

**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 ( <a href="#">H03G 3/32</a> , <a href="#">H03G 3/34</a> take precedence ) }                                   |
| H03G 3/3089 | ...   | { Control of digital or coded signals }   |
| H03G 3/3094 | ...   | { in parametric amplifiers ( <a href="#">H03G 3/32</a> , <a href="#">H03G 3/34</a> 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 ( <a href="#">H03G 3/344</a> , <a href="#">H03G 3/345</a> 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 ( <a href="#">H03G 3/344</a> , <a href="#">H03G 3/345</a> take precedence ) } |
| H03G 3/344  | ....  | { Muting responsive to the amount of noise ( noise squelch ) ( <a href="#">H03G 3/345</a> takes precedence ) }  |
| H03G 3/345  | ....  | { Muting during a short period of time when noise pulses are detected, i.e. blanking ( <a href="#">H03G 3/348</a> 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 <a href="#">H03G 5/00</a> ) }                   |
| H03G 5/02  | .    | Manually-operated control ( variable bandpass or bandstop filters <a href="#">H03H 7/12</a> ) |
| 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