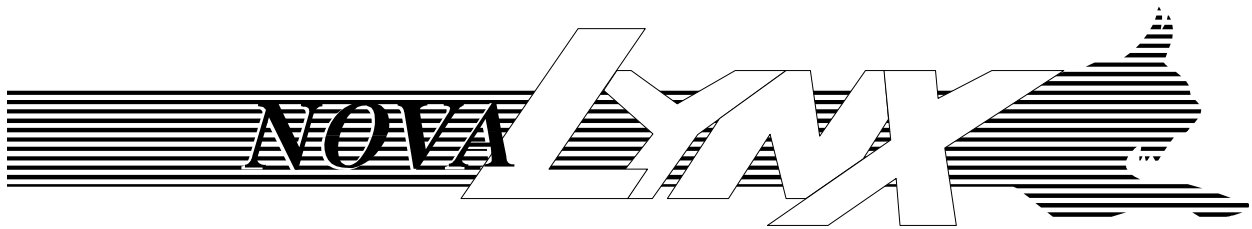


NOVALYNX CORPORATION

**MODEL 110-WS-16BP
BAROMETRIC PRESSURE SENSOR**

INSTRUCTION MANUAL



REVISION DATE: OCT 2005

Receiving and Unpacking

Carefully unpack all components and compare to the packing list. Notify NovaLynx Corporation immediately concerning any discrepancy. Inspect equipment to detect any damage that may have occurred during shipment. In the event of damage, any claim for loss must be filed immediately with the carrier by the consignee. Damages to equipment sent via Parcel Post or UPS require the consignee to contact NovaLynx Corporation for instructions.

Returns

If equipment is to be returned to the factory for any reason, call NovaLynx between 8:00 a.m. and 4:00 p.m. Pacific Time to request a Return Authorization Number (RA#). Include with the returned equipment a description of the problem and the name, address, and daytime phone number of the sender. Carefully pack the equipment to prevent damage or additional damage during the return shipment. Call NovaLynx for packing instructions in the case of delicate or sensitive items. If packing facilities are not available take the equipment to the nearest Post Office, UPS, or other freight service and obtain assistance with the packaging. Please write the RA# on the outside of the box.

Warranty

NovaLynx Corporation warrants that its products are free from defects in material and workmanship under normal use and service for a period of one year from the date of shipment from the factory. NovaLynx Corporation's obligations under this warranty are limited to, at NovaLynx's option: (i) replacing; or (ii) repairing; any product determined to be defective. In no case shall NovaLynx Corporation's liability exceed product's original purchase price. This warranty does not apply to any equipment that has been repaired or altered, except by NovaLynx Corporation, or that has been subjected to misuse, negligence, or accident. It is expressly agreed that this warranty will be in lieu of all warranties of fitness and in lieu of the warranty of merchantability.

Address

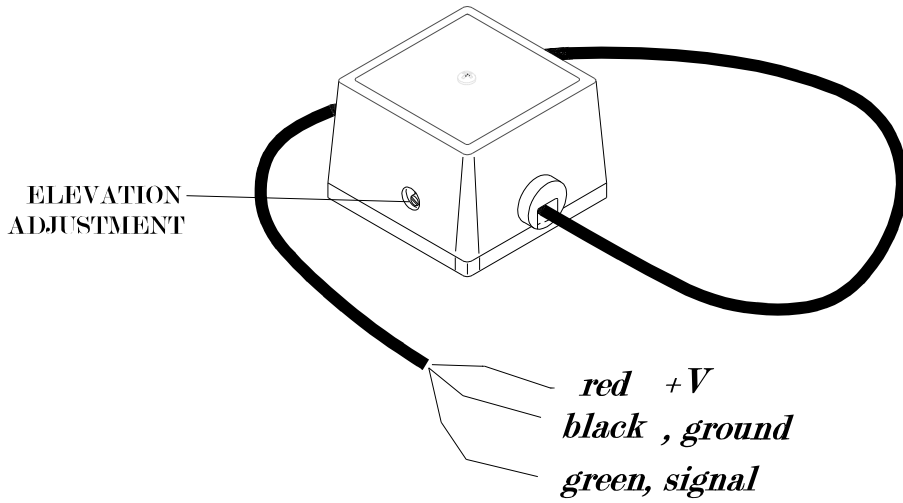
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MODEL 110-WS-16BP EQUIPMENT CONFIGURATION AND IDENTIFICATION



