

CPC COOPERATIVE PATENT CLASSIFICATION

H ELECTRICITY

(NOTE omitted)

H03 BASIC ELECTRONIC CIRCUITRY

H03C MODULATION (measuring, testing [G01R](#); masers, lasers [H01S](#); modulators specially adapted for use in the amplifiers [H03F 3/38](#); modulating pulses [H03K 7/00](#); so-called modulators capable only of a switching between predetermined states of amplitude, frequency or phase [H03K 17/00](#), [H04L](#); coding, decoding or code conversion, in general [H03M](#); synchronous modulators specially adapted for colour television [H04N 9/65](#))

NOTES

1. This subclass covers only modulation, keying, or interruption of sinusoidal oscillations or electromagnetic waves, the modulating signal having any desired waveform.
2. In this subclass, circuits usable both as modulator and demodulator are classified in the group dealing with the type of modulator involved.

WARNING

The following IPC groups are not in the CPC scheme. The subject matter for these IPC groups is classified in the following CPC groups:

[H03C 1/38](#) - [H03C 1/44](#)

covered by

[H03C 1/36](#)

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|-------------|--|-------------|---|
| 1/00 | Amplitude modulation (H03C 5/00 , H03C 7/00 take precedence) | 1/52 | • Modulators in which carrier or one side-band are wholly or partially suppressed |
| 1/02 | • Details | | |
| 1/04 | • • Means in or combined with modulating stage for reducing angle modulation | 1/54 | • • Balanced modulators, e.g. bridge type, ring type, double balanced type |
| 1/06 | • • Modifications of modulator to reduce distortion, e.g. by feedback, and clearly applicable to more than one type of modulator | 1/542 | • • • {comprising semiconductor devices with at least three electrodes} |
| 1/08 | • by means of variable impedance element | 1/545 | • • • • {using bipolar transistors} |
| | (H03C 1/28 - H03C 1/34 , H03C 1/46 - H03C 1/52 , H03C 1/62 take precedence) | 1/547 | • • • • {using field-effect transistors} |
| 1/10 | • • the element being a current-dependent inductor | 1/56 | • • • comprising variable two-pole elements only |
| 1/12 | • • the element being a voltage-dependent capacitor | 1/58 | • • • • comprising diodes |
| 1/14 | • • the element being a diode | 1/60 | • • with one sideband wholly or partially suppressed |
| 1/16 | • by means of discharge device having at least three electrodes (H03C 1/28 - H03C 1/34 , H03C 1/50 , H03C 1/52 , H03C 1/62 take precedence) | 1/62 | • Modulators in which amplitude of carrier component in output is dependent upon strength of modulating signal, e.g. no carrier output when no modulating signal is present |
| 1/18 | • • carrier applied to control grid | | (H03C 1/28 - H03C 1/34 , H03C 1/46 , H03C 1/48 take precedence) |
| 1/20 | • • • modulating signal applied to anode | 3/00 | Angle modulation (H03C 5/00 , H03C 7/00 take precedence) |
| 1/22 | • • • modulating signal applied to same grid | | |
| 1/24 | • • • modulating signal applied to different grid | 3/005 | • {Circuits for asymmetric modulation} |
| 1/26 | • • • modulating signal applied to cathode | 3/02 | • Details |
| 1/28 | • by means of transit-time tube | 3/04 | • • Means in or combined with modulating stage for reducing amplitude modulation |
| 1/30 | • • by means of a magnetron | | |
| 1/32 | • by deflection of electron beam in discharge tube | 3/06 | • • Means for changing frequency deviation {(for demodulation H03D 3/003 , H03D 3/242)} |
| 1/34 | • by means of light-sensitive element | 3/08 | • • Modifications of modulator to linearise modulation, e.g. by feedback, and clearly applicable to more than one type of modulator |
| 1/36 | • by means of semiconductor device having at least three electrodes (H03C 1/34 , H03C 1/50 , H03C 1/52 , H03C 1/62 take precedence) | 3/09 | • • Modifications of modulator for regulating the mean frequency |
| 1/46 | • Modulators with mechanically or acoustically driven parts | 3/0908 | • • • {using a phase locked loop} |
| 1/48 | • by means of Hall-effect devices | 3/0916 | • • • • {with frequency divider or counter in the loop} |
| 1/50 | • by converting angle modulation to amplitude modulation (H03C 1/28 - H03C 1/34 , H03C 1/46 , H03C 1/48 take precedence) | | |

