

CPC COOPERATIVE PATENT CLASSIFICATION

H03D DEMODULATION OR TRANSFERENCE OF MODULATION FROM ONE CARRIER TO ANOTHER (masers, lasers [H01S](#); circuits capable of acting both as modulator and demodulator [H03C](#); details applicable to both modulators and frequency-changers [H03C](#); demodulating pulses [H03K 9/00](#); transforming types of pulse modulation [H03K 11/00](#); coding, decoding or code conversion, in general [H03M](#); repeater stations [H04B 7/14](#); demodulators adapted for ac systems of digital information transmission [H04L 27/00](#); synchronous demodulators adapted for colour television [H04N 9/66](#))

NOTE

This subclass covers only:

- demodulation or transference of signals modulated on a sinusoidal carrier or on electromagnetic waves;
- comparing phase or frequency of two mutually-independent oscillations.

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| 1/00 | Demodulation of amplitude-modulated oscillations (H03D 5/00 , H03D 9/00 , H03D 11/00 take precedence) | 1/26 | • by means of transit-time tubes |
| 1/02 | • Details | 1/28 | • by deflecting an electron beam in a discharge tube (H03D 1/26 takes precedence) |
| 1/04 | • . Modifications of demodulators to reduce interference by undesired signals | 3/00 | Demodulation of angle-, {frequency- or phase-} modulated oscillations (H03D 5/00 , H03D 9/00 , H03D 11/00 take precedence) |
| 1/06 | • . Modifications of demodulators to reduce distortion, e.g. by negative feedback | 3/001 | • {Details of arrangements applicable to more than one type of frequency demodulator (H03D 3/28 takes precedence)} |
| 1/08 | • by means of non-linear two-pole elements (H03D 1/22 , H03D 1/26 , H03D 1/28 take precedence) | 3/002 | • . {Modifications of demodulators to reduce interference by undesired signals (H03D 3/248 takes precedence)} |
| 1/10 | • . of diodes | 3/003 | • . {Arrangements for reducing frequency deviation, e.g. by negative frequency feedback (combined with a phase locked loop demodulator H03D 3/242 ; changing frequency deviation for modulators H03C 3/06)} |
| 1/12 | • . . with provision for equalising ac and dc loads | 3/004 | • . . {wherein the demodulated signal is used for controlling an oscillator, e.g. the local oscillator} |
| 1/14 | • by means of non-linear elements having more than two poles (H03D 1/22 , H03D 1/26 , H03D 1/28 take precedence) | 3/005 | • . . {wherein the demodulated signal is used for controlling a bandpass filter (automatic bandwidth control H03G ; automatic frequency control H03J 7/02)} |
| 1/16 | • . of discharge tubes | 3/006 | • {by sampling the oscillations and further processing the samples, e.g. by computing techniques (H03D 3/007 takes precedence)} |
| 1/18 | • . of semiconductor devices | 3/007 | • {by converting the oscillations into two quadrature related signals (H03D 3/245 takes precedence)} |
| 1/20 | • . with provision for preventing undesired type of demodulation, e.g. preventing anode detection in a grid detection circuit | 3/008 | • . {Compensating DC offsets} |
| 1/22 | • Homodyne or synchrodyne circuits {(receiver circuits H04B 1/30)} | 3/009 | • . {Compensating quadrature phase or amplitude imbalances} |
| 1/2209 | • . {Decoders for simultaneous demodulation and decoding of signals composed of a sum-signal and a suppressed carrier, amplitude modulated by a difference signal, e.g. stereocoders} | 3/02 | • by detecting phase difference between two signals obtained from input signal (H03D 3/28 - H03D 3/32 take precedence; {muting in frequency-modulation receivers H03G 3/28 }; limiting arrangements H03G 11/00) |
| 1/2218 | • . . {using diodes for the decoding} | 3/04 | • . by counting or integrating cycles of oscillations {(arrangements for measuring frequencies G01R 23/10)} |
| 1/2227 | • . . {using switches for the decoding (diodes used as switches H03D 1/2218)} | 3/06 | • . by combining signals additively or in product demodulators |
| 1/2236 | • . . {using a phase locked loop} | 3/08 | • . . by means of diodes, e.g. Foster-Seeley discriminator |
| 1/2245 | • . {using two quadrature channels (H03D 1/2209 takes precedence)} | | |
| 1/2254 | • . . {and a phase locked loop} | | |
| 2001/2263 | • . . . {including a counter or a divider in the PLL} | | |
| 1/2272 | • . {using FET's (H03D 1/2209 , H03D 1/2245 and H03D 1/2281 take precedence)} | | |
| 1/2281 | • . {using a phase locked loop (H03D 1/2236 and H03D 1/2254 take precedence)} | | |
| 1/229 | • . {using at least a two emitter-coupled differential pair of transistors (H03D 1/2209 - H03D 1/2281 take precedence)} | | |
| 1/24 | • . for demodulation of signals wherein one sideband or the carrier has been wholly or partially suppressed {(receiver circuits H04B 1/302)} | | |

