

Using the IceFree II Hall-Effect Anemometer

Introduction

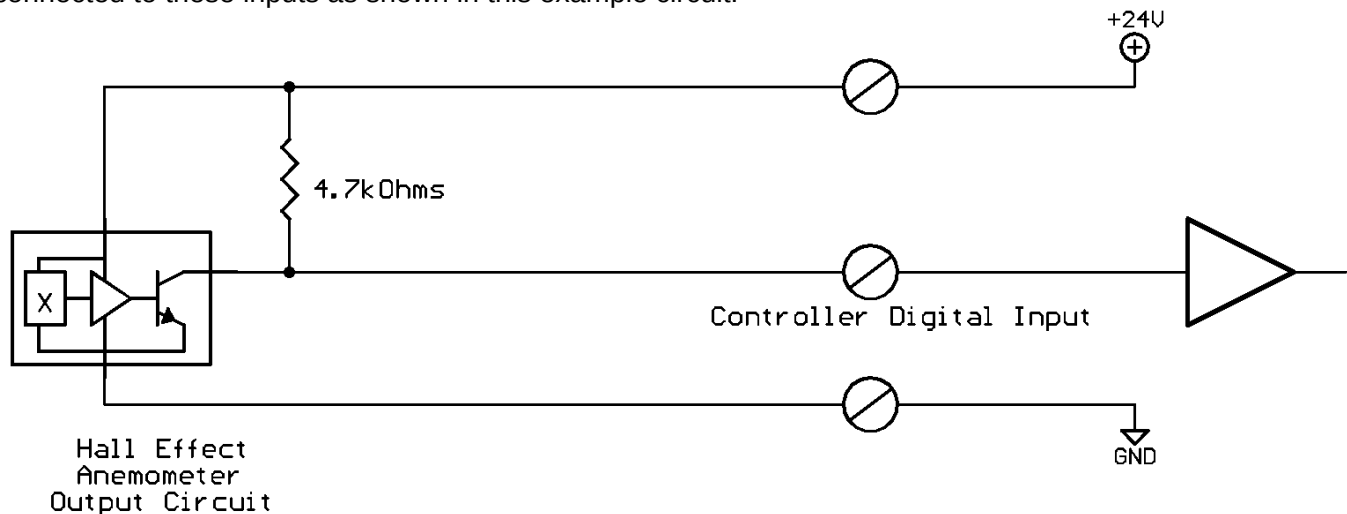
This Application Note documents several ways of wiring the NRG IceFree II Hall-Effect Anemometer (HAE-H) to common Wind Turbine controller inputs.

The IceFree II Hall-Effect output signal

The signal from the HAE-H is a Hall switch with an open collector output. This means that the output is a transistor switch from the output Signal connection to common Ground. There is a 4.7 k Ω resistor connected from the output to the Power supply. This pull-up resistor makes the output signal voltage will swing high when the Hall switch is off. The example circuits below show the equivalent circuit for the HAE-H output.

Digital Inputs

Many controllers provide Digital inputs with various input threshold voltages. The HAE-H signal can be directly connected to these inputs as shown in this example circuit:



Connecting Hall Effect Anemometer to Digital Inputs

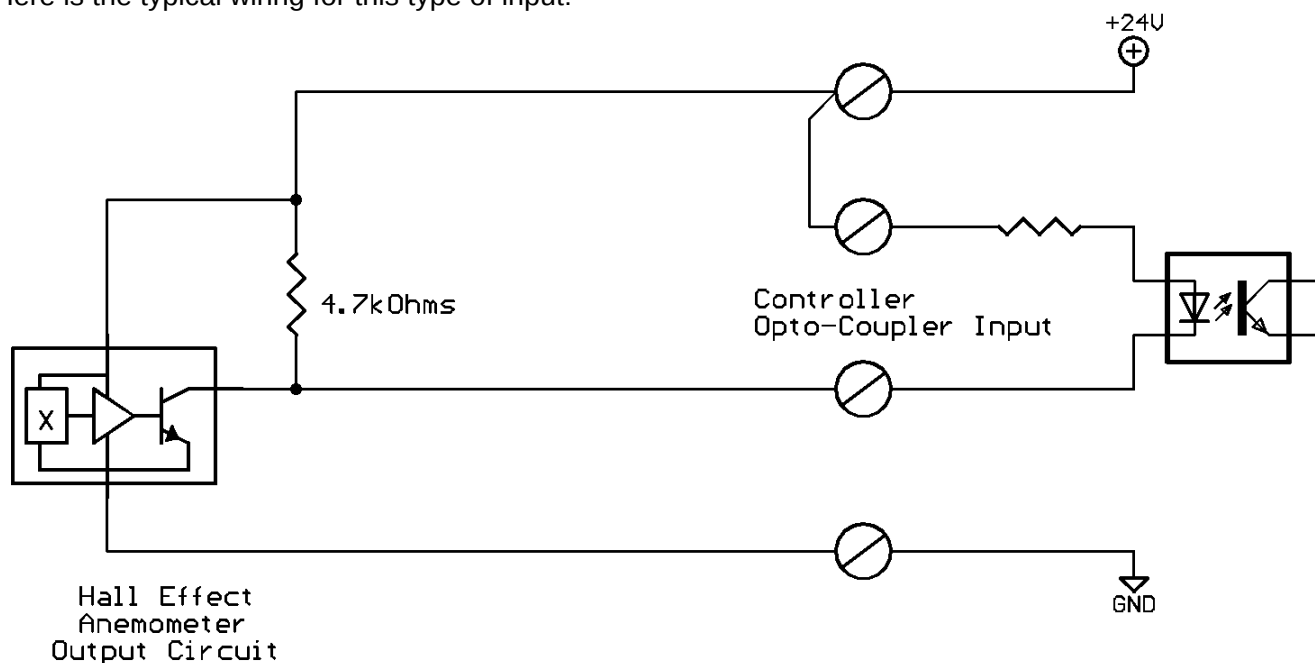
The low voltage of the signal is controlled by the current sinking capability of the HAE-H, which is 20 mA. The high voltage is controlled by the applied power supply voltage and the input impedance of the controller. The controller input forms a voltage divider with the HAE-H internal pull-up resistor. If the controller input impedance is small, the controller will load the output significantly, providing a reduced signal amplitude at the controller.

Controllers with opto-isolated inputs

Many controllers provide digital inputs which are opto-isolated to protect the controller from a wide range of input faults.

The HAE-H can be directly connected to most inputs of this type, providing the drive capability of the sensor is sufficient to switch the controller input.

Here is the typical wiring for this type of input:



Connecting Hall-Effect Anemometer to Opto-Coupler Inputs

Notice that the + side of the controller input is tied directly to its power supply. The sensor is wired so that when the hall switch is "closed", the input of the controller is activated. Since it is output frequency, not polarity, that is important, this inverted wiring causes no logic problems.

The HAE-H can sink up to 20 mA of current, which is enough to activate the input loop of most controllers.