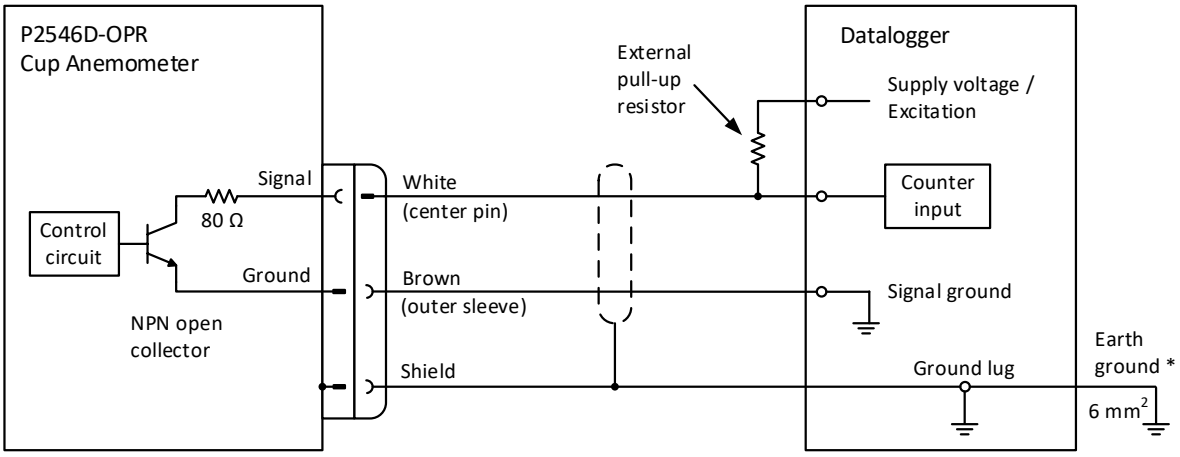
Application note

Connecting the WindSensor P2546D-OPR

The WindSensor P2546D-OPR Cup Anemometer has an open collector transistor output with the frequency proportional to the wind speed. A control circuit inside the P2546D-OPR switches the open collector output between open state (floating) and closed state (grounded) when the cup rotor assembly is rotated by the wind.

The P2546D-OPR must be connected to a counter/frequency input on a datalogger using a pull-up (or pull-down) resistor to provide a well-defined signal when the open collector output is floating. The pull-up resistor must be connected to the supply voltage or if available an excitation voltage on the datalogger. A recommended value of the pull-up resistor is 10 KΩ. Figure 1 shows an example of connecting the P2546D-OPR to a datalogger using an external pull-up resistor. Please refer to the datalogger documentation for specific details on how to connect the P2546D-OPR to the datalogger.



* *Connect the datalogger's ground lug to earth ground.*
Connect the ground lug to the nearest point at a met. tower or turbine structure, and trim the wire to the shortest possible length.
Maintain the integrity and continuity of the shield connection in all intermediate junction boxes used.

Figure 1: P2546D-OPR connection using an external pull-up resistor.

Dataloggers with internal pull-up or pull-down resistors may be connected to the P2546D-OPR without using an external resistor. Adding an external resistor is however recommended to reduce noise sensitivity, when using dataloggers with high resistance pull-up or pull-down resistors. When e.g. using a Campbell CR1000 datalogger with 100 kΩ pull-up resistors on the P-terminals and 100 kΩ pull-down resistors on the C-terminals, adding an external 12 kΩ resistor is recommended. Figure 2 show examples of connecting the P2546D-OPR open collector output to dataloggers with internal pull-up or pull-down resistors.

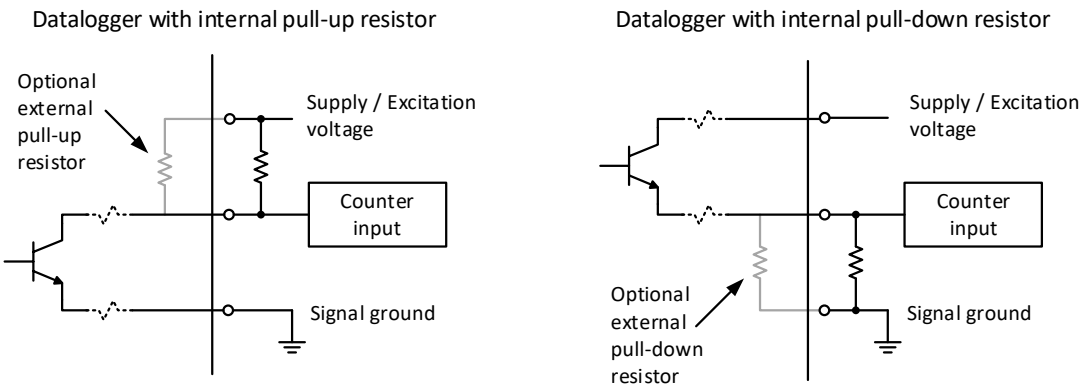


Figure 2: P2546D-OPR connection using an internal pull-up (left) or pull-down (right) resistor.

Using a pull-up resistor will provide a high level output voltage with the output transistor in open state (transistor turned off and output tied to supply voltage / excitation) and a low level output voltage with the output transistor in closed state (transistor turned on and output tied to ground). Using a pull-down resistor provides the opposite output level with a low level in the open state and a high level in the closed state. Figure 3 shows the waveform for one revolution of the cup anemometer rotor.

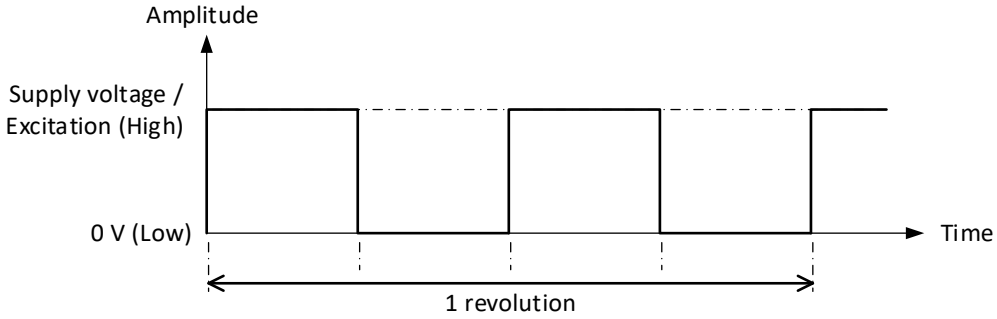


Figure 3: Datalogger counter input waveform.