semiconductor devices without control electrode
- H02M7/72 . . . using discharge tubes with control electrode or semiconductor devices with control electrode
- H02M7/75 . . . . using devices of a thyatron or thyristor type requiring extinguishing means  
([H02M7/77](#) takes precedence)
- H02M7/753 . . . . . using discharge tubes only
- H02M7/757 . . . . . using semiconductor devices only
- H02M7/757B . . . . . [N: for high voltage direct transmission link]
- H02M7/758 . . . . . with automatic control of output waveform or frequency
- H02M7/77 . . . . . arranged for operation in parallel
- H02M7/79 . . . . using devices of a triode or transistor type requiring continuous application of a control signal ([H02M7/81](#) takes precedence)
- H02M7/793 . . . . . using discharge tubes only
- H02M7/797 . . . . . using semiconductor devices only
- H02M7/81 . . . . . arranged for operation in parallel
- H02M7/82 . . . using open-spark devices, e.g. Marx rectifier
- H02M7/84 . . . using electrolytic rectifiers
- H02M7/86 . . by dynamic converters
- H02M7/88 . . . using mechanical parts to select progressively or to vary continuously the input potential
- H02M7/90 . . . using mechanical contact-making and -breaking parts to interrupt a single potential
- H02M7/92 . . . . wherein the parts are rotating and collectors co-operate with brushes or rollers
- H02M7/94 . . . . wherein the parts are operated by rotating cams or cam-like devices
- H02M7/95 . . . . with electromagnetically-operated vibrating contacts, e.g. chopper  
(self-interrupters in general [H01H51/34](#))
- H02M7/96 . . . . with moving liquid contacts
- H02M7/98 . . by combination of static with dynamic converters; by combination of dynamo-electric with other dynamic or static converters
- H02M11/00 Power conversion systems not covered by the preceding groups**