# CPC COOPERATIVE PATENT CLASSIFICATION

## H03G CONTROL OF AMPLIFICATION ( impedance networks, e.g. attenuators, H03H ; control of transmission in lines H04B 3/04 )

**NOTE**

This subclass covers:

- control of gain of amplifiers or frequency-changers,
- control of frequency range of amplifiers,
- limiting amplitude or rate of change of amplitude

Attention is drawn to the Note following the title of subclass H03F .

**H03G 1/00** **Details of arrangements for controlling amplification** { for arrangements combined with means for generating a controlling signal, or these means per se, see the other main groups of H03G }

H03G 1/0005 . { Circuits characterised by the type of controlling devices operated by a controlling current or voltage signal }
H03G 1/0011 . . { the device being at least one of the amplifying tubes of the amplifier }
H03G 1/0017 . . { the device being at least one of the amplifying solid state elements of the amplifier }
H03G 1/0023 . . . { in emitter-coupled or cascode amplifiers ( H03GB4F takes precedence ) }
H03G 1/0029 . . . { using FETs }
H03G 1/0035 . . { using continuously variable impedance elements }
H03G 1/0041 . . . { using thermistors }
H03G 1/0047 . . . { using photo-electric elements }
H03G 1/0052 . . . { using diodes }
H03G 1/0058 . . . . { PIN-diodes }
H03G 1/0064 . . . . { Variable capacitance diodes }
H03G 1/007 . . . { using FET type devices }
H03G 1/0076 . . . { using galvanomagnetic elements }
H03G 1/0082 . . . { using bipolar transistor-type devices }
H03G 1/0088 . . { using discontinuously variable devices, e.g. switch-operated }
H03G 1/0094 . . . { using switched capacitors }

H03G 1/02 . Remote control of amplification, tone, or bandwidth ( remote control in general G05 , G08 ; combined with remote tuning or selection of resonant circuits H03J )

H03G 1/04 . Modifications of control circuit to reduce distortion caused by control ( modifications to reduce influence of variations of internal impedance of amplifying elements caused by control H03F 1/08 )

**H03G 3/00** **Gain control in amplifiers or frequency changers** { without distortion of the input signal } ( gated amplifiers H03F 3/72 ; peculiar to television receivers H04N )

H03G 3/001 . { Digital control of analog signals }

H03G 3/002 . { Control of digital or coded signals ( H03G 3/3089 take precedence ) }

H03G 3/004 . { Control by varying the supply voltage }

H03G 3/005 . { Control by a pilot signal ( H03G 3/001 takes precedence ) }

H03G 3/007 . { Control dependent on the supply voltage }

H03G 3/008 . { Control by switched capacitors }

H03G 3/02 . Manually-operated control { H03G 3/001 and H03G 3/002 take precedence }
H03G 3/04 . . in untuned amplifiers
H03G 3/06 . . . having discharge tubes
H03G 3/08 . . . . incorporating negative feedback
H03G 3/10 . . . having semiconductor devices
H03G 3/12 . . . . incorporating negative feedback
H03G 3/14 . . in frequency-selective amplifiers
H03G 3/16 . . . having discharge tubes
H03G 3/18 . . . having semiconductor devices

H03G 3/20 . Automatic control ( { H03G 3/005 takes precedence } ; combined with volume compression or expansion H03G 7/00 )
H03G 3/22 . . in amplifiers having discharge tubes
H03G 3/225 . . . { controlling or controlled by the (local) oscillators of a (super)heterodyne receiver }
H03G 3/24 . . . Control dependent upon ambient noise level or sound level
H03G 3/26 . . . Muting amplifier when no signal is present { or when only weak signals are present, or caused by the presence of noise, e.g. squelch systems }
H03G 3/28 . . . . in frequency-modulation receivers; { in angle-modulation receivers }
H03G 3/30 . . in amplifiers having semiconductor devices
H03G 3/3005 . . . { in amplifiers suitable for low-frequencies, e.g. audio amplifiers ( H03G 3/32 , H03G 3/34 take precedence ) }
H03G 3/301 . . . . { the gain being continuously variable }
H03G 3/3015 . . . . . { using diodes or transistors }
H03G 3/3021 . . . . . { by varying the duty cycle }
H03G 3/3026 . . . . { the gain being discontinuously variable, e.g. controlled by switching }
H03G 3/3031 . . . . . { using switched capacitors }
H03G 3/3036 . . . { in high-frequency amplifiers or in frequency-changers ( H03G 3/3052 , H03G 3/32 , H03G 3/34 take precedence ) }
H03G 3/3042 . . . . { in modulators, frequency-changers, transmitters or power amplifiers ( transmission power control in bidirectional transmission systems H04W 52/04 ) }
H03G 3/3047 . . . . . { for intermittent signals, e.g. burst signals }
H03G 3/3052 . . . { in bandpass amplifiers ( H.F. or I.F. ) or in frequency-changers used in a (super)heterodyne receiver ( H03G 3/32 , H03G 3/34 take precedence ) }

