PAM

Components :Transisted BC547, signal generator, bread board, CRO

In a PAM communicatuoj system the continous wave formed are sampled at continous and regular interval. They are transmitted along with the sychronising pulses. The orginal wave form can be constructed from the sample of recieving end if the sampled rate in ant pulse modulation exceeds twice the maximun frequency. The orginal signal can be constructed in the receiver witn the minimal distortion.

The basic methos for generation of PAM is that the signal to be modulated must be fed to a switch which is operated by sampling signal. It is the techinique in which the analog siganal is sampled abd sampled value is used. There are two categeroies ofpulse modularuoj. Digital pulse modulation and amplitudr pulse modulatuon.

PAM is a analog pulse modylatuon in whuch the amplitude or a cknsrant width and constant position pulse train is varied according to amplitude od analog signal. The proceds is termed as sampling of analog singnal. Theroam must be followed the sampling therorom.... that is if the sampling rate in any pulse misylaruon system exceeds twice the maximum signal frequency. The orgjnal singal can be constructed in reciever witn mininmal distortion.

PAM siganl describe the time and value continous. They are neither analog or digital. They are the intermediate stage of pulse code modulation.

Design

Vcc:5v Vb:5v IC :2ma β:100 Vbe:0.7v Vce:sat:0.2v IB:IC/β=20ma IB sat:5*20=100ma

Rc:(Vc-Vce sat)/IC=(5-.2)/2*10^3=2.2k Rb:Vb-Vbe/IB sat=4.7k

PWM

Componenrs : 555ic, resistor, capacitor, DC powe, Signal generator, CRO, bread bosard

For modulation of wave pulse modulation servers very well.un analog pulse modulatuij the indication od sample amplitide is variable. The continous wave form is sampled at regular interval informatio regardinf the tramitted only ar sampling tines. Pulse width modulathin is digital pulse modulatuim techinique. In PWM the amplitudr of starting time of all pulsess are fixed in widrh of each pikse is made propotional to amolitude of signal at instant.

When the timer is connected at monostable mode and triggered with a ccntionous puse train, the output width can be modulated by signal applied to Pin5 here the 555ic is used as a monostable multivibrator. When a trigger is applied ti pin 2 the compartor switched the output to its unstable state. The ubstable state is 1set position of flipflop.Now the capacitor charged and changes the flip floo output

to reset state by swutching the outputof compartor1. The othee output is 0.3/vm when vm is modulaing signal.A negatuve going pulse od amplitude is greater than 1/3 vm is needed as triggering signal. In the state tne discharge transisro q1(inside 555) act as a short for tbe capacitoe ans in the two unstable state q1 act as a open circuit tk exterior capacitor. The thershold voltage is given to non invertable terminal of capacitor

Procedure: befor feeding verifiy that 555functikn as astavle multi vibratoe by observibg square wave on AF signal source. Keep it at 100hz

Design. In monostable mode Ton :1.1Rc TOn :0.5ms C=01.mf

R=(0.5-10^-3)/1.1×0.1×10^-6=4.7k ohm

Frequency modulation

Conponents required :IC 565, resistor, capacitoe, function generator, CRO, dc power, bread board

Modulation is the process by which information is encoded from a message source in order to optimize it for transmission. Frequency Modulation (FM) is the encoding of information in a carrier wave by changing the instantaneous frequency of the wave. FM technology is widely used in the fields of computing, telecommunications, and signal processing.Much like amplitude modulation, frequency modulation also has a similar approach, where a carrier signal is modulated by the input signal. However, in the case of FM, the amplitude of the modulated signal is kept, or it remains constant.

The frequency modulation index is mostly over 1, and it usually requires a high bandwidth at a range of 200 kHz. FM operates in a very high-frequency range, normally between 88 to 108 Megahertz. There are complex circuits with an infinite number of sidebands that help in receiving high-quality signals with high sound quality.Frequency modulation is widely used for FM radio broadcasting. It is also used in telemetry, radar, seismic prospecting, and monitoring newborns for seizures via EEG,[3] two-way radio systems, sound synthesis, magnetic tape-recording systems and some video-transmission systems. In radio transmission, an advantage of frequency modulation is that it has a larger signal-to-noise ratio and therefore rejects radio frequency interference better than an equal power amplitude modulation (AM) signal. For this reason, most music is broadcast over FM radio.

However, under severe enough multipath conditions it performs much more poorly than AM, with distinct high frequency noise artifacts that are audible with lower volumes and less complex tones.[citation needed] With high enough volume and carrier deviation audio distortion starts to occur that otherwise wouldn't be present without multipath or with an AM signal

Procedure :Feed 5vpp and 1khz square wave input

Set fm demodulator and

Design vcc:5v at pin 16

Modulationn: R:10k ohm Input (pin9)at vcc/2=2.5v

Message frequnecy1khz and amolitudd 1vpp R1=10k ohm (pin11)

R2=100 k ohm C=0.002mf