

**CPC****COOPERATIVE PATENT CLASSIFICATION****G04G****ELECTRONIC TIME-PIECES****NOTES**

1. This subclass covers:
  - electronic time-pieces with no moving parts;
  - electronic circuitry for producing timing pulses irrespective of the nature of the time indicating means utilised.
2. This subclass does not cover electronic time-pieces with moving parts, which are covered by subclass [G04C](#).

**G04G 3/00**

**Producing timing pulses** (driving circuits for stepping motors [G04C 3/14](#); producing preselected time intervals for use as timing standards [G04F 5/00](#); pulse technique in general [H03K](#); control, synchronisation, or stabilisation of generators in general [H03L](#))

**G04G 3/02**

- Circuits for deriving low frequency timing pulses from pulses of higher frequency (pulse frequency dividers in general [H03K 23/00](#) to [H03K 29/00](#))

**G04G 3/022**

- {the desired number of pulses per unit of time being obtained by adding to or subtracting from a pulse train one or more pulses (in general [G06F 7/68](#))}

**G04G 3/025**

- {by storing time-data which are periodically investigated and modified accordingly, e.g. by using cyclic shift-registers}

**G04G 3/027**

- {by combining pulse-trains of different frequencies, e.g. obtained from two independent oscillators or from a common oscillator by means of different frequency dividing ratios (synchronisation of electric time pieces [G04G 7/00](#), [G04C 11/00](#))}

**G04G 3/04**

- Temperature-compensating arrangements

**G04G 5/00**

**Setting, i.e. correcting or changing, the time-indication** (radio-controlled time-pieces [G04R](#))

**G04G 5/002**

- {brought into action by radio}

**WARNING**

This group is no longer used for the classification of new documents as from September 1, 2012. The backlog of this group is being continuously reclassified to subgroups of [G04R](#)

**G04G 5/005**

- {Debouncing circuits}

**G04G 5/007**

- {by using a separate register into which the entire correct setting is introduced, which is thereafter transferred to the time counters}

**G04G 5/02**

- by temporarily changing the number of pulses per unit time, e.g. quick-feed method

**G04G 5/022**

- {quick-feed method}

**WARNING**

Not complete, see also [G04G 5/02](#)

**G04G 5/025**

- {the time-counters first being reset to zero}

- G04G 5/027
  - . . {by adding or suppressing individual pulses, e.g. for step-motor}

**WARNING**

Not complete, see also [G04G 5/02](#)

- G04G 5/04
  - . by setting each of the displayed values, e.g. date, hour, independently

- G04G 5/041
  - . . {Correction of the minutes counter in function of the seconds' counter position at zero adjustment of the latter}

- G04G 5/043
  - . . {using commutating devices for selecting the value, e.g. hours, minutes, seconds, to be corrected}

**WARNING**

Not complete, see also [G04G 5/04](#)

- G04G 5/045
  - . . . {using a sequential electronic commutator}

**WARNING**

Not complete, see also [G04G 5/04](#)

- G04G 5/046
  - . . . . {by using a separate register into which the correct setting of one of the counters is introduced which is thereafter transferred to the selected time-counter to be reset}

- G04G 5/048
  - . . . {by using a separate register into which the correct setting of the selected time-counter is introduced which is thereafter transferred to the time-counter to be reset}

**G04G 7/00**

**Synchronisation (radio-controlled time-pieces [G04R](#))**

- G04G 7/005
  - . {provided with arrangements to prevent synchronisation by interfering signals ([G04G 7/023](#) takes precedence)}

- G04G 7/02
  - . {by radio}

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- G04G 7/023
  - . . {provided with arrangements to prevent synchronisation by interfering signals}

- G04G 7/026
  - . . {the time-piece preparing itself on set times on the reception of the synchronising signal}

**G04G 9/00**

**Visual time or date indication means**

- G04G 9/0005
  - . {Transmission of control signals}

- G04G 9/0011
  - . . {using coded signals (synchronisation combined with automatic setting at regular intervals, e.g. by coded signals [G04G 7/00](#))}

- G04G 9/0017
  - . {in which the light emitting display elements may be activated at will or are controlled in accordance with the ambient light}

- G04G 9/0023
  - . {by light valves in general ([G04G 9/06](#), [G04G 9/12](#) takes precedence; electro-, magneto- or acousto-optic devices in general [G02F 1/00](#))}

