



# Micro Response Anemometer/Vane

- Very sensitive to low wind speeds
- Thresholds as low as .5 mph
- Weatherproof

## A. Model 2020 Micro Response Vane

### Description

This is a highly reliable, low threshold wind direction sensor. It responds to winds as low as 0.5 MPH. The machined aluminum body is aerodynamically shaped to combat sensor-induced turbulence. A labyrinth beneath the vane assembly prevents water and dust particles from reaching the sealed bearings at the top of the shaft. The reinforced, lightweight foam tail has a butyrate skin and a stainless steel counterweight.

### Features

As the vane turns, it rotates a stainless steel shaft held in place with instrument-grade bearings. A waterproof conductive plastic potentiometer is coupled to the base of the shaft. This potentiometer has excellent linearity. Very low torque (0.15 inch ounces) is required to move the wiper. The use of a single wiper doubles the life expectancy of the potentiometer compared to the dual-wiper potentiometers. Electronic switching inside the signal conditioning module provides an output range of 0° to 540°.

## B. Model 2030 Micro Response Anemometer

### Description

This is a highly responsive and rugged 3-cup anemometer designed to measure very low wind speeds (0.5 mph threshold). It is constructed



entirely of stainless steel and anodized aluminum to resist corrosive environments. Like its wind vane counterpart, the micro response anemometer has an aerodynamically shaped body and utilizes a labyrinth to prevent dust and water from reaching the bearings.

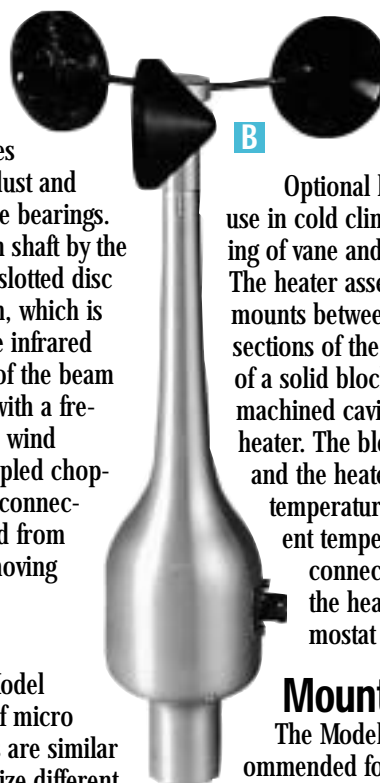
Rotation of the main shaft by the cup assembly moves a slotted disc through a photon beam, which is generated by a long-life infrared LED. The interruption of the beam causes a pulse output with a frequency proportional to wind speed. The photon-coupled chopper is mounted on the connector and can be removed from the body simply by removing the connector.

### Three Models:

In addition to the Model 2030 two other types of micro response anemometers are similar in construction but utilize different transducers. The Model 2031 utilizes a DC generator to produce a DC voltage proportional to wind speed. The main shaft couples the cup assembly directly to the generator. Output is approximately 5.5 mV/mph.

The Model 2032 employs a normally open reed switch. A bar magnet

attached to the main shaft causes two closures of a reed switch per revolution. The frequency of closures is thus proportional to wind speed.



### Heaters

Optional heaters are available for use in cold climates to minimize freezing of vane and anemometer shafts. The heater assembly, Model 20201, mounts between the top and bottom sections of the sensor body. It consists of a solid block of aluminum with a machined cavity containing a 20-watt heater. The block acts as a heat sink, and the heater raises the block's temperature 20°C above the ambient temperature. Environmental connectors are supplied with the heater. An optional thermostat is available.

### Mounting

The Model 2023 crossarm is recommended for mounting the micro response vane in conjunction with the micro response anemometer. A mast adapter is available for mounting either sensor alone on a 1-inch 25mm O.D. mast. Fixed keying of the sensor bodies makes orientation necessary one time only.

