WS102- Wind Speed Sensor Datasheet & Installation Guide

DATA LOGGERS | ZERO EXPORT DEVICE | PV DG SYNC

WEATHER SENSORS | MFM METERS | SPD | MODBUS REPEATERS

WS102 Introduction

This Wind Speed Sensor is designed with rugged components stand up to Might Wind to light breeze. It includes sealed bearings for long life. The range and accuracy specifications have been verified in wind-tunnel tests.

Working Principle

The wind sensor assembly consists of three cups mounted on a cup assembly hub. A shaft, which rotates on precision-sealed ball bearings, connects the cup assembly to a magnet assembly. When the shaft is rotated, the turning magnet assembly causes a reed switch to close. It closes twice for every rotation of the shaft. The pulses produced by this device is counted and later converted by the Signal Converter into desired output.
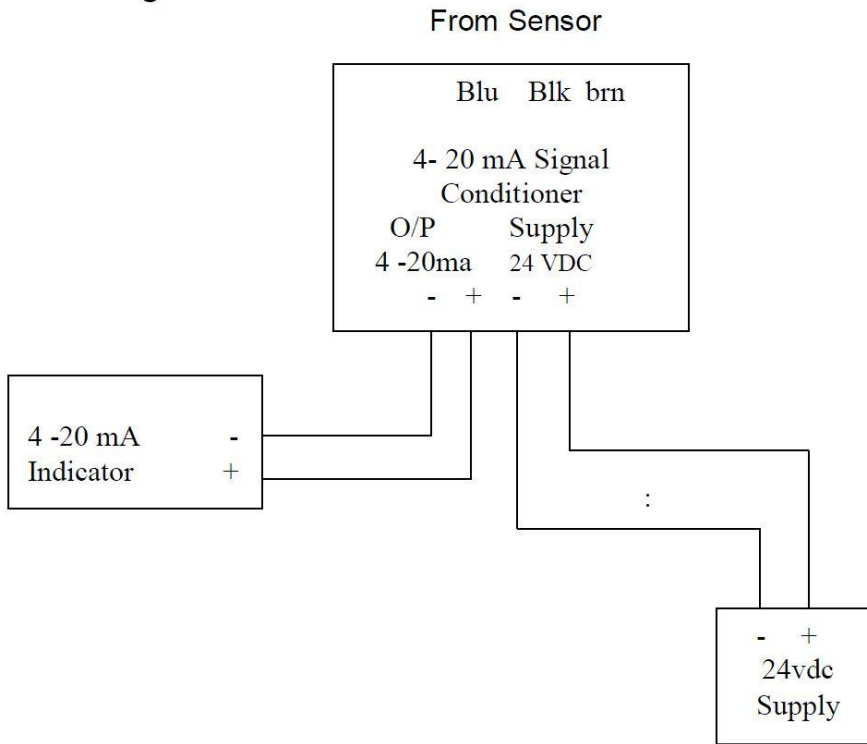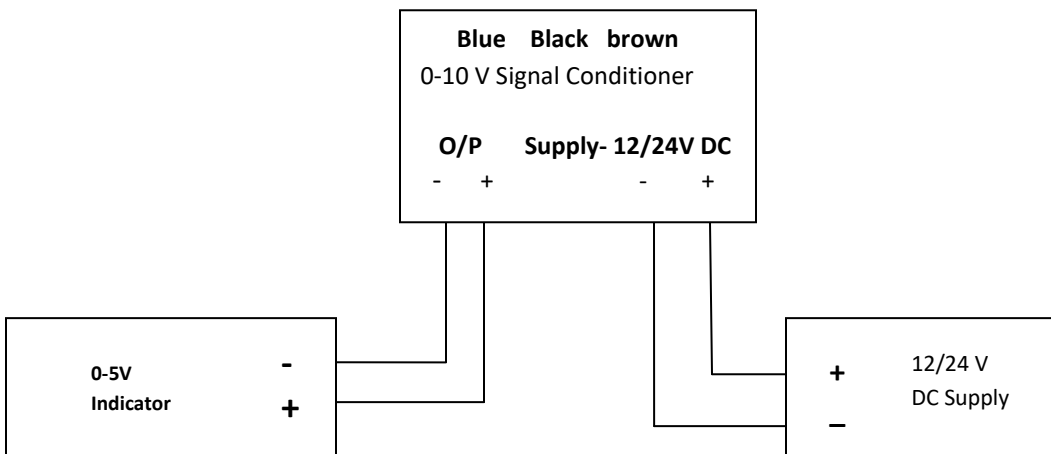

Specifications

Material	Control Head UV-resistant ABS
Sensor Type	3 Cups
Wind Cups	Polycarbonate
Range	0 to 250 km/hr
Startup wind speed	0.5 m/s or 1.8 km/hr
Accuracy	± 5% under standard conditions
Output	0-10V or 4-20mA, MODBUS is Optional (Needs a converter)
Dimensions	3 cup dia. 15 cm
Operating Temperature	- 40 ~ 75 ° C