OVERALL SIZE: 2.1" X 2.1" X 1.5"

			C
TITLE OUTLINE, BAROMETRIC PRESSURE SENSOR			
MODEL USAGE 110-WS-16BP		SHEET DP 1	
BY RGN	SCALE	DWG. NO.	
DATE 11-18-07	E1	10000342	

NovaLynx Corporation

Model 110-WS-16BP Barometric Pressure Sensor Instruction Manual

1.0 INTRODUCTION

Barometric pressure (BP) is sensed using a piezoresistive sensing element. This element responds to changes in barometric pressure with a corresponding change in resistance. This resistance is converted to a voltage from which the microprocessor (or another data processor) calculates the barometric pressure at the elevation where the barometer is located.

Because barometric pressure varies with elevation, the BP sensor must be adjusted to read correctly for the elevation at which it is installed. This is done using the offset adjustment screw located on the side of the sensor. Instructions are provided in Section 3.0 of this manual.

2.0 SPECIFICATIONS

Range: 28.25 to 30.75 in Hg (956.6 to 1041.3 mb)

Measurement span: 2.50 in Hg (85 mb)

Resolution: ± 0.01 in Hg or ± 0.3 mb

Altitude offset: 0 to +10,000 feet, screwdriver adjustable

Absolute Accuracy: 0.05 in Hg

Input power: 10 to 18 Vdc

Output voltage: 0 to 5 Vdc = 2.5 in Hg (85 mb) span

3.0 INSTALLATION

The 110-WS-16BP has been designed for use with the 110-WS-16 Modular Weather Station. The sensor is designed to be mounted indoors. This arrangement assumes that the barometric pressure indoors and outdoors is equal. An 18" length of cable is provided.

Connect the three wires of the BP sensor into the terminal strip on the WS-16 module.

The barometric pressure sensor is set for sea level when it leaves the factory. Because pressure varies with elevation, the sensor must be adjusted to read correctly for the elevation at which it is installed. This is done using the offset adjustment screw located on the side of the sensor.

To set the barometric pressure offset for sea level, you must first obtain a reliable barometric pressure for your location. This can be found by contacting the nearest

airport or weather service facility. The barometric pressure range is 28.25 to 30.75 inches of mercury (956.6 to 1041.3 millibars). Nominal barometric pressure is 29.6 inHg (1013 mb).

Call up the WS-16 main menu on the display terminal by pressing "M" and "Enter." Press "2" for current observations. Then press "1" for observation display.

While watching the display screen, slowly turn the offset adjustment screw. Clockwise will decrease the pressure reading. You may have to turn the adjustment screw 3 to 10 revolutions before the display starts to change. Turn the pot slowly in single turn increments, then wait for the screen to update, every five seconds. If the value is moving away from the correct value obtained above, turn the screw in the opposite direction. Continue turning the screw until the displayed value agrees with the value obtained from the airport or weather service.

Note: 1 millibar (mb) is equal to 1 hectopascal (hPa).

3.1 Cable Assignments

Function	Color	WS-16 Connection
+12V Power	Red	+12V
0-5Vdc Signal	Green	A2
Ground	Black	GND

4.0 MAINTENANCE

Check and determine that the BP sensor offset adjustment has not drifted. Compare the displayed BP value to the present one obtained from a local airport or weather service facility. If the values do not agree, adjust the offset screw as explained in Section 3.0.