## Specifications

### Micro Response Vane

Sensor:	Counter balanced tail
Transducer:	5K-ohm potentiometer, single wiper
Excitation:	5VDC, 1 mA
Range:	0-360° or 0-540°
Accuracy:	±2°, 5° deadband at North
Resolution:	<1°
Potentiometer Linearity:	0.5%
Threshold:	0.5 mph (0.22 m/s)
Damping Ratio:	0.4
Delay Distance:	3.5' (1.1m)
Operating Temperature:	-40° to +60°C
Materials:	Aluminum body with foam tail
Size:	
Body:	12" H x 2.75" dia (305 x 70 mm)
Turning radius:	18" (457 mm)
Mounting:	Direct to 2023 crossarm or with adapter to 1" (25 mm) O.D. mast
Weight/shipping:	2.5 lbs/7 lbs (1.1 kg/3.2 kg)

### Micro Response Anemometer

Sensor:	3-cup assembly, carbon graphite composite, 2" diameter cups
Transducer:	
Model 2030:	light chopper
Model 2031:	DC generator
Model 2032:	reed switch
Excitation:	
Model 2030:	25 mA, + 12 VDC
Light source:	
Model 2030:	LED
Output	
Model 2030:	30 pulses/revolution, 900 Hz at 88.8 mph
Model 2031:	approx. 5.5 mV/mph
Model 2032:	2 contacts/revolution, 60Hz at 88.8 mph
Range:	0-160mph (0-75m/s)
Accuracy:	±0.15 mph or ±1%
Threshold:	
Models 2030, 2032:	.5 mph (0.44 m/s)
Model 2031:	.5 mph (0.45 m/s)
Distance Constant:	5' (1.5m)
Operating Temperature:	-40° to +60°C
Materials:	Stainless steel and anodized aluminum
Size:	
Body:	12" H x 2.75" dia (305 x 70mm)
Turning radius:	3.8" (97mm)
Mounting:	direct to 2023 crossarm or with adapter to 1" (25mm) O.D. mast
Weight/shipping:	2.5 lbs/7 lbs (1.1 kg/3.2 kg)

### Heater

Heating Capability:	To approx 20°C above ambient temperature at 0 wind speed
Control:	Optional Model 10681 thermostat
Input Voltage:	
Model 20201:	115 Vac, 50/60 Hz
Model 20201-A:	230 Vac, 50/60 Hz
Size:	2.64" dia. x 1.5" H (67 x 38 mm)
Weight/shipping:	1 lb/2 lbs (0.4 kg/0.9 kg)

### Crossarm

Size:	48" W x 6" H x 1" square (1219 x 152 x 25 mm)
Mounting:	1" (25mm) O.D. mast
Weight/Shipping:	3.5 lbs/5 lbs (1.6 kg/2.3 kg)

## Ordering Information

### Micro Response Vane

2020	Micro Response Vane
20201	Sensor Heater Assembly, 115 Vac
20201-A	Sensor Heater Assembly, 230 Vac
10681	Thermostat Control for Sensor Heater, one thermostat required for any number of heaters, requires junction box
T600503	Cable, 3 Conductor, 20 AWG shielded for 2020

### Micro Response Anemometer

2030	Micro Response Anemometer, light chopper
2031	Micro Response Anemometer, dc generator
2032	Micro Response Anemometer, reed switch
T600502	Cable, 2-conductor, 20 AWG shielded for 2031 or 2032
T600504	Cable, 4-conductor, 20 AWG shielded for 2030

### Heater

20201	Sensor Heater Assembly, 115 Vac
20201-A	Sensor Heater Assembly, 230 Vac
10681	Thermostat Control for sensor heater; one thermostat required for any number of heaters; requires junction box
T600503	Cable for heater

### Crossarm

2023	Crossarm for mounting two micro response wind sensors to 1" (25 mm) O.D. mast
20231	Mast Adapter to mount one micro response wind sensor to 1" (25 mm) O.D. mast

### Spare Parts Kits

M488140	Spare Parts Kit for 2020, 2021
M488141	Spare Parts Kit for 2030, 2031, 2032, 2033



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