

Application note

Connecting the WindSensor P2546C-OPR

The output of the WindSensor P2546C-OPR Cup Anemometer is a low-level ac signal with the output frequency proportional to the wind speed. A dedicated or general purpose low-level ac input must be used on the data logger to connect the P2546C-OPR. Figure 1 shows an example of a connection to the data logger. Please refer to the data logger documentation for further details on how to connect the P2546C-OPR.

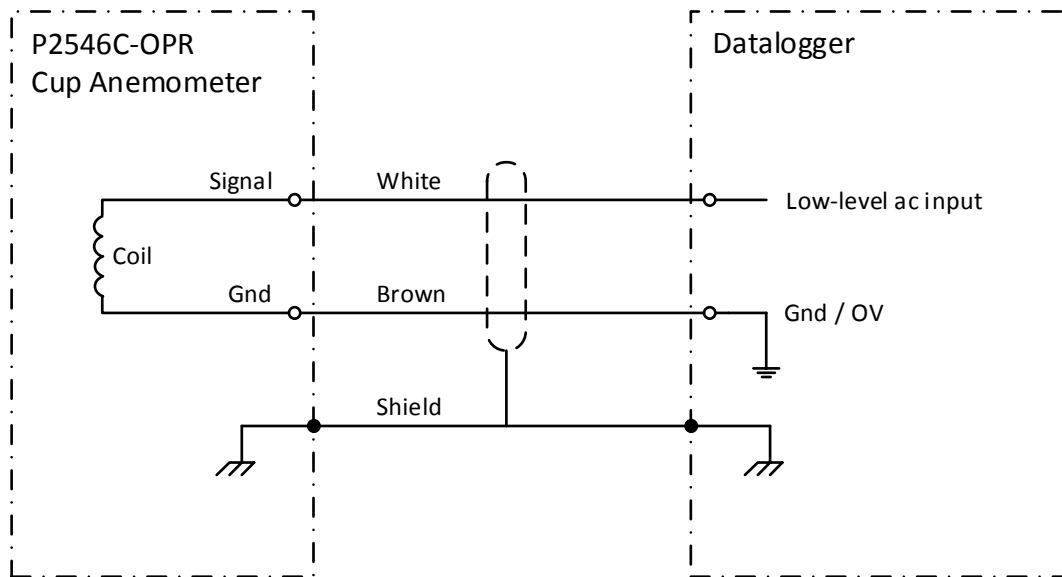


Figure 1: P2546C-OPR connection diagram.

A coil inside the P2546C-OPR generates the sinusoidal ac signal when exposed to the magnetic field of magnets mounted on the rotating shaft. Both the frequency and voltage amplitude of the low-level ac signal is proportional to the wind speed, however only the frequency can be used for determining the wind speed.

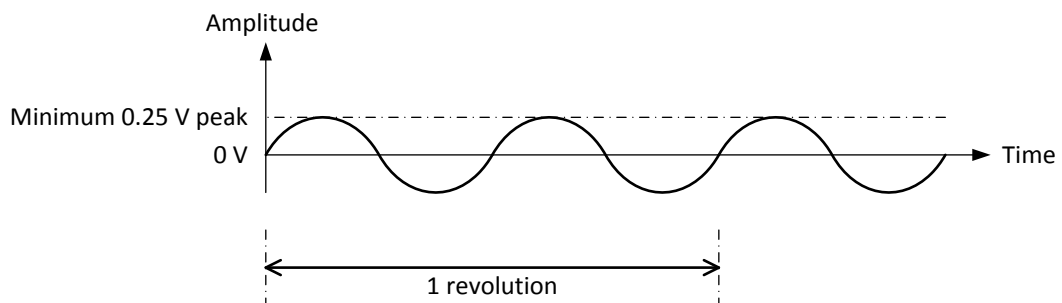


Figure 2: Typical low-level ac input signal at a wind speed of 0.4 m/s.

Figure 2 and 3 illustrates the typical low-level ac signals from the P2546C-OPR at a wind speed of 0.4 m/s and a wind speed of 10 m/s respectively. A wind speed of 0.4 m/s corresponds to the starting threshold of the P2546C-OPR and therefore represents the lowest voltage amplitude to be detected by the data logger.