H03G 3/3057 .... { using at least one diode as controlling device }
H03G 3/3063 .... { using at least one transistor as controlling device, the transistor being used as a variable impedance device }
H03G 3/3068 .... { Circuits generating control signals for both R.F. and I.F. stages }
H03G 3/3073 .... { Circuits generating control signals when no carrier is present, or in SSB, CW or pulse receivers }
H03G 3/3078 .... { Circuits generating control signals for digitally modulated signals }
H03G 3/3084 ... { in receivers or transmitters for electromagnetic waves other than radiowaves, e.g. lightwaves ( H03G 3/32 , H03G 3/34 take precedence ) }
H03G 3/3089 ... { Control of digital or coded signals }
H03G 3/3094 ... { in parametric amplifiers ( H03G 3/32 , H03G 3/34 take precedence ) }
H03G 3/32 ... the control being dependent upon ambient noise level or sound level
H03G 3/34 ... Muting amplifier when no signal is present { or when only weak signals are present, or caused by the presence of noise signals, e.g. squelch systems }
H03G 3/341 .... { Muting when no signals or only weak signals are present ( H03G 3/344 , H03G 3/345 take precedence ) }
H03G 3/342 .... { Muting when some special characteristic of the signal is sensed which distinguishes it from noise, e.g. using speech detector ( H03G 3/344 , H03G 3/345 take precedence ) }
H03G 3/344 .... { Muting responsive to the amount of noise ( noise squelch ) ( H03G 3/345 takes precedence ) }
H03G 3/345 .... { Muting during a short period of time when noise pulses are detected, i.e. blanking ( H03G 3/348 takes precedence ) }
H03G 3/347 ..... { dependent on the rate of noise pulses }
H03G 3/348 .... { Muting in response to a mechanical action or to power supply variations, e.g. during tuning; Click removal circuits }

**H03G 5/00** **Tone control or bandwidth control in amplifiers**

H03G 5/005 . { of digital signals ( see provisionally also H03G 5/00 ) }

H03G 5/02 . Manually-operated control ( variable bandpass or bandstop filters H03H 7/12 )
H03G 5/025 .. { Equalizers; Volume or gain control in limited frequency bands }
H03G 5/04 .. in untuned amplifiers
H03G 5/06 ... having discharge tubes
H03G 5/08 .... incorporating negative feedback
H03G 5/10 ... having semiconductor devices
H03G 5/12 .... incorporating negative feedback
H03G 5/14 .. in frequency-selective amplifiers

H03G 5/16 . Automatic control
H03G 5/165 .. { Equalizers; Volume or gain control in limited frequency bands }
H03G 5/18 .. in untuned amplifiers
H03G 5/20 ... having discharge tubes
H03G 5/22 ... having semiconductor devices
H03G 5/24 .. in frequency-selective amplifiers

H03G 5/26 . . . having discharge tubes

H03G 5/28 . . . having semiconductor devices

**H03G 7/00** **Volume compression or expansion in amplifiers** { frequency dependent H03G 9/00 }

H03G 7/001 . { without controlling loop ( H03G 7/007 , H03G 7/02 , H03G 7/06 take precedence ) }

H03G 7/002 . { in untuned or low-frequency amplifiers e.g. audio amplifiers ( H03G 7/007 , H03G 7/001 , H03G 7/008 , H03G 7/02 , H03G 7/06 take precedence ) }

H03G 7/004 . . { using continuously variable impedance devices }

H03G 7/005 . . { using discontinuously variable devices, e.g. switch-operated }

H03G 7/007 . { of digital or coded signals ( see provis. also H03G 7/00 ) }

H03G 7/008 . { Control by a pilot signal ( H03G 7/007 , H03G 7/02 , H03G 7/06 take precedence ) }

