

NOAA's Ocean Service
Center for Operational Oceanographic Products and Services (CO-OPS)
Environmental Measurement Systems
Sensor Specifications and Measurement Algorithm

Measurement Parameter	Sensor Manufacturer	Estimated Accuracy	Resolution	Sample Interval	Measurement Algorithm
Water Level (Primary)	Aquatrak® (Air Acoustic sensor in protective well)	<i>Relative to Datum</i> ± 0.02 m (Individual measurement) ± 0.005 m (monthly means)	0.001 m	6 minutes	181 one-second water level samples centered on each tenth of an hour are averaged, a three standard deviation outlier rejection test applied, the mean and standard deviation are recalculated and reported along with the number of outliers. (3 minute water level average)
Water Level (Backup) <i>Generally used to fill Primary WL sensor data gaps.</i>	Single Orifice Bubbler Strain Gauge Sensor (Pressure)	<i>Relative to Datum</i> ± 0.05 m (Individual measurement) ± 0.02 m (monthly means)	0.001 m	6 minutes (Only the hour and half-hour sample is send over GOES)	181 one-second water level samples centered on each tenth of an hour are averaged, a three standard deviation outlier rejection test applied, the mean and standard deviation are recalculated and reported along with the number of outliers. (3 minute water level average)
Air Temp	Yellow Springs Instruments	± 0.2 Deg.C	0.1 Deg.C	6 minutes (PORTS®) Hourly (NWLON)	20 equally spaced samples collected over a 2 minute period are averaged for each measurement. The samples are collected starting one minute prior to each tenth hour at PORTS® sites or centered on the hour otherwise.

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Water Temp	Yellow Springs Instruments	± 0.2 Deg.C	0.1 Deg.C	6 minutes (PORTS®) Hourly (NWLON)	20 equally spaced samples collected over a 2 minute period are averaged for each measurement. The samples are collected starting one minute prior to each tenth hour at PORTS® sites or centered on the hour otherwise.
Wind S/D/G (Typically installed approximate 10 m above sea level)	R.M. Young Model 05103	Speed ± 0.3 m/sec. Direction ± 3 Deg. (Speed Threshold 1 m/sec)	Speed 0.1 m/sec. Direction 0.1 Deg.	6 minutes (PORTS®) Hourly (NWLON)	Speed - 2 minute scalar average of 1 second wind speed measurements collected prior to each tenth hour. Wind Direction - 2 minute unit vector average of wind direction collected prior to each tenth hour. Wind Gust - The maximum 5 second moving scalar average of wind speed that occurred during the previous 6 minutes for PORTS® stations, during the previous hour otherwise.
Baro Press.	Setra , Vaisala, or Sutron Acubar	± 0.5 mbar	0.1 mbar	6 minutes (PORTS®) Hourly (NWLON)	20 equally spaced samples collected over a 2 minute period are averaged for each measurement. The samples are collected starting one minute prior to each tenth hour at PORTS® sites or centered on the hour otherwise.