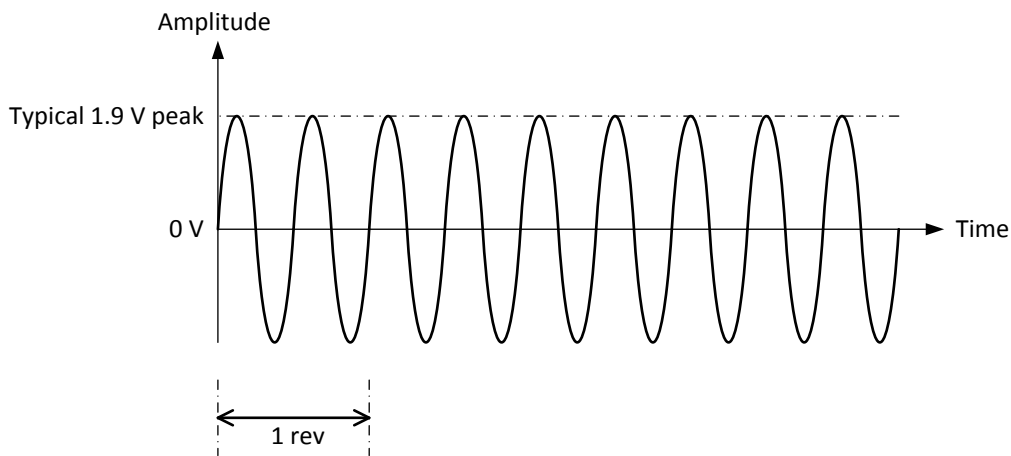


Figure 3: Typical low-level ac input signal at a wind speed of 10 m/s.

As can be seen from figure 2 and figure 3 both the frequency and voltage amplitude of the low-level ac signal increases with wind speed. The relationship between the frequency and the amplitude of the low-level ac signal defines the sensitivity of the P2546C-OPR and can be expressed as a linear function. Figure 4 shows the typical relationship between the frequency and the voltage amplitude of the low-level ac signal with the sensitivity represented as the slope of the plotted line.

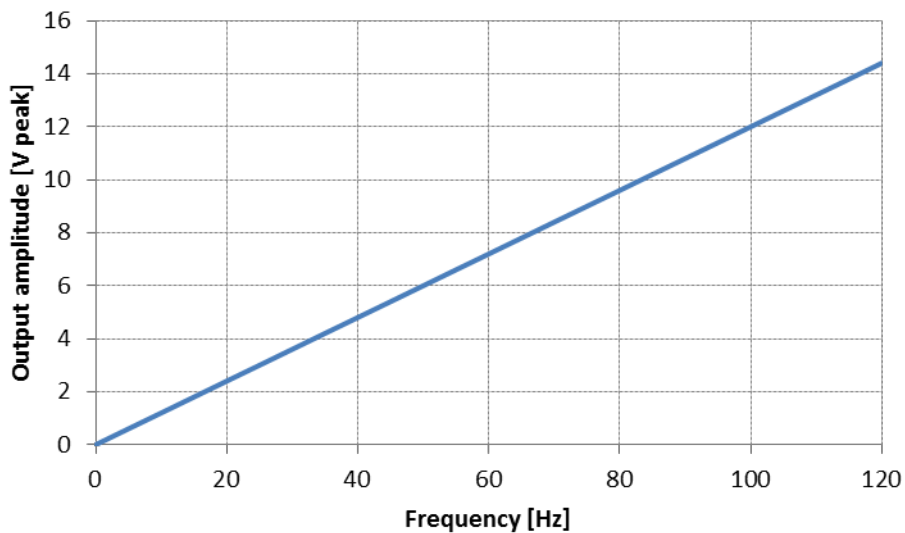


Figure 4: Typical relationship between the frequency output and amplitude output of the P2546C-OPR.

The amplitude of the low-level ac signal must be taken into account when determining the input range and required trigger threshold on the data logger to be used. Most data loggers are compatible to the P2546C-OPR.