APPENDIX 1 PRESSURE CONVERSION TABLE

Millibars	In. Hg	mm Hg	Millibars	In. Hg	mm Hg	Millibars	In. Hg	mm Hg
900	26.577	675.06	950	28.053	712.56	1000	29.530	750.06
901	26.607	675.81	951	28.083	713.31	1001	29.560	750.81
902	26.636	676.56	952	28.113	714.06	1002	29.589	751.56
903	26.666	677.31	953	28.142	714.81	1003	29.619	752.31
904	26.695	678.06	954	28.172	715.56	1004	29.648	753.06
905	26.725	678.81	955	28.201	716.31	1005	29.678	753.81
906	26.754	679.56	956	28.231	717.06	1006	29.707	754.56
907	26.784	680.31	957	28.260	717.81	1007	29.737	755.31
908	26.813	681.06	958	28.290	718.56	1008	29.766	756.06
909	26.843	681.81	959	28.319	719.31	1009	29.796	756.81
910	26.872	682.56	960	28.349	720.06	1010	29.825	757.56
911	26.902	683.31	961	28.378	720.81	1011	29.855	758.31
912	26.931	684.06	962	28.408	721.56	1012	29.884	759.06
913	26.961	684.81	963	28.437	722.31	1013	29.914	759.81
914	26.990	685.56	964	28.467	723.06	1014	29.943	760.56
915	27.020	686.31	965	28.496	723.81	1015	29.973	761.31
916	27.049	687.06	966	28.526	724.56	1016	30.002	762.06
917	27.079	687.81	967	28.555	725.31	1017	30.032	762.81
918	27.109	688.56	968	28.585	726.06	1018	30.062	763.56
919	27.138	689.31	969	28.615	726.81	1019	30.091	764.31
920	27.168	690.06	970	28.644	727.56	1020	30.121	765.06
921	27.197	690.81	971	28.674	728.31	1021	30.150	765.81
922	27.227	691.56	972	28.703	729.06	1022	30.180	766.56
923	27.256	692.31	973	28.733	729.81	1023	30.209	767.31
924	27.286	693.06	974	28.762	730.56	1024	30.239	768.06
925	27.315	693.81	975	28.792	731.31	1025	30.268	768.81
926	27.345	694.56	976	28.821	732.06	1026	30.298	769.56
927	27.374	695.31	977	28.851	732.81	1027	30.327	770.31
928	27.404	696.06	978	28.880	733.56	1028	30.357	771.06
929	27.433	696.81	979	28.910	734.31	1029	30.386	771.81
930	27.463	697.56	980	28.939	735.06	1030	30.416	772.56
931	27.492	698.31	981	28.969	735.81	1031	30.445	773.31
932	27.522	699.06	982	28.998	736.56	1032	30.475	774.06
933	27.551	699.81	983	29.028	737.31	1033	30.504	774.81
934	27.581	700.56	984	29.058	738.06	1034	30.534	775.56
935	27.611	701.31	985	29.087	738.81	1035	30.564	776.31
936	27.640	702.06	986	29.117	739.56	1036	30.593	777.06
937	27.670	702.81	987	29.146	740.31	1037	30.623	777.81
938	27.699	703.56	988	29.176	741.06	1038	30.652	778.56
939	27.729	704.31	989	29.205	741.81	1039	30.682	779.31
940	27.758	705.06	990	29.235	742.56	1040	30.711	780.06
941	27.788	705.81	991	29.264	743.31	1041	30.741	780.81
942	27.817	706.56	992	29.294	744.06	1042	30.770	781.56
943	27.847	707.31	993	29.323	744.81	1043	30.800	782.31
944	27.876	708.06	994	29.353	745.56	1044	30.829	783.06
945	27.906	708.81	995	29.382	746.31	1045	30.859	783.81
946	27.935	709.56	996	29.412	747.06	1046	30.888	784.56
947	27.965	710.31	997	29.441	747.81	1047	30.918	785.31
948	27.994	711.06	998	29.471	748.56	1048	30.947	786.06
949	28.024	711.81	999	29.500	749.31	1049	30.977	786.81
						1050	31.006	787.56