- G04G 9/0029
  - . . {Details}

- G04G 9/0035 . . . {constructional}
- G04G 9/0041 . . . . {Illumination devices}
- G04G 9/0047 . . . {electrical, e.g. selection or application of the operating voltage}
- G04G 9/0052 . . . . {using means to adjust the display in accordance with the ambient light, e.g. switching or controlling a supplementary light source}
- G04G 9/0058 . {using a cathode ray tube as display device (displaying supplementary informative, e.g. time on TV screen [H04N 5/445](#))}
- G04G 9/0064 . {in which functions not related to time can be displayed (digital output to display devices of digital computers [G06F 3/14](#))}
- G04G 9/007 . . {combined with a calculator or computing means}
- G04G 9/0076 . {in which the time in another time-zone or in another city can be displayed at will}
- G04G 9/0082 . {by building-up characters using a combination of indicating elements and by selecting desired characters out of a number of characters or by selecting indicating elements the positions of which represents the time, i.e. combinations of [G04G 9/02](#) and [G04G 9/08](#)}
- G04G 9/0088 . . {by controlling light sources, e.g. electroluminescent diodes}
- G04G 9/0094 . . {using light valves, e.g. liquid crystals}
- G04G 9/02 . by selecting desired character out of a number of characters or by selecting indicating elements the position of which represent the time, e.g. by using multiplexing techniques {([G04G 9/0082](#) takes precedence)}
- G04G 9/022 . . {using multiplexing techniques}
- G04G 9/025 . . {provided with date indication}
- G04G 9/027 . . {provided with means for displaying at will a time indication or a date or a part thereof}
- G04G 9/04 . . by controlling light sources, e.g. electroluminescent diodes {([G04G 9/0058](#) takes precedence)}
- G04G 9/042 . . . {using multiplexing techniques}
- G04G 9/045 . . . {provided with date indication}
- G04G 9/047 . . . {provided with means for displaying at will a time indication or a date or a part thereof}
- G04G 9/06 . . using light valves, e.g. liquid crystals
- G04G 9/062 . . . {using multiplexing techniques}
- G04G 9/065 . . . {using a drop of liquid suspended by capillary forces and moved by an electric field}
- G04G 9/067 . . . {using mechano-optical means}
- G04G 9/08 . by building-up characters using a combination of indicating elements, e.g. by using multiplexing techniques {([G04G 9/0082](#) takes precedence)}
- G04G 9/082 . . {using multiplexing techniques}
- G04G 9/085 . . {provided with date indication}
- G04G 9/087 . . {provided with means for displaying at will a time indication or a date or a part thereof}
- G04G 9/10 . . by controlling light sources, e.g. electroluminescent diodes {([G04G 9/0058](#) takes precedence)}
- G04G 9/102 . . . {using multiplexing techniques}

- G04G 9/105 . . . {provided with date indication}
- G04G 9/107 . . . {provided with means for displaying at will a time indication or a date or a part thereof}
- G04G 9/12 . . using light valves, e.g. liquid crystals
- G04G 9/122 . . . {using multiplexing techniques}
- G04G 9/124 . . . {provided with date indication}
- G04G 9/126 . . . {provided with means for displaying at will a time indication or a date or a part thereof}
- G04G 9/128 . . . {using mechano-optical means}

#### **G04G 11/00**      **Producing optical signals at preselected times**

#### **G04G 13/00**      **Producing acoustic time signals**

- G04G 13/02 . at preselected times, e.g. alarm clocks
- G04G 13/021 . . {Details}
- G04G 13/023 . . . {Adjusting the duration or amplitude of signals}
- G04G 13/025 . . {acting only at one preselected time}
- G04G 13/026 . . {acting at a number of different times}
- G04G 13/028 . . {combined with a radio}

#### **G04G 15/00**      **Time-pieces comprising means to be operated at preselected times or after preselected time intervals ([G04G 11/00](#), [G04G 13/00](#) take precedence; {electronic timers [G04F 1/005](#)}; pulse delay circuits [H03K 5/13](#); electronic time-delay switches [H03K 17/28](#); electronic time-programme switches which automatically terminate their operation after the programme is completed [H03K 17/296](#))**

- G04G 15/003 . {acting only at one preselected time or during one adjustable time interval}
- G04G 15/006 . {for operating at a number of different times (cigar or cigarette receptacles or boxes with means for limiting the frequency of smoking [A24F 15/005](#))}

#### **G04G 17/00**      **Structural details; Housings (constructional details of radio-controlled time-pieces, e.g. antennas [G04R 60/00](#))**

- G04G 17/005 . {Time-pieces combined with games}
- G04G 17/02 . Component assemblies
- G04G 17/04 . . Mounting of electronic components
- G04G 17/045 . . . {Mounting of the display}
- G04G 17/06 . . Electric connectors, e.g. conductive elastomers
- G04G 17/08 . Housings
- G04G 17/083 . . {Watches distributed over several housings}
- G04G 17/086 . . {Desktop clocks}

#### **G04G 19/00**      **Electric power supply circuits specially adapted for use in electronic time-pieces**

- G04G 19/02 . Conversion or regulation of current or voltage
- G04G 19/04 . . Capacitive voltage division or multiplication

- G04G 19/06 . . Regulation
- G04G 19/08 . Arrangements for preventing voltage drop due to overloading the power supply
- G04G 19/10 . Arrangements for supplying back-up power
- G04G 19/12 . Arrangements for reducing power consumption during storage
  
- G04G 21/00** **Input or output devices integrated in time-pieces**
- G04G 21/02 . Detectors of external physical values, e.g. temperature
- G04G 21/025 . . {for measuring physiological data}
- G04G 21/04 . using radio waves (radio-controlled time-pieces [G04R](#))
- G04G 21/06 . using voice
- G04G 21/08 . Touch switches specially adapted for time-pieces
  
- G04G 99/00** **Subject matter not provided for in other groups of this subclass**
- G04G 99/003 . {Pulse shaping; Amplification}
- G04G 99/006 . {Electronic time-pieces using a micro-computer, e.g. for multi-function clocks}