WS-MMW-005 Instruction Manual

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Principle of Operation

The solid state wind sensor type MMW-005 uses a special chip to measure wind direction and wind speed, based on the temperature differences on the chip surface. These temperature differences are processed by a small microprocessor in the sensor, resulting in a serial signal for the indication of wind direction and wind speed. The output signal of the sensor is RS-422 and is standardized according to NMEA-0183.

Wind Sensor Installation

Always ensure that the sensor is installed away from obstacles (i.e. possible causes of turbulence) in order to obtain the best possible wind measurements. The correct installation height for the wind sensor is 10 meters above ground level.

Mount the base of the wind sensor (see Fig. 1) with 3 bolts on a horizontal surface.
Route the wind sensor cable from the top of the sensor through the base.

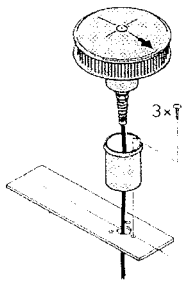

Figure 1

Once you have established the north, you can push the sensor, with the arrow pointing north (see Fig. 2 wind sensor top view) and using some force, into the base until it "clicks".

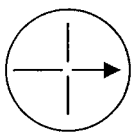

Figure 2

Now that the sensor is mounted, you can install the cable and connect the wind sensor to your equipment or PC.

Wind Sensor Connection

White	= +12 VDC / 150 mA
Brown	= GND
Yellow	= Signal + (RS-422)
Green	= Signal – (RS-422)
Shielding	= Ground

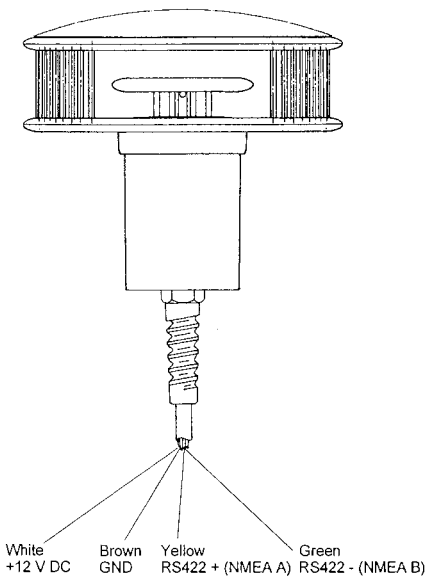

Figure 3

Output String According to NMEA 0183:

NMEA A	= YELLOW
NMEA B	= GREEN
Baud rate	= 4800
Data bits	= 8
Stop bits	= 1
Parity	= none

Format: $WIMWV,ddd,R,ss.s,M,A<CR><LF>

Description:

$	= Start of sentence
WI	= Device type: Weather Instruments
MWV	= Wind speed and direction
ddd	= Wind direction value [0..359°]
R	= Relative to the vessel (not applicable)
ss.s	= Wind speed value [0..25.5 m/s]
M	= Unit for wind speed [m/s]
A	= Data always valid for MMW-005

Wiring Diagram for PC with Mains adapter

The wind sensor can be connected directly to the RS-232 port of a PC (see also Figure 4). Connections should be made according to the following table (table 1). Depending on the type of connection, you can use a 9- or 25-pole Sub-D:

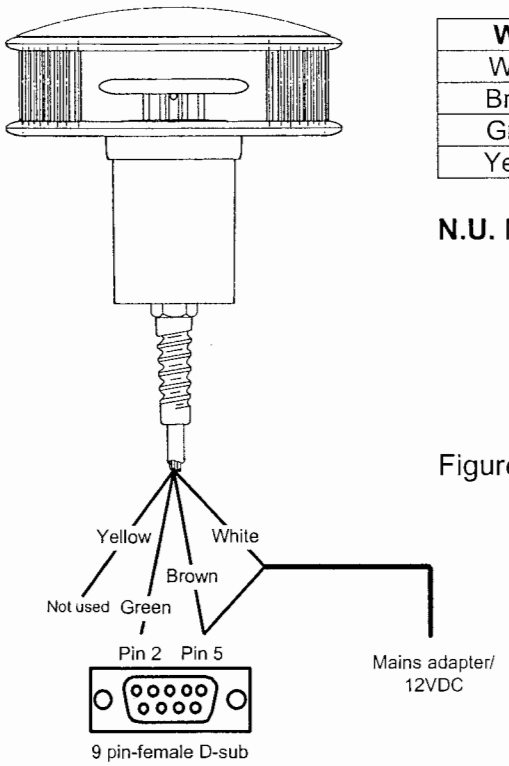

Figure 4

Table 1: Pin Connection Sub-D Connector

Wire	9p Sub-D	25p Sub-D	Supply
White			+12V
Brown	5	7	GND
Green	2	3	
Yellow	N.U.	N.U.	N.U.

N.U. Not Used

Wiring Diagram for PC with battery

The wind sensor can be connected directly to the RS-232 port of a PC (see also Figure 5). Connections should be made according to the following table (table 2). Depending on the type of connection, you can use a 9- or 25-pole Sub-D:

Table 2: Pin Connection Sub-D Connector

Wire	9p Sub-D	25p Sub-D	Supply
White			+12V Red(+Battery)
Brown	5	7	GND Black (- Battery)
Yellow	N.U.	N.U.	N.U.

N.U. Not Used

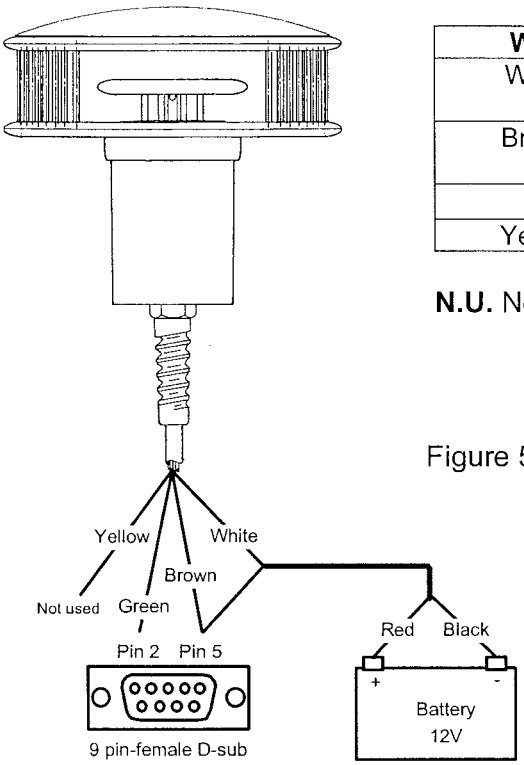

Figure 5

Maintenance

The wind sensor has no moving parts, and requires no other maintenance than the cleaning of the sensor itself. The time interval for cleaning depends on the installation site.

A calibration certificate with a validity of 1 year can be provided, after the wind sensor has been tested in Mierij Meteo's wind tunnel.

Technical Specification

Operating Range	: Wind speed	: 0…25 m/s
	Min. wind speed	: 0,2 m/s *(values < 0,2 m/s = 0 m/s)*
	Wind direction	: 0..360°
	values for wind direction at wind speed < 0,5 m/s = not valid	
Inaccuracy	: Wind speed	: 0,5 m/s ± 3% @ 20°C
	Wind direction	: ± 3" @ 20°C
Response time	: < 1 second	
Stabilization time	: < 1 hour after switching on	
Dimensions	: 0 120 mm, height 105 mm	
Weight	: 200 grams	
Material	: Stapron N	
Operating temp.	: -25….+70°C	
Static discharge	: The instrument is protected against outside inductive interference up to a discharge power of 600 Watt	
Water ingress	: Sealed to IP65	
Mounting	: Vertically, free-standing	
Connection	: 4-wire cable (0.34mm²), shielded	
Supply voltage	: 12 V DC +/- 10%	
Power consumption	: 125 mA max. continuous	
output	: RS-422 (NMEA 0183 protocol) serial	
Baud rate	: 4800	
Data bits	: 8	
Stop bits	: 1	
Parity	: none	
Warranty	: 1 year	