APPENDIX 2 ELEVATION CORRECTION TABLES

Introduction

Weather stations located at elevations above sea level often need adjustment to the barometer so that sea level pressure is the indicated value. Sometimes the information necessary making for the adjustment is unavailable or is difficult to obtain. This document provides tables that give the barometer corrections for various elevations. A brief discussion of the concept of pressure variations with elevation is also included.

Using the Tables

Barometer corrections to sea level pressure are most often associated with airports, television reports, or National Weather Service offices. These organizations give sea level reduced pressure readings. Some large organizations may have networks of weather stations spread over a large region to measure lateral variations in pressure such as those produced by weather fronts. It is not necessary for a barometer to be corrected to sea level in order for it to operate. The correction adjustment is simply a preference for the way that pressure is reported.

Barometric pressure corrections can be obtained by contacting a local airport or National Weather Service weather station operator and requesting the current local reading. The barometer in question is then adjusted so that its reading matches that obtained from the airport or NWS. Some error will be introduced using this method of adjustment, increasing with distance since lateral pressure variations may increase with the horizontal distance from the reporting weather station.

The tables provided with this document are based upon the United States Standard Atmosphere and can be used in situations where no reporting stations exist within the immediate area. The tables give the correction factor that is added to the barometric pressure reading for a given station elevation. The correction is given both in inches of mercury (inHg) and in millibars (mb). Values are indicated for elevations expressed in feet above sea level.

For any station elevation, add the “**deviation from zero**” figure to the barometer’s current barometric pressure reading.

As an example, consider a barometer located at an elevation of 4550 feet with a current reading of 25.07 inHg. Using the tables, a value of 4.60 inHg should be added to the reading. The barometer should be adjusted until it produces a reading of 29.67 inHg to report the equivalent sea level pressure.

The “**standard pressure**” figures indicate the calculated barometric pressure at each elevation based upon the United States Standard Atmosphere. Actual pressures typically vary by up to 1 inHg (34 mb), depending upon weather conditions, time of year, and time of day. The variation is seldom more than 2 inHg (68 mb) from the values given, even in a severe storm. These figures provide a method for checking a barometer’s operation. A barometer that is located at an elevation of 1950 feet and is reporting a pressure of 860 mb has a calibration problem or is sitting in the eye of a super hurricane!

STANDARD PRESSURE VS. ELEVATION

Feet and mb

Station Elevation (feet)	Standard Pressure (mb)	Deviation from zero (mb)	Station Elevation (feet)	Standard Pressure (mb)	Deviation from zero (mb)
0	1013.2	0.0	1950	943.8	69.4
50	1011.4	1.8	2000	942.1	71.1
100	1009.6	3.7	2050	940.4	72.9
150	1007.8	5.5	2100	938.6	74.6
200	1005.9	7.3	2150	936.9	76.3
250	1004.1	9.1	2200	935.2	78.0
300	1002.3	10.9	2250	933.5	79.8
350	1000.5	12.8	2300	931.8	81.5
400	998.7	14.6	2350	930.1	83.2
450	996.9	16.4	2400	928.4	84.9
500	995.1	18.2	2450	926.7	86.6
550	993.3	20.0	2500	925.0	88.3
600	991.5	21.8	2550	923.3	90.0
650	989.7	23.6	2600	921.6	91.7
700	987.9	25.4	2650	919.9	93.4
750	986.1	27.2	2700	918.2	95.1
800	984.3	29.0	2750	916.5	96.8
850	982.5	30.8	2800	914.8	98.4
900	980.7	32.5	2850	913.1	100.1
950	978.9	34.3	2900	911.4	101.8
1000	977.1	36.1	2950	909.7	103.5
1050	975.4	37.9	3000	908.1	105.2
1100	973.6	39.7	3050	906.4	106.8
1150	971.8	41.4	3100	904.7	108.5
1200	970.0	43.2	3150	903.1	110.2
1250	968.3	45.0	3200	901.4	111.9
1300	966.5	46.7	3250	899.7	113.5
1350	964.8	48.5	3300	898.1	115.2
1400	963.0	50.2	3350	896.4	116.8
1450	961.2	52.0	3400	894.7	118.5
1500	959.5	53.8	3450	893.1	120.2
1550	957.7	55.5	3500	891.4	121.8
1600	956.0	57.3	3550	889.8	123.5
1650	954.2	59.0	3600	888.1	125.1
1700	952.5	60.7	3650	886.5	126.8
1750	950.8	62.5	3700	884.8	128.4
1800	949.0	64.2	3750	883.2	130.0
1850	947.3	66.0	3800	881.6	131.7
1900	945.6	67.7	3850	879.9	133.3

