

Pribusin Inc.

Section 5


Frequency


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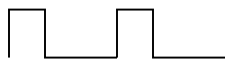
Frequency - The Up's and Down's of Mr. Hertz

Frequency is defined as a regularly occurring event over a period of time. It is measured in Hertz (Hz) which is the count of these recurring event cycles in one second. In electronics, frequency is the fluctuation in voltage of a signal.

There are many types of frequency:


 Sinusoidal - eg. AC House current

 Square - eg. Rotary Flowmeters

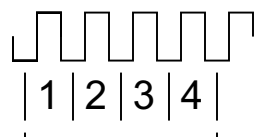
 Pulse Width Modulation - eg. Motor Drives

All Frequencies have 2 main identifying properties:

1. **Amplitude** - The voltage difference between extreme levels

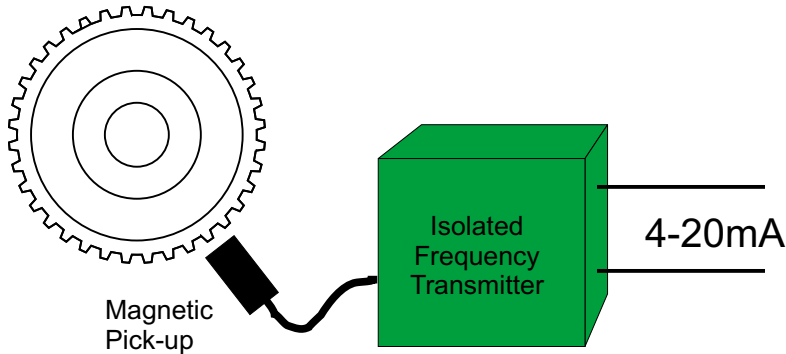
eg.  12VDC
0VDC The amplitude is 12 Volts

2. **Frequency** - The number of cycles per second

eg. 
1 2 3 4
1 second = 4cycles/second = 4Hz

Use of Frequency - Application Examples

Example 1: Frequency is quite often used as a speed indicator of a motor or a rotating vane of a flowmeter. Typically, this frequency cannot be use in its raw form and must usually be converted to some sort of analog signal, ie. 4-20mA.

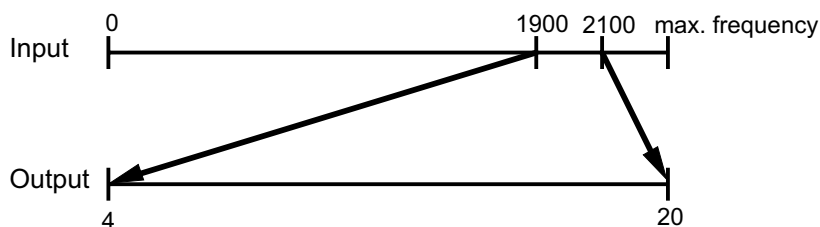


When converting frequency to an analog signal it is important to note that the output signal is zero-based. This means that a frequency of 0 Hz always results in a signal output of 0%. The upper frequency limit is the only adjustment. This upper limit frequency results in a 100% output signal.

Using Pribusin's Isolated Frequency Converter IUC-7X-FRX serves a dual purpose by achieving the desired conversion and isolating the input frequency from the analog output signal.

Example 2: Sometimes the speed of a motor must be monitored very closely and the above example would result in insufficient signal resolution. Using a Pribusin Frequency Window Converter allows a small portion of the frequency to be extracted and then converted to an analog signal.

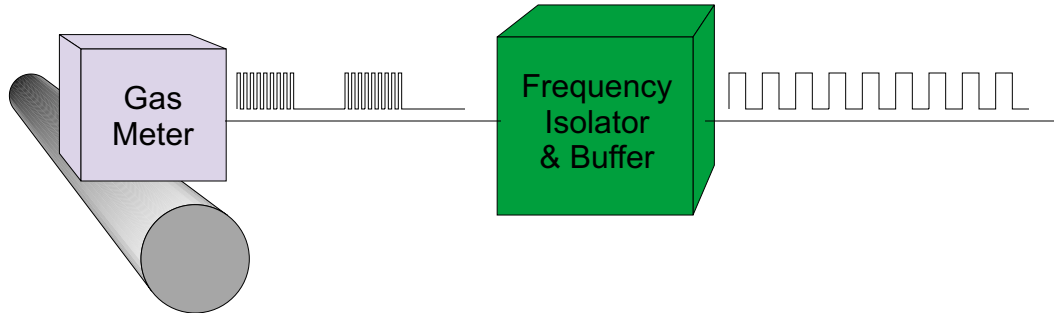
Suppose a motor runs at 2000 RPM. It is to be monitored over a range of 1900-2100 RPM.



By setting up the Frequency Window Converter appropriately, a small portion of frequency can be extracted and expanded into a full 4-20mA (or any other) analog output.

Use of Frequency - Application Examples

Example 3: Some Natural Gas Consumption meters produce a burst of pulses at a high rate. This rate is often too high for counters to measure.



A Pribusin Frequency Isolator with Buffer option can store up to 65535 incoming pulses at a fast rate and slowly pass them on to a slower counter or PLC input.