

From: Mary Engels
Subject: Consensus on Young Anemometer?
Date: Wed, 5 May 2010

Afternoon All,

I am in the process of getting another Young anemometer for our ships. As I looked into the history it turns out that we have two different models, 05103 (for rugged outdoor applications) and 05106 (for marine applications). Both of these have been working well on our ships and we haven't had any issues. Is there any consensus out there in the community on which type might be preferable? Any thoughts would be appreciated.

All the best

Mary Engels

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From: Anthony Johnson (Columbia University)

Langseth uses the 5103. The 5103, or at least our 5103's, have a degraded zone around the 0-360 transition, pretty much right where the bird is pointing most of the time. Not ideal. I don't know if the 5106 has the same issue, but if it doesn't, I would consider that an advantage.

Anthony

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Anthony Johnson
Chief, Marine IT/Navigation Dept.
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From: Mike Webb (NOAA)
Date: Wed, 05 May 2010 16:21:56 -0700

/Mary/Anthony,

We use the Young stuff, both 5103 and 5106 also for the last ten years, but mostly for feeding the science met data to our SCS data collection

system. We still use Bendix for navigation on the bridge, since they have the analog displays that help the ship handlers better than the bouncing digital displays or the flashing type of display.

All Young birds have a 5 deg deadspot between 355 and 360 (they are not synchro, but a resistive element (pot)), so we mount them backwards such that the deadspot is toward the stern, which means that the translator has to be reprogrammed to get the 0 deg heading to be 180 deg. Then the data is correct. Most of the time the deadspot will not seriously affect the data that way. Steaming ships are almost always heading into the wind.

We are trying some new pseudo analog displays on the Young birds to get a better type of display for the ship handlers.

We are also trying the ultrasonic Young instruments for a couple of ships as a test to possible switch to them for the rest of the fleet. Look good so far, but don't know about the data acceptability yet, since we've just started sending the data to Shawn.

Good Luck.

mike

From: Thomas Wilson (SUNYSB)

Date: Wed, 5 May 2010 23:00:40 -0400 (EDT)

Hi All,

1) I think the only difference between the 5103 and the 5106 is the bearings used, the 5106 uses a more sealed bearing with heavier lubricant, slightly more resistant to corrosion, slightly less physically responsive. Probably not a huge difference either way.

2) Like Mike Webb, I also mount my windbirds backwards add 180 degrees to the reading in software, and then mod 360 to get the direction.

3) Our ship recently installed an Airmar PB150 (=Furuno PB150) ultrasonic weather station and seems quite happy with it. Ultrasonic wind sensor with barometric pressure, air temperature, relative humidity, wind chill, fluxgate compass, and WAAS GPS all in a masthead package about the size of your fist. The big feature - internal real time calculation of true wind (woo hoo hoo!).

I would recommend buying the Airmar PB200, for a few more bucks than the PB150 it adds a rate gyro and accelerometer for better performance in rough seas:

<http://www.airmartechology.com/2009/products/marine-product.asp?prodid=105>

Street price only about \$1,030.00, not much more than a bare windbird and a LOT less than windbird plus GPS plus compass plus software (plus baro plus RHT). You can get better accuracy with research grade

sensors but the specs on the Airmar might be adequate for some installations and certainly useful as a backup anytime.

There is NMEA output of both true and apparent wind so you can calculate true wind the classic way if you wanted for example to use higher quality compass data (but I'd guess that airflow over the ship is a bigger source of error than fluxgate inaccuracy).

Anybody else tried these?

Tom

From: David Fisichella (WHOI)
Date: Thu, 06 May 2010 11:02:38 -0400

WHOI has been switching to Vaisala WXT520 multi sensor units that provide ultrasonic wind, temp, rain, and humidity. We had some sealing issues with the older models (WXT510), but the 520's seem to be better. Cost - approx \$2500 each

David

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David Fisichella

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From: Thomas Wilson (SUNYSB)
Date: Thu, 6 May 2010 12:27:57 -0400 (EDT)

Hi again David et. al.,

We have been using a WXT510 for several years at the University weather station, our faculty here seem satisfied with performance and accuracy. Brookhaven National Labs owns several units and also has had good experiences. Last time I checked, Mike Reynolds (scientist and engineer who has worked at NOAA, BNL, and founded at least two companies I know of) was taking a WXT510 on all his cruises as a backup met system and a primary system on ships of opportunity.

According to Vaisala's website, all WXT510s sent in for service are upgraded to WXT520s automatically. For those who might not know, Vaisala is considered top-notch in the measurement of humidity. The WXT510/520 has a field replaceable "PTU" module that replaces baro, temperature, and humidity sensors in one operation. I've had to do this once, as I remember the module was not too expensive (<\$300).

The WXT510/520 does not have compass or GPS, so if mounted on a vessel you still need to do the "true wind tango" with the data, but it seems to be a good unit for those with appropriate sized budgets.

Tom

From: Frank Delahoyde (SIO)
Date: Thu, 06 May 2010 09:32:48 -0700

SIO is also using Vaisala sensors. We use their WS425 ultrasonic anemometers. Their biggest problem is the default mounting configuration provides an excellent perch for sea birds, so we mount them upside-down (and change the wind direction scaling).

Frank

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From: Brent Evers
Date: Sat, 8 May 2010 13:07:17 -0400

FWIW, and to the best of my memory, on the NBP we had the twin Young windbirds mounted out of phase - one with dead band forward, the other backwards. I don't think we processed to get one single set of data, just recorded the two raw sets to RVDAS. Having two up in the air meant at least one was still running in the morning after the bearings burnt out of the other, or you couldn't get up the mast (ice) to pull the bad one down.

I'm envious of the Vaisala's - wanted one, but no-one wanted to break the continuity of the data set with the young's - kinda silly since the Young's probably put out bad data a significant portion of the time when the bearings started to go. I don't know how often I drive by small land based met stations and notice a nice Young windbird with no prop on it..

Brent

From: David O'Gorman (OSU)
Date: Mon, 10 May 2010 13:39:29 -0700 (PDT)

The Wecoma has an R.M. Young 05103 and a Gill Wind Observer II. Both have been reliable.

We have been preventatively changing out the "Flange Bearings" ([http://tangle.coas.oregonstate.edu/martech/dave/SensorInformation/R.M.%20Young%20wind%20monitor%20-%20RPL-05103\(2007\).pdf](http://tangle.coas.oregonstate.edu/martech/dave/SensorInformation/R.M.%20Young%20wind%20monitor%20-%20RPL-05103(2007).pdf) the propeller bearings) once a year and it just keeps going and going. According to R.M. Young the unit does not require recalibration after the bearings are changed, so for ~\$18 and one trip up the mast a year (at a time of our choosing) it has been pretty good to us.

We primarily rely on a Gill Wind Observer II (<http://www.gill.co.uk/products/anemometer/windobserver.html>) which has been completely trouble free for more than 5 years now.

Also in the FWIW category, I recently saw a gill windsonic (<http://www.gill.co.uk/products/anemometer/windsonic.htm>) go out on a buoy. According the the technician it was cheaper than the mechanical windbird and more reliable. That being said several of the other items in this chain looked superior, and lower-cost. Thanks for the tips.

Dave

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