- 3/0925 {applying frequency modulation at the divider in the feedback loop}
- 3/0933 {using fractional frequency division in the feedback loop of the phase locked loop}
- 3/0941 {applying frequency modulation at more than one point in the loop}
- 3/095 {applying frequency modulation to the loop in front of the voltage controlled oscillator}
- 3/0958 {applying frequency modulation by varying the characteristics of the voltage controlled oscillator}
- 3/0966 {modulating the reference clock}
- 3/0975 {applying frequency modulation in the phase locked loop at components other than the divider, the voltage controlled oscillator or the reference clock}
- 3/0983 {containing in the loop a mixer other than for phase detection}
- 3/0991 {including calibration means or calibration methods}
- 3/10 . . by means of variable impedance [\(H03C 3/30 - H03C 3/38 take precedence\)](#)
- 3/12 . . by means of a variable reactive element
- 3/14 . . . simulated by circuit comprising active element with at least three electrodes, e.g. reactance-tube circuit
- 3/145 {by using semiconductor elements}
- 3/16 in which the active element simultaneously serves as the active element of an oscillator
- 3/18 . . . the element being a current-dependent inductor
- 3/20 . . . the element being a voltage-dependent capacitor
- 3/22 . . . the element being a semiconductor diode, e.g. varicap diode
- 3/222 {using bipolar transistors [\(H03C 3/227 takes precedence\)](#)}
- 3/225 {using field effect transistors [\(H03C 3/227 takes precedence\)](#)}
- 3/227 {using a combination of bipolar transistors and field effect transistors}
- 3/24 . . by means of a variable resistive element, e.g. tube
- 3/245 . . . {by using semiconductor elements}
- 3/26 . . . comprising two elements controlled in push-pull by modulating signal
- 3/28 . . using variable impedance driven mechanically or acoustically
- 3/30 . . by means of transit-time tube
- 3/32 . . the tube being a magnetron
- 3/34 . . by deflection of electron beam in discharge tube
- 3/36 . . by means of light-sensitive element
- 3/38 . . by converting amplitude modulation to angle modulation
- 3/40 . . using two signal paths the outputs of which have a predetermined phase difference and at least one output being amplitude-modulated
- 3/403 . . . {using two quadrature frequency conversion stages in cascade}
- 3/406 . . . {using a feedback loop containing mixers or demodulators}
- 3/42 . . by means of electromechanical devices [\(H03C 3/28 takes precedence\)](#)

- 5/00 Amplitude modulation and angle modulation produced simultaneously or at will by the same modulating signal [\(H03C 7/00 takes precedence\)](#)**
 - 5/02 . . by means of transit-time tube
 - 5/04 . . the tube being a magnetron
 - 5/06 . . by deflection of electron beam in discharge tube
- 7/00 Modulating electromagnetic waves [\(modulating light G02F 1/00; for generating oscillations H03B, H03K\)](#)**
 - 7/02 . . in transmission line, waveguide, cavity resonator or radiation field of antenna
 - 7/022 . . {using ferromagnetic devices, e.g. ferrites}
 - 7/025 . . {using semiconductor devices}
 - 7/027 . . . {using diodes}
 - 7/04 . . Polarisation of transmitted wave being modulated [{\(H03C 7/022 takes precedence\)}](#)
- 99/00 Subject matter not provided for in other groups of this subclass**
- 2200/00 Indexing scheme relating to details of modulators or modulation methods covered by [H03C](#)**
 - 2200/0004 . . Circuit elements of modulators
 - 2200/0008 . . . Variable capacitors, e.g. a varicap, a varactor or a variable capacitance of a diode or transistor
 - 2200/0012 . . . Emitter or source coupled transistor pairs or long tail pairs
 - 2200/0016 . . . Pre-emphasis or de-emphasis circuits
 - 2200/002 . . . Filters with particular characteristics
 - 2200/0025 . . . Gilbert multipliers
 - 2200/0029 . . . Memory circuits, e.g. ROMs, RAMs, EPROMs, latches, shift registers
 - 2200/0033 . . . Transmission lines, e.g. striplines, microstrips or coplanar lines
 - 2200/0037 . . Functional aspects of modulators
 - 2200/0041 . . . Calibration of modulators
 - 2200/0045 . . . Pulse width, duty cycle or on/off ratio
 - 2200/005 . . . Modulation sensitivity
 - 2200/0054 . . . Filtering of the input modulating signal for obtaining a constant sensitivity of frequency modulation
 - 2200/0058 . . . Quadrature arrangements
 - 2200/0062 . . . Lowering the supply voltage and saving power
 - 2200/0066 . . . Reduction of carrier leakage or the suppression of the carrier
 - 2200/007 . . . with one sideband wholly or partially suppressed
 - 2200/0075 . . . FM modulation down to DC
 - 2200/0079 . . . Measures to linearise modulation or reduce distortion of modulation characteristics
 - 2200/0083 Predistortion of input modulating signal to obtain a linear modulation characteristic
 - 2200/0087 . . . Measures to address temperature induced variations of modulation
 - 2200/0091 by stabilising the temperature
 - 2200/0095 by compensating temperature induced variations