- 3/10 . . . in which the diodes are simultaneously conducting during the same half period of the signal, e.g. radio detector
- 3/12 . . . by means of discharge tubes having more than two electrodes
- 3/14 . . . by means of semiconductor devices having more than two electrodes
- 3/16 . . . by means of electromechanical resonators
- 3/18 . . by means of synchronous gating arrangements
- 3/20 . . . producing pulses whose amplitude or duration depends on phase difference
- 3/22 . . by means of active elements with more than two electrodes to which two signals are applied derived from the signal to be demodulated and having a phase difference related to the frequency deviation, e.g. phase detector
- 3/24 . . Modifications of demodulators to reject or remove amplitude variations by means of locked-in oscillator circuits
- 3/241 . . . {the oscillator being part of a phase locked loop}
- 3/242 {combined with means for controlling the frequency of a further oscillator, e.g. for negative frequency feedback or AFC}
- 3/244 {combined with means for obtaining automatic gain control}
- 3/245 {using at least twophase detectors in the loop (H03D 3/244 takes precedence; in general H03L 7/087)}
- 3/247 {using a controlled phase shifter (in general H03L 7/081)}
- 3/248 {with means for eliminating interfering signals, e.g. by multiple phase locked loops (multiple loops in general H03L 7/07, H03L 7/22)}
- 3/26 . . by means of sloping amplitude/frequency characteristic of tuned or reactive circuit (H03D 3/28 - H03D 3/32 takes precedence)
- 3/28 . . Modifications of demodulators to reduce effects of temperature variations ({automatic frequency regulation in receivers H03J}; automatic frequency control H03L)
- 3/30 . . by means of transit-time tubes
- 3/32 . . by deflecting an electron beam in a discharge tube (H03D 3/30 takes precedence)
- 3/34 . . by means of electromechanical devices (H03D 3/16 takes precedence)
- 5/00** **Circuits for demodulating amplitude-modulated or angle-modulated oscillations at will (H03D 9/00, H03D 11/00 take precedence)**
- 7/00** **Transference of modulation from one carrier to another, e.g. frequency-changing (H03D 9/00, H03D 11/00 take precedence; dielectric amplifiers, magnetic amplifiers, parametric amplifiers used as a frequency-changers H03F)**
- 7/005 . . {by means of superconductive devices}
- 7/02 . . by means of diodes (H03D 7/14 - H03D 7/22 take precedence)
- 7/04 . . having {a partially} negative resistance characteristic, e.g. tunnel diode
- 7/06 . . by means of discharge tubes having more than two electrodes (H03D 7/14 - H03D 7/22 take precedence)
- 7/08 . . the signals to be mixed being applied between the same two electrodes
- 7/10 . . the signals to be mixed being applied between different pairs of electrodes
- 7/12 . . by means of semiconductor devices having more than two electrodes (H03D 7/14 - H03D 7/22 take precedence)
- 7/125 . . {with field effect transistors}
- 7/14 . . Balanced arrangements
- 7/1408 . . {with diodes}
- 7/1416 . . {with discharge tubes having more than two electrodes}
- 7/1425 . . {with transistors}
- WARNING**
- Subgroups H03D 7/1433 - H03D 7/1491 are incomplete pending reclassification; see also this group and its other subgroups
- 7/1433 . . . {using bipolar transistors (H03D 7/145 takes precedence)}
- 7/1441 . . . {using field-effect transistors (H03D 7/145 takes precedence)}
- 7/145 . . . {using a combination of bipolar transistors and field-effect transistors}
- 7/1458 . . . {Double balanced arrangements, i.e. where both input signals are differential}
- 7/1466 . . . {Passive mixer arrangements}
- 7/1475 . . . {Subharmonic mixer arrangements}
- 7/1483 . . . {comprising components for selecting a particular frequency component of the output}
- 7/1491 . . . {Arrangements to linearise a transconductance stage of a mixer arrangement}
- 7/16 . . Multiple-frequency-changing
- 7/161 . . {all the frequency changers being connected in cascade}
- 7/163 . . . {the local oscillations of at least two of the frequency changers being derived from a single oscillator}
- 7/165 . . {at least two frequency changers being located in different paths, e.g. in two paths with carriers in quadrature (combined with amplitude demodulation H03D 1/2245, combined with angle demodulation H03D 3/007; N-path filters H03H 19/002)}
- 7/166 . . . {using two or more quadrature frequency translation stages}
- 7/168 {using a feedback loop containing mixers or demodulators}
- 7/18 . . Modifications of frequency-changers for eliminating image frequencies ({H03D 7/16 takes precedence})
- 7/20 . . by means of transit-time tubes
- 7/22 . . by deflecting an electron beam in a discharge tube (H03D 7/20 takes precedence)
- 9/00** **Demodulation or transference of modulation of modulated electromagnetic waves (demodulating light, transferring modulation in light waves G02F 2/00)**
- 9/02 . . Demodulation using distributed inductance and capacitance, e.g. in feeder lines
- 9/04 . . for angle-modulated oscillations
- 9/06 . . Transference of modulation using distributed inductance and capacitance
- 9/0608 . . {by means of diodes}