H03G 7/02 . having discharge tubes

H03G 7/04 . . incorporating negative feedback

H03G 7/06 . having semiconductor devices

H03G 7/08 . . incorporating negative feedback

**H03G 9/00** **Combinations of two or more types of control, e.g. gain control and tone control**

H03G 9/005 . { of digital or coded signals }

**WARNING**

Not complete pending reclassification; see provisionally also group H03G 9/00 )

H03G 9/02 . in untuned amplifiers ( combined tone controls for low and high frequencies H03G 5/00 ) { compression or expansion combined with volume control H03G 7/00 }

H03G 9/025 . . { frequency-dependent volume compression or expansion, e.g. multiple-band systems ( H03G 9/10 , H03G 9/18 take precedence ) }

H03G 9/04 . . having discharge tubes

H03G 9/06 . . . for gain control and tone control

H03G 9/08 . . . . incorporating negative feedback

H03G 9/10 . . . for tone control and volume expansion or compression

H03G 9/12 . . having semiconductor devices

H03G 9/14 . . . for gain control and tone control

H03G 9/16 . . . . incorporating negative feedback

H03G 9/18 . . . for tone control and volume expansion or compression

H03G 9/20 . in frequency-selective amplifiers

H03G 9/22 . . having discharge tubes

H03G 9/24 . . having semiconductor devices

H03G 9/26 . in untuned amplifying stages as well as in frequency-selective amplifying stages ( gain control in both stages H03G 3/00 ; tone control or bandwidth control H03G 5/00 ) { compression or expansion combined with volume control H03G 7/00 }

H03G 9/28 . . all amplifying stages having discharge tubes

H03G 9/30 . . all amplifying stages having semiconductor devices

**H03G 11/00** **Limiting amplitude ; Limiting rate of change of amplitude;** { Clipping in general }

H03G 11/002 . { without controlling loop ( H03G 11/004 , H03G 11/006 , H03G 11/008 , H03G 11/02 , H03G 11/04 , H03G 11/06 , H03G 11/08 take precedence; see provisional also H03G 11/00 ) }

H03G 11/004 . { using discharge tubes ( H03G 11/008 takes precedence ) }

H03G 11/006 . { in circuits having distributed constants ( H03G 11/008 takes precedence ) }

H03G 11/008 . { of digital or coded signals ( see provis. also H03G 11/00 , H03G 11/02 ) }

H03G 11/02 . by means of diodes ( { H03G 11/008 , } H03G 11/04 , H03G 11/06 , H03G 11/08 take precedence )

H03G 11/025 . . { in circuits having distributed constants }

H03G 11/04 . Limiting level dependent on strength of signal ; Limiting level dependent on strength of carrier on which signal is modulated { H03G 11/008 takes precedence }

H03G 11/06 . { Limiters of angle-modulated signals } ; such limiters combined with discriminators ( H03G 11/00 takes precedence; discriminators having an inherent limiting action H03D 3/00 )

H03G 11/08 . Limiting rate of change of amplitude { H03G 11/008 takes precedence }

**H03G 99/00** **Subject matter not provided for in other groups of this subclass**

**H03G 2201/00** **Indexing scheme relating to subclass H03G**

H03G 2201/10 . Gain control characterised by the type of controlled element

H03G 2201/103 . . being an amplifying element

H03G 2201/106 . . being attenuating element

H03G 2201/20 . Gain control characterized by the position of the detection

H03G 2201/202 . . being in baseband

H03G 2201/204 . . being in intermediate frequency

H03G 2201/206 . . being in radio frequency

H03G 2201/208 . . being in power supply of the amplifier

H03G 2201/30 . Gain control characterized by the type of controlled signal

H03G 2201/302 . . being baseband signal

H03G 2201/305 . . being intermediate frequency signal
H03G 2201/307 . . being radio frequency signal

H03G 2201/40 . Combined gain and bias control

H03G 2201/50 . Gain control characterized by the means of gain control
H03G 2201/502 . . by switching impedance in feedback loop
H03G 2201/504 . . by summing selected parallel amplifying paths, i.e. more amplifying/attenuating paths summed together
H03G 2201/506 . . by selecting one parallel amplifying path
H03G 2201/508 . . by using look-up tables

H03G 2201/60 . Gain control characterized by varying time constants in control loop
H03G 2201/603 . . time constant being continuous
H03G 2201/606 . . time constant being discrete

H03G 2201/70 . Gain control characterized by the gain control parameter
H03G 2201/702 . . being frequency, e.g. frequency deviations
H03G 2201/704 . . being number of multiplexed channels
H03G 2201/706 . . being quality indicator, e.g. BER,C/I
H03G 2201/708 . . being temperature