

## 200-2020 Micro Response Wind Sensors



200-2030 Micro Response Anemometer

200-2020 Micro Response Vane

The Micro Response Wind Sensors have been carefully designed to provide accuracy, sensitivity, dependability, and ease of use. They are sensitive enough to catch the slightest breeze, yet rugged enough to withstand gale force winds. Fixed keying of the sensor bodies makes orientation necessary one time only. The crossarm can be installed quickly and accurately on a tower or mast. Micro Response Wind Sensors are selected when the requirement is for high response, low maintenance sensors.

The **Model 200-2020 Micro Response Wind Vane** 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.

As the vane turns, it rotates a stainless steel shaft held in place with instrument-grade bearings. A waterproof, wirewound potentiometer with zero gap 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 dual-wiper potentiometers. Electronic switching in the signal conditioning module provides a range of 0-540°.

The **Model 200-2023 Crossarm** is recommended for mounting the vane in conjunction with the micro response anemometer. A mast adapter is available for mounting either sensor alone on a 1" (25 mm) o.d. mast.

Once installed and oriented, the sensors can be removed from the crossarm or mast adapter for maintenance and reinstalled without reorientation. A keyed connector allows replacement in the original position only.

### Specifications

#### Micro Response Vane

Sensor: Counterbalanced tail  
 Transducer: 5K-ohm potentiometer, single wiper  
 Excitation: 1 mA, +5 Vdc  
 Range: 0-360° or 0-540°  
 Accuracy:  $\pm 2^\circ$ , 5° deadband at North  
 Resolution:  $< 1^\circ$   
 Potentiometer linearity: 0.5%  
 Threshold: 0.5 mph (0.22 m/s)  
 Damping ratio: 0.4  
 Delay distance: 3.5' (1.1 m)  
 Operating temperature: -40° to +60°C  
 Materials: Aluminum body with foam tail  
 Size: Body: 12" H x 2.75" dia (305 mm x 70 mm)  
 Turning radius: 18" (457 mm)  
 Mounting: Direct to 200-2023 crossarm or with adapter to 1" (25 mm) o.d. mast  
 Weight/shipping: 2.5 lbs/7 lbs (1.1 kg/3.2 kg)

#### Crossarm

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

#### Heater

Heating capability: To approx 20°C above ambient temperature at 0 mph wind  
 Control: Optional Model 200-10681 thermostat  
 Input voltage:  
 200-20201: 115 Vac, 50/60 Hz  
 200-20201-A: 230 Vac, 50/60 Hz  
 Power: 20 W standard  
 Size: 2.64" dia x 1.5" H (67 mm x 38 mm)  
 Weight/shipping: 1 lb/2 lbs (0.4 kg/0.9 kg)

## 200-2030 Micro Response Wind Sensors

The **Model 200-2030 Micro Response Anemometer** 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.



200-2030 Anemometer

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. A quick release waterproof connector is standard. The photon-coupled chopper is mounted on the connector and can be removed from the body simply by removing the connector.

One other type of micro response anemometer is available, similar to 200-2030 except in terms of output. The 200-2031 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 200-20201 Heaters** are available for use in cold climates to minimize freezing of the vane and anemometer shafts. The heater assembly 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. 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. One thermostat will control any number of heaters.

### Specifications

#### Micro Response Anemometer

Sensor: 3-cup assembly, black lexan, 2" diameter cups  
Transducer:

200-2030 light chopper  
200-2031 dc generator

Excitation: 200-2030 25 mA, +12 Vdc

Light source: 200-2030 LED

Output:

200-2030: 30 pulses/revolution, 900 Hz at 89 mph

200-2031: approx 5.5 mV/mph

Range: 0-100 mph (0-45 m/s)

Accuracy:  $\pm 0.15$  mph or 1%

Threshold:

200-2030: 0.5 mph (0.22 m/s)

200-2031: 1 mph (0.45 m/s)

Distance constant: 5' (1.5 m)

Operating temperature: -40° to +60°C

Materials: Stainless steel and anodized aluminum

Size: Body: 12" H x 2.75" dia (305 mm x 70 mm)

Turning radius: 3.8" (97 mm)

Mounting: Direct to 200-2023 crossarm or with adapter

to 1" (25 mm) o.d. mast

Weight/shipping: 2.5 lbs/7 lbs (1.1 kg/3.2 kg)

### Ordering Information

200-2020	Micro Response Wind Vane
200-2030	Micro Response Anemometer, light chopper
200-2031	Micro Response Anemometer, dc generator
200-2023	Crossarm for mounting two micro response wind sensors to 1" (25 mm) o.d. mast
200-20231	Mast Adapter to mount one micro response wind sensor to 1" (25 mm) o.d. mast
200-20201	Sensor Heater Assembly, 115 Vac
200-20201-A	Sensor Heater Assembly, 230 Vac
200-10681	Thermostat Control for sensor heater; one thermostat required for any number of heaters; requires junction box
200-M488035	Spare Parts Kit for 200-2020, including tail assembly, potentiometer, 2 bearings, and 4 set screws
200-M488036	Spare Parts Kit for 200-2030, including cup assembly, light chopper assembly, 2 bearings, 2 E-rings, and 3 set screws
200-M488037	Spare Parts Kit for 200-2031, including cup assembly, dc generator, 2 bearings, 2 E-rings, and 2 set screws
330-0220	Cable for 200-2031, per foot
330-0320	Cable for 200-2020, per foot
330-0524	Cable for 200-2030, per foot