NRG #40 Anemometer, Hall Effect

FEATURES

- Reliable performance in electrically noisy environments
- Short distance constant
- Simple, durable design

The NRG #40 anemometer is the industry standard anemometer used worldwide. A Hall Effect version of this sensor is available for electrically noisy environments and instrumentation requiring a square wave signal. NRG #40 anemometers have recorded wind speeds of 96 m/s (214 mph). Their low moment of inertia and unique bearings permit very rapid response to gusts and lulls. Because of their output linearity, these sensors are ideal for use with various data retrieval systems. A Hall Effect switch induces a square wave voltage, producing an output signal with a frequency proportional to wind speed. A 5 to 24 VDC excitation voltage with 5ma of current is required. The #40H is constructed of rugged Lexan cups molded in one piece for repeatable performance. A rubber terminal boot is included.

SPECIFICATIONS

Description	Sensor type	3-cup anemometer
	Applications	• wind resource assessment • meteorological studies • environmental monitoring
	Sensor range	1 m/s to 96 m/s (2.2 mph to 214 mph) (highest recorded)
	Instrument compatibility	controllers or loggers requiring a square wave signal
Output signal	Signal type	• square wave signal from open collector transistor • external pull-up resistor required • frequency proportional to wind speed

SPECIFICATIONS

	Transfer function	m/s = (Hz x 0.765) + 0.35 [miles per hour = (Hz x 1.711) + 0.78]
	Accuracy	within 0.1 m/s (0.2 mph) for the range 5 m/s to 25 m/s (11 mph to 55 mph)
	Recommended load resistance	• output sinks up to 20 mA • 3300 Ohm typical pull-up resistor for 24V • 250 Ohm minimum pull-up resistor for 5V
	Calibration	calibrated version available
	Output signal range	0 Hz to 125 Hz (highest recorded)
Power requirements	Supply voltage	5 V to 24 V DC
	Supply current	9 mA max.
Response characteristics	Threshold	0.78 m/s (1.75 miles per hour)
	Distance constant (63% recovery)	3.0 m (10 feet)
	Moment of inertia	68 x 10^{-6} S-ft^2
	Swept diameter of rotor	190 mm (7.5 inches)
Installation	Mounting	onto a 13 mm (0.5 inch) diameter mast with cotter pin and set screw
	Tools required	0.25 inch nut driver, petroleum jelly, electrical tape
Environmental	Operating temperature range	-55 °C to 60 °C (-67 °F to 150 °F)
	Operating humidity range	0 to 100% RH
Physical	Connections	4-40 brass hex nut/post terminals
	Weight	0.14 kg (0.3 pounds)
	Dimensions	• 3 cups of conical cross-section, 51 mm (2 inches) dia. • 81 mm (3.2 inches) overall assembly height
Materials	Cups	one piece injection-molded black polycarbonate
	Body	housing is black ABS plastic
	Shaft	beryllium copper, fully hardened
	Bearing	modified Teflon, self-lubricating
	Boot	protective PVC sensor terminal boot included
	Terminals	brass