

## SECTION H — ELECTRICITY

## H03 BASIC ELECTRONIC CIRCUITRY

## H03L AUTOMATIC CONTROL, STARTING, SYNCHRONISATION, OR STABILISATION OF GENERATORS OF ELECTRONIC OSCILLATIONS OR PULSES (of dynamo-electric generators H02P) [3]

**Note(s)**

1. This subclass covers:
  - automatic control circuits for generators of electronic oscillations or pulses;
  - starting, synchronisation, or stabilisation circuits for generators where the type of generator is irrelevant or unspecified.
2. This subclass does not cover stabilisation or starting circuits specially adapted to only one specific type of generator, which are covered by subclasses H03B, H03K.
3. In this subclass, the following expression is used with the meaning indicated:
  - "automatic control" covers only closed loop systems.

<p><b>1/00</b> <b>Stabilisation of generator output against variations of physical values, e.g. power supply</b> (automatic control H03L 5/00, H03L 7/00) [3]</p> <p>1/02 • against variations of temperature only [3]</p> <p>1/04 • • Constructional details for maintaining temperature constant [3]</p> <p><b>3/00</b> <b>Starting of generators</b> [3]</p> <p><b>5/00</b> <b>Automatic control of voltage, current, or power</b> [3]</p> <p>5/02 • of power [3]</p> <p><b>7/00</b> <b>Automatic control of frequency or phase; Synchronisation</b> (tuning of resonant circuits in general H03J; synchronising in digital communication systems, <u>see</u> the relevant groups in class H04) [3]</p> <p>7/02 • using a frequency discriminator comprising a passive frequency-determining element [3]</p> <p>7/04 • • wherein the frequency-determining element comprises distributed inductance and capacitance [3]</p> <p>7/06 • using a reference signal applied to a frequency- or phase-locked loop [3]</p> <p>7/07 • • using several loops, e.g. for redundant clock signal generation (for indirect frequency synthesis H03L 7/22) [5]</p> <p>7/08 • • Details of the phase-locked loop [3]</p> <p>7/081 • • • provided with an additional controlled phase shifter [5]</p> <p>7/083 • • • the reference signal being additionally directly applied to the generator (direct frequency synchronisation without loop H03L 7/24) [5]</p> <p>7/085 • • • concerning mainly the frequency- or phase-detection arrangement including the filtering or amplification of its output signal (H03L 7/10 takes precedence; frequency or phase detection comparison in general H03D 3/00, H03D 13/00) [5]</p> <p>7/087 • • • using at least two phase detectors or a frequency and phase detector in the loop [5]</p> <p>7/089 • • • the phase or frequency detector generating up-down pulses (H03L 7/087 takes precedence) [5]</p>	<p>7/091 • • • the phase or frequency detector using a sampling device (H03L 7/087 takes precedence) [5]</p> <p>7/093 • • • using special filtering or amplification characteristics in the loop (H03L 7/087-H03L 7/091 take precedence) [5]</p> <p>7/095 • • • using a lock detector (H03L 7/087 takes precedence) [5]</p> <p>7/097 • • • using a comparator for comparing the voltages obtained from two frequency to voltage converters [5]</p> <p>7/099 • • • concerning mainly the controlled oscillator of the loop [5]</p> <p>7/10 • • • for assuring initial synchronisation or for broadening the capture range [3]</p> <p>7/107 • • • using a variable transfer function for the loop, e.g. low pass filter having a variable bandwidth [5]</p> <p>7/113 • • • using frequency discriminator [5]</p> <p>7/12 • • • using a scanning signal (tuning circuits with automatic scanning over a band of frequencies H03J 7/18) [3]</p> <p>7/14 • • • for assuring constant frequency when supply or correction voltages fail [3]</p> <p>7/16 • • Indirect frequency synthesis, i.e. generating a desired one of a number of predetermined frequencies using a frequency- or phase-locked loop [3]</p> <p>7/18 • • • using a frequency divider or counter in the loop (H03L 7/20, H03L 7/22 take precedence) [3]</p> <p>7/181 • • • a numerical count result being used for locking the loop, the counter counting during fixed time intervals [5]</p> <p>7/183 • • • a time difference being used for locking the loop, the counter counting between fixed numbers or the frequency divider dividing by a fixed number [5]</p> <p>7/185 • • • using a mixer in the loop (H03L 7/187-H03L 7/195 take precedence) [5]</p> <p>7/187 • • • using means for coarse tuning the voltage controlled oscillator of the loop (H03L 7/191-H03L 7/195 take precedence) [5]</p>
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## H03L

- 7/189 • • • • • comprising a D/A converter for generating a coarse tuning voltage [5]
- 7/191 • • • • • using at least two different signals from the frequency divider or the counter for determining the time difference (H03L 7/193, H03L 7/195 take precedence) [5]
- 7/193 • • • • • the frequency divider/counter comprising a commutable pre-divider, e.g. a two modulus divider (pulse counters/frequency dividers H03K 21/00-H03K 29/00) [5]
- 7/195 • • • • • in which the counter of the loop counts between two different non zero numbers, e.g. for generating an offset frequency (H03L 7/193 takes precedence; pulse counters for predetermined counting H03K 21/00-H03K 29/00) [5]
- 7/197 • • • • • a time difference being used for locking the loop, the counter counting between numbers which are variable in time or the frequency divider dividing by a factor variable in time, e.g. for obtaining fractional frequency division [5]
- 7/199 • • • • • with reset of the frequency divider or the counter, e.g. for assuring initial synchronisation [5]
- 7/20 • • • using a harmonic phase-locked loop, i.e. a loop which can be locked to one of a number of harmonically related frequencies applied to it (H03L 7/22 takes precedence) [3]
- 7/22 • • • using more than one loop [3]
- 7/23 • • • • • with pulse counters or frequency dividers [5]
- 7/24 • using a reference signal directly applied to the generator [3]
- 7/26 • using energy levels of molecules, atoms, or subatomic particles as a frequency reference [3]
- 9/00 Automatic control not provided for in other groups of this subclass [2006.01]**