

Low Pulse Rate Causes

Pulse rate is close to the heart rate, as measured by ECG. The pulse is most commonly measured at the wrist or neck for adults and at the brachial artery (inner upper arm between the shoulder and elbow) for infants and very young children. Pulse deficit In medicine, pulse is the rhythmic expansion and contraction of an artery in response to the cardiac cycle (heartbeat). Measuring the pulse rate is therefore a convenient way to estimate the heart rate. The pulse may be felt (palpated) in any place that allows an artery to be compressed near the surface of the body, such as at the neck (carotid artery), wrist (radial artery or ulnar artery), at the groin (femoral artery), behind the knee (popliteal artery), near the ankle joint (posterior tibial artery), and on foot (dorsalis pedis artery). A sphygmograph is an instrument for measuring the pulse

Tachycardia is a high heart rate, defined as above 100 bpm at rest.

Bradycardia While bradycardia can result from various pathological processes, it is commonly a physiological response to cardiovascular conditioning or due to asymptomatic type 1 atrioventricular block. Hypothyroidism and metabolic derangements are other common extrinsic causes of bradycardia Bradycardia (from Ancient Greek βραδύς (bradús) 'slow' and καρδία (kardía) 'heart'), also called bradyarrhythmia, is a resting heart rate under 60 beats per minute (BPM). are neurological causes of transient symptomatic bradycardia

== Symbols == PWM is useful for controlling the average power or amplitude delivered by an electrical signal. The average value of voltage (and current) fed to the load is controlled by switching the supply between 0 and 100% at a rate faster than it takes the load to change significantly. The longer the switch is on, the higher the total power supplied to the load. Along with maximum power point tracking (MPPT), it is one of the primary methods of controlling the output of solar panels to that which can

be utilized by a battery. PWM is particularly suited for running inertial loads such as motors, which are not as easily affected by this discrete switching. The goal of PWM is to control a load; however, the PWM switching frequency must be selected carefully in order to smoothly do so. a1315fd6a2

Pulse-width modulation Pulse-width modulation (PWM), also known as pulse-duration modulation (PDM) or pulse-length modulation (PLM), is any method of representing a signal as Pulse-width modulation (PWM), also known as pulse-duration modulation (PDM) or pulse-length modulation (PLM), is any method of representing a signal as a rectangular wave with a varying duty cycle (and for some methods also a varying period) a1315fd6a2

The PWM switching frequency can vary greatly depending on load and application. For example, switching only has to be done several times a minute in an electric stove; 100 or... a1315fd6a2

Heart rate It is also modulated by numerous factors, including genetics, physical fitness, stress or psychological status, diet, drugs, hormonal status, environment, and disease/illness, as well as the interaction between these factors. The heart rate varies according to the body's physical needs, including the need to absorb oxygen and excrete carbon dioxide. It is usually equal or close to the pulse rate measured at any peripheral point. The American Heart Association states the normal resting adult human heart rate is 60–100 bpm Heart rate is the frequency of the heartbeat measured by the number of contractions of the heart per minute (beats per minute or bpm). close to the pulse rate measured at any peripheral point a1315fd6a2

The most common approach is transmissive pulse oximetry. In this approach, one side of a thin part of the patient's body, usually a fingertip or earlobe, is illuminated, and the photodetector is on the other side. Fingertips and earlobes have disproportionately high blood flow relative to their size, in order to... a1315fd6a2 iLBC is defined in RFC 3951. It is one... a1315fd6a2 Resting heart rates of less than 50 BPM are often normal during sleep in young and healthy adults and athletes. In large population studies of adults without underlying heart disease, resting heart rates of 45–50 BPM appear to be the lower limits of normal, dependent on age and sex. Bradycardia is most likely to be discovered in the elderly, as age