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| 9/0616 | . . . {mounted in a hollow waveguide (H03D 9/0641 takes precedence)} | 2200/0019 | . . Gilbert multipliers |
| 9/0625 | . . . {mounted in a coaxial resonator structure} | 2200/0021 | . . Frequency multipliers |
| 9/0633 | . . . {mounted on a stripline circuit} | 2200/0023 | . . Balun circuits |
| 9/0641 | {located in a hollow waveguide} | 2200/0025 | . . Gain control circuits |
| 9/065 | . . {by means of discharge tubes having more than two electrodes} | 2200/0027 | . . . including arrangements for assuring the same gain in two paths |
| 9/0658 | . . {by means of semiconductor devices having more than two electrodes} | 2200/0029 | . . Loop circuits with controlled phase shift |
| 9/0666 | . . . {using bipolar transistors (H03D 9/0683 takes precedence)} | 2200/0031 | . . PLL circuits with quadrature locking, e.g. a Costas loop |
| 9/0675 | . . . {using field effect transistors (H03D 9/0683 takes precedence)} | 2200/0033 | . . Current mirrors |
| 9/0683 | . . . {using a combination of bipolar transistors and field effect transistors} | 2200/0035 | . . Digital multipliers and adders used for detection |
| 2009/0691 | . . {by means of superconductive devices} | 2200/0037 | . . Diplexers |
| 11/00 | Super-regenerative demodulator circuits {(applications in responders G01S)} | 2200/0039 | . . Exclusive OR logic circuits |
| 11/02 | . for amplitude-modulated oscillations | 2200/0041 | . Functional aspects of demodulators |
| 11/04 | . . by means of semiconductor devices having more than two electrodes | 2200/0043 | . . Bias and operating point |
| 11/06 | . for angle-modulated oscillations | 2200/0045 | . . Calibration of demodulators |
| 11/08 | . . by means of semiconductor devices having more than two electrodes | 2200/0047 | . . Offset of DC voltage or frequency |
| 13/00 | Circuits for comparing the phase or frequency of two mutually-independent oscillations {(measuring phase G01R 25/00; phase-discriminators with yes/no output G01R 25/005)} | 2200/0049 | . . Analog multiplication for detection |
| 13/001 | . {in which a pulse counter is used followed by a conversion into an analog signal} | 2200/005 | . . Analog to digital conversion |
| 13/002 | . . {the counter being an up-down counter} | 2200/0052 | . . Digital to analog conversion |
| 13/003 | . {in which both oscillations are converted by logic means into pulses which are applied to filtering or integrating means} | 2200/0054 | . . Digital filters |
| 13/004 | . . {the logic means delivering pulses at more than one terminal, e.g. up and down pulses} | 2200/0056 | . . . including a digital decimation filter |
| 13/005 | . {in which one of the oscillations is, or is converted into, a signal having a special waveform, e.g. triangular} | 2200/0058 | . . . using a digital filter with interpolation |
| 13/006 | . . {and by sampling this signal by narrow pulses obtained from the second oscillation} | 2200/006 | . . Signal sampling |
| 13/007 | . {by analog multiplication of the oscillations or by performing a similar analog operation on the oscillations} | 2200/0062 | . . . Computation of input samples, e.g. successive samples |
| 13/008 | . . {using transistors} | 2200/0064 | . . Detection of passages through null of a signal |
| 13/009 | . . {using diodes} | 2200/0066 | . . Mixing |
| 99/00 | Subject matter not provided for in other groups of this subclass | 2200/0068 | . . . by computation |
| 2200/00 | Indexing scheme relating to details of demodulation or transference of modulation from one carrier to another covered by H03D | 2200/007 | . . . by using a logic circuit, e.g. flipflop, XOR |
| 2200/0001 | . Circuit elements of demodulators | 2200/0072 | . . . by complex multiplication |
| 2200/0003 | . . Rat race couplers | 2200/0074 | . . . using a resistive mixer or a passive mixer |
| 2200/0005 | . . Wilkinson power dividers or combiners | 2200/0076 | . . . using a distributed mixer |
| 2200/0007 | . . Dual gate field effect transistors | 2200/0078 | . . . using a switched phase shifter or delay line |
| 2200/0009 | . . Emitter or source coupled transistor pairs or long tail pairs | 2200/008 | . . Hilbert type transformation |
| 2200/0011 | . . Diodes | 2200/0082 | . . Quadrature arrangements |
| 2200/0013 | . . . Diodes connected in a ring configuration | 2200/0084 | . . Lowering the supply voltage and saving power |
| 2200/0015 | . . . Diodes connected in a star configuration | 2200/0086 | . . Reduction or prevention of harmonic frequencies |
| 2200/0017 | . . Intermediate frequency filter | 2200/0088 | . . Reduction of intermodulation, nonlinearities, adjacent channel interference; intercept points of harmonics or intermodulation products |
| | | 2200/009 | . . Reduction of local oscillator or RF leakage |
| | | 2200/0092 | . . Detection or reduction of fading in multipath transmission arrangements |
| | | 2200/0094 | . . Measures to address temperature induced variations of demodulation |
| | | 2200/0096 | . . . by stabilising the temperature |
| | | 2200/0098 | . . . by compensating temperature induced variations |