STANDARD PRESSURE VS. ELEVATION

Feet and mb

Station Elevation (feet)	Standard Pressure (mb)	Deviation from zero (mb)	Station Elevation (feet)	Standard Pressure (mb)	Deviation from zero (mb)
3900	878.3	134.9	5850	816.5	196.7
3950	876.7	136.6	5900	815.0	198.3
4000	875.0	138.2	5950	813.4	199.8
4050	873.4	139.8	6000	811.9	201.3
4100	871.8	141.4	6050	810.4	202.9
4150	870.2	143.1	6100	808.9	204.4
4200	868.6	144.7	6150	807.3	205.9
4250	866.9	146.3	6200	805.8	207.4
4300	865.3	147.9	6250	804.3	209.0
4350	863.7	149.5	6300	802.8	210.5
4400	862.1	151.1	6350	801.3	212.0
4450	860.5	152.7	6400	799.7	213.5
4500	858.9	154.3	6450	798.2	215.0
4550	857.3	155.9	6500	796.7	216.5
4600	855.7	157.5	6550	795.2	218.0
4650	854.1	159.1	6600	793.7	219.5
4700	852.5	160.7	6650	792.2	221.0
4750	850.9	162.3	6700	790.7	222.5
4800	849.3	163.9	6750	789.2	224.0
4850	847.7	165.5	6800	787.7	225.5
4900	846.2	167.1	6850	786.2	227.0
4950	844.6	168.7	6900	784.7	228.5
5000	843.0	170.2	6950	783.2	230.0
5050	841.4	171.8	7000	781.8	231.5
5100	839.8	173.4	7050	780.3	233.0
5150	838.3	175.0	7100	778.8	234.4
5200	836.7	176.5	7150	777.3	235.9
5250	835.1	178.1	7200	775.8	237.4
5300	833.6	179.7	7250	774.4	238.9
5350	832.0	181.2			
5400	830.5	182.8			
5450	828.9	184.3			
5500	827.3	185.9			
5550	825.8	187.5			
5600	824.2	189.0			
5650	822.7	190.6			
5700	821.1	192.1			
5750	819.6	193.6			
5800	818.1	195.2			