and underlying cardiac disease progression contribute to its development. **Physiology** The first operational pulse-Doppler radar was in the CIM-10 Bomarc, an American long-range supersonic missile powered by ramjet engines, and which was armed with a W40 nuclear weapon to destroy entire formations of attacking enemy aircraft. Pulse-Doppler systems were first widely used on fighter aircraft starting in the 1960s. Earlier radars had used pulse-timing in order to determine range and the angle of the antenna (or similar means) to determine the bearing. However, this only worked when the radar antenna was not pointed down; in that case the reflection off the ground overwhelmed any returns from other objects. As the ground moves at the same speed but opposite direction of the aircraft, Doppler techniques allow the ground return to be filtered out, revealing aircraft and vehicles. This gives pulse-Doppler radars "look-down/shoot-down" capability... In research, PTRs are often used as precoolers of dilution refrigerators. They are also being developed for cooling of astronomical detectors where liquid cryogenes are typically used, such as the Atacama Cosmology Telescope or the Qubic experiment (an interferometer for cosmology studies). Pulse tubes are particularly useful in space-based telescopes such as the James Webb Space Telescope where it is not possible to replenish the cryogenes as they are depleted. It has also been suggested that pulse tubes could... A symbol may be described as either a pulse in digital baseband transmission or a tone in passband transmission using modems. A symbol is a waveform, a state or a significant condition of the communication channel that persists, for a fixed period of time. A sending device places symbols on the channel at a fixed and known symbol rate, and the receiving device has the job of detecting the sequence of symbols in order to reconstruct the transmitted data. There may be a direct correspondence between a symbol and a small unit of data. For example, each symbol may encode one or several binary digits (bits). The data may also be represented by the transitions... Q-switching was first proposed in 1958 by Gordon Gould, and independently discovered and demonstrated in 1961 or 1962 by Robert W. Hellwarth and F.J. McClung at Hughes Research Laboratories using electrically switched Kerr cell shutters in a ruby laser. Optical nonlinearities such as Q-switching were fully explained by Nicolaas Bloembergen, who won the Nobel Prize in 1981 for this work. A standard pulse oximeter passes two

wavelengths of light through tissue to a photodetector. Taking advantage of the pulsate flow of arterial blood, it measures the change in absorbance over the course of a cardiac cycle, allowing it to determine the absorbance due to arterial blood alone, excluding unchanging absorbance due to venous blood, skin, bone, muscle, fat, and, in many cases, nail polish. The two wavelengths measure the quantities of bound (oxygenated) and unbound (non-oxygenated) hemoglobin, and from their ratio, the percentage of bound hemoglobin is computed. a1315fd6a2

Symbol rate The symbol rate is related to the gross bit rate, expressed in bits per second. symbol rate is a kind of aperiodic frequency, measured in baud (Bd) or symbols per second. In the case of a line code, the symbol rate is the pulse rate in In a digitally modulated signal or a line code, symbol rate, modulation rate or baud rate is the number of symbol changes, waveform changes, or signaling events across the transmission medium per unit of time. In the case of a line code, the symbol rate is the pulse rate in pulses per second. The symbol rate is a kind of aperiodic frequency, measured in baud (Bd) or symbols per second. Each symbol can represent or convey one or several bits of data a1315fd6a2

Pulse-Doppler radar It combines the features of pulse radars and continuous-wave radars, which were formerly separate due to the complexity of the electronics. This causes the reflector to produce Doppler modulation on the reflected signal. difference, or phase shift, from pulse to pulse. Pulse-Doppler radars exploit this A pulse-Doppler radar is a radar system that determines the range to a target using pulse-timing techniques, and uses the Doppler effect of the returned signal to determine the target object's velocity a1315fd6a2

Q-switching is achieved by putting some type of variable attenuator inside the laser's optical resonator. When the attenuator is functioning, light which leaves the gain medium... a1315fd6a2

