

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