Wiring Diagram

I/O Specifications for 4-20 Mili amps Sensor Output
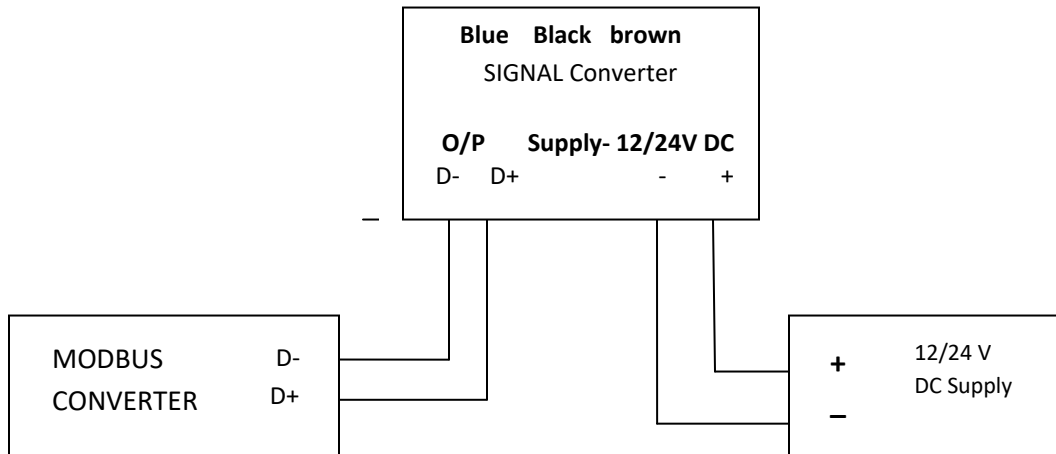
Wiring Details

From Sensor

```
                    Blu   Blk  brn

                    4- 20 mA Signal
                       Conditioner
                    O/P      Supply
                    4 -20ma   24 VDC
                    -  +     -  +
```

```
4 -20 mA        -
Indicator       +
```

```
-   +
24vdc
Supply
```

I/O Specifications for 0-10 V Sensor Output

```
        Blue   Black  brown
       0-10 V Signal Conditioner

        O/P      Supply- 12/24V DC
        -   +        -   +
```

```
0-5V        -
Indicator   +
```

```
+   12/24 V
    DC Supply
_
```

I/O Specifications for RS-485 Output

```
                    ┌─────────────────────────────┐
                    │  Blue   Black  brown        │
                    │     SIGNAL Converter        │
                    │                             │
                    │  O/P     Supply- 12/24V DC  │
                    │  D-   D+           -    +    │
                    └─────────────────────────────┘
         _

┌──────────────────────┐              ┌──────────────────────┐
│ MODBUS         D-     │              │  +      12/24 V       │
│ CONVERTER      D+     │              │         DC Supply     │
│                      │              │  _                   │
└──────────────────────┘              └──────────────────────┘
```

INSTALLATION

Parts of The wind speed sensor come in below different parts for assembly.

1) Sensor body,
2) Wind Cup wheel
3) "L" angle with U clamp to mount the sensor body
4) Allen key to mount the cup wheel on the sensor body.

Tools and Materials Needed

Please make sure you have all the necessary material as mentioned below: -
Wire cutters , Pliers and   stripper - Multi meter - Screwdriver
 Electrical tapes and cable ties for wiring

Mounting

The Anemometer is to be mounted by using the three holes in the bottom mounting plates.
And mounting this on any flat LEVEL surface**.**

Caution:

To prevent damaging the wind cups properly mount the sensor/bracket combination on the mast before fitting the wind cup-unit whenever possible.

In areas where icing of the anemometer is a problem, drip rings deflect water from the joint between moving parts.

Do not try to lubricate the force bearings

Orientation: The Anemometer should be mounted with its axis as close to vertical as possible to provide for the best measurement of horizontal wind movement and where there is no obstruction for the wind movement.

Steps for Mounting:
1. With the supplied U-bolt, the L angle is to be mounted on a pole or rod, where there is wind flow by placing the two ends of the U-bolt around the pole and through the two holes in the C-shaped bracket on the base.
2. Gently slide the wind cup assembly down onto the anemometer's stainless-steel shaft and tighten the screws on side if the wind cup gently by Allen Key provided.
. (DO NOT PUT EXCESS PRESSURE AS THIS CAN DAMAGE THE SENSOR PERMANENTLY)
3. Check for the free Spinning of the wind cups. If they do not spin freely, loosen the set screw, then retighten the set screw, repeat the process until the wind cups spin freely
4. After confirming that the sensor is properly oriented, tighten the nuts with a wrench.
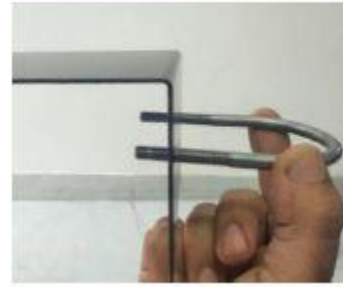
Calibration and Reading

In case of Modbus Output – sensors are pre calibrated and Gives default output.

In case of Analog Output -

      - IF **Output**: 0 - 5 VDC (0 to 250 km/hr)
      Wind Speed in km/hr = 50*Sensor Output voltage (in Volt)
      - IF **Output:** 4-20mA (0 to 250 km/hr)
      Wind Speed in km/hr = 15.625*(Output in mA - 4)

NOTE
There will be some variation in the real vs. expected values as This sensor is a low-cost sensor and does not fall under any class. It's a alternative to the Class 2 sensors of the same type. In case of very accurate data for analytics, it's recommended to use Class 1/Class 2 sensors. Warranty of this sensor is as per the terms and conditions of original manufacturer.