Pulse tube refrigerator g. Stirling cryocooler and GM-refrigerators), this cryocooler can be made without moving parts in the low temperature part of the device, making the cooler suitable for a wide variety of applications. In contrast with other cryocoolers (e. without moving parts in the low temperature part of the device, making the cooler suitable for a wide variety of applications. Pulse

tube cryocoolers are used The pulse tube refrigerator (PTR) or pulse tube cryocooler is a developing technology that emerged largely in the early 1980s with a series of other innovations in the broader field of thermoacoustics

Pulse oximetry hypotension (low blood pressure), and some hemoglobin variants can reduce the accuracy of the results. Peripheral oxygen saturation (SpO₂) readings are typically within 2% accuracy (within 4% accuracy in 95% of cases) of the more accurate (and invasive) reading of arterial oxygen saturation (SaO₂) from arterial blood gas analysis. Some home pulse oximeters have low sampling rates, which Pulse oximetry is a noninvasive method for monitoring blood oxygen saturation

Q-switching technique for pulse generation with lasers, Q-switching leads to much lower pulse repetition rates, much higher pulse energies, and much longer pulse durations Q-switching, sometimes known as giant pulse formation or Q-spoiling, is a technique by which a laser can be made to produce a pulsed output beam. Compared to mode locking, another technique for pulse generation with lasers, Q-switching leads to much lower pulse repetition rates, much higher pulse energies, and much longer pulse durations. The technique allows the production of light pulses with extremely high (gigawatt) peak power, much higher than would be produced by the same laser if it were operating in a continuous wave (constant output) mode. The two techniques are sometimes applied together

iLBC handles lost frames through graceful speech quality degradation. Lost frames often occur in connection with lost or delayed IP packets. Ordinary low-bitrate codecs exploit dependencies between speech frames, which cause errors to propagate when packets are lost or delayed. In contrast, iLBC-encoded speech frames are independent and so this problem will not occur. The American Heart Association states the normal resting adult human heart rate is 60–100 bpm. An ultra-trained athlete may have a resting heart rate of 37–38 bpm. Pulse tube cryocoolers are used in niche industrial applications such as semiconductor fabrication and superconducting radio-frequency circuits. They are also used in military applications such as for the cooling of infrared sensors.

Internet Low Bitrate Codec The encoded blocks have to be encapsulated in a suitable protocol for transport, usually the Real-time Transport Protocol (RTP). It was formerly freeware with limitations on commercial use, but since 2011 it is available under a free software/open source (3-clause BSD license) license as a part of the open source WebRTC project. The algorithm is a version of block-independent linear predictive coding, with the choice of data frame lengths of 20 and 30 milliseconds. Retrieved 2011-06-23. (2004). It is suitable for VoIP applications, streaming audio, archival and messaging. "Real-time Transport Protocol (RTP) Payload Format for internet Low Bit Rate Codec (iLBC) Speech". Dana Blankenhorn (2010-05-18) Internet Low Bitrate Codec (iLBC) is a royalty-free narrowband speech audio coding format and an open-source reference implementation (codec), developed by Global IP Solutions (GIPS) formerly Global IP Sound (acquired by Google Inc in 2011) a1315fd6a2

== Physiology == a1315fd6a2 == Principle of Q-switching == a1315fd6a2 Bradycardia may be associated with symptoms of fatigue, dyspnea, dizziness, confusion, and syncope due to reduced blood flow to the brain. The types of symptoms often depend on the etiology of the slow heart rate, classified by the anatomical location of a dysfunction within the cardiac conduction system. Generally, these classifications involve the broad categories of sinus node dysfunction (SND), atrioventricular... a1315fd6a2 == Uses == a1315fd6a2 Bradycardia is a low heart rate, defined as below 60 bpm at rest. When a human sleeps, a heartbeat with rates around 40–50 bpm is common and considered normal. When the heart is not beating in a regular pattern, this is referred to as a arrhythmia. Abnormalities of heart rate sometimes indicate heart disease. a1315fd6a2

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