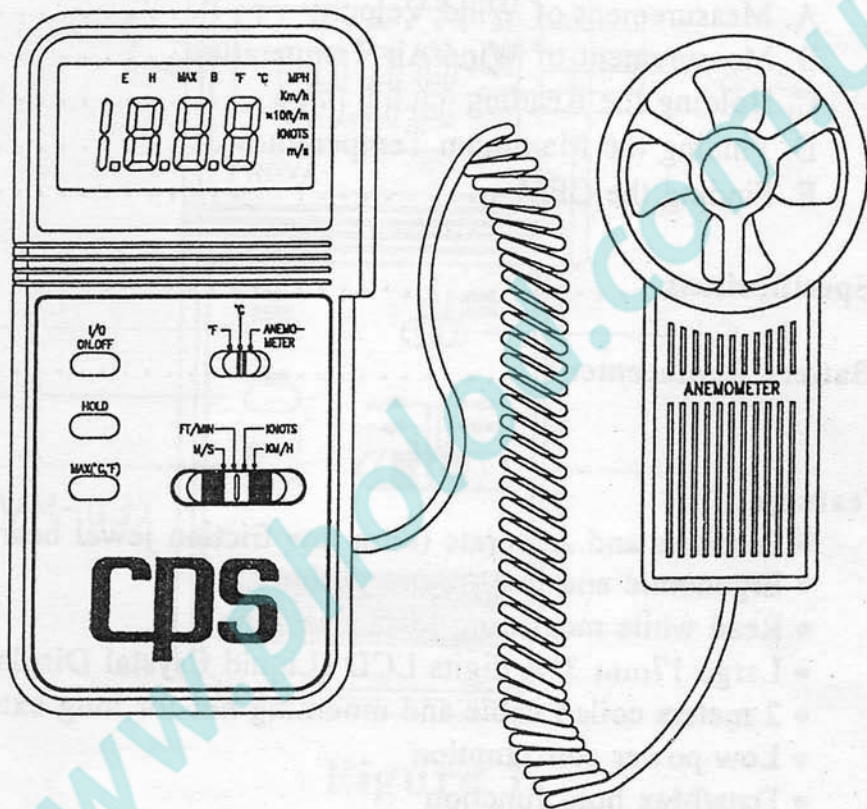


# CPS THERMO ANEMOMETER AM50 USERS MANUAL



**cps**  
PRODUCTS, INC.