STANDARD PRESSURE VS. ELEVATION

Feet and inHg

Station Elevation (feet)	Standard Pressure (inHg)	Deviation from zero (inHg)	Station Elevation (feet)	Standard Pressure (inHg)	Deviation from zero (inHg)
0	29.92	0.00	1950	27.87	2.05
50	29.87	0.05	2000	27.82	2.10
100	29.81	0.11	2050	27.77	2.15
150	29.76	0.16	2100	27.72	2.20
200	29.71	0.22	2150	27.67	2.25
250	29.65	0.27	2200	27.62	2.30
300	29.60	0.32	2250	27.57	2.36
350	29.54	0.38	2300	27.52	2.41
400	29.49	0.43	2350	27.46	2.46
450	29.44	0.48	2400	27.41	2.51
500	29.38	0.54	2450	27.36	2.56
550	29.33	0.59	2500	27.31	2.61
600	29.28	0.64	2550	27.26	2.66
650	29.22	0.70	2600	27.21	2.71
700	29.17	0.75	2650	27.16	2.76
750	29.12	0.80	2700	27.11	2.81
800	29.07	0.86	2750	27.06	2.86
850	29.01	0.91	2800	27.01	2.91
900	28.96	0.96	2850	26.96	2.96
950	28.91	1.01	2900	26.91	3.01
1000	28.86	1.07	2950	26.86	3.06
1050	28.80	1.12	3000	26.82	3.11
1100	28.75	1.17	3050	26.77	3.16
1150	28.70	1.22	3100	26.72	3.20
1200	28.65	1.28	3150	26.67	3.25
1250	28.59	1.33	3200	26.62	3.30
1300	28.54	1.38	3250	26.57	3.35
1350	28.49	1.43	3300	26.52	3.40
1400	28.44	1.48	3350	26.47	3.45
1450	28.39	1.54	3400	26.42	3.50
1500	28.33	1.59	3450	26.37	3.55
1550	28.28	1.64	3500	26.32	3.60
1600	28.23	1.69	3550	26.68	3.65
1650	28.18	1.74	3600	26.23	3.69
1700	28.13	1.79	3650	26.18	3.74
1750	28.08	1.85	3700	26.13	3.79
1800	28.02	1.90	3750	26.08	3.84
1850	27.97	1.95	3800	26.03	3.89
1900	27.92	2.00	3850	25.98	3.94

STANDARD PRESSURE VS. ELEVATION
Feet and inHg

Station Elevation (feet)	Standard Pressure (inHg)	Deviation from zero (inHg)	Station Elevation (feet)	Standard Pressure (inHg)	Deviation from zero (inHg)
3900	25.94	3.98	5850	24.11	5.81
3950	25.89	4.03	5900	24.07	5.85
4000	25.84	4.08	5950	24.02	5.90
4050	25.79	4.13	6000	23.98	5.95
4100	25.74	4.18	6050	23.93	5.99
4150	25.70	4.22	6100	23.89	6.04
4200	25.65	4.27	6150	23.84	6.08
4250	25.60	4.32	6200	23.80	6.13
4300	25.55	4.37	6250	23.75	6.17
4350	25.51	4.42	6300	23.71	6.22
4400	25.46	4.46	6350	23.66	6.26
4450	25.41	4.51	6400	23.62	6.30
4500	25.36	4.56	6450	23.57	6.35
4550	25.32	4.60	6500	23.53	6.39
4600	25.27	4.65	6550	23.48	6.44
4650	25.22	4.70	6600	23.44	6.48
4700	25.17	4.75	6650	23.39	6.53
4750	25.13	4.79	6700	23.35	6.57
4800	25.08	4.84	6750	23.31	6.62
4850	25.03	4.89	6800	23.26	6.66
4900	24.99	4.93	6850	23.22	6.70
4950	24.94	4.98	6900	23.17	6.75
5000	24.89	5.03	6950	23.13	6.79
5050	24.85	5.07	7000	23.09	6.84
5100	24.80	5.12	7050	23.04	6.88
5150	24.75	5.17	7100	23.00	6.92
5200	24.71	5.21	7150	22.95	6.97
5250	24.66	5.26	7200	22.91	7.01
5300	24.62	5.31	7250	22.87	7.05
5350	24.57	5.35			
5400	24.52	5.40			
5450	24.48	5.44			
5500	24.43	5.49			
5550	24.39	5.54			
5600	24.34	5.58			
5650	24.29	5.63			
5700	24.25	5.67			
5750	24.20	5.72			
5800	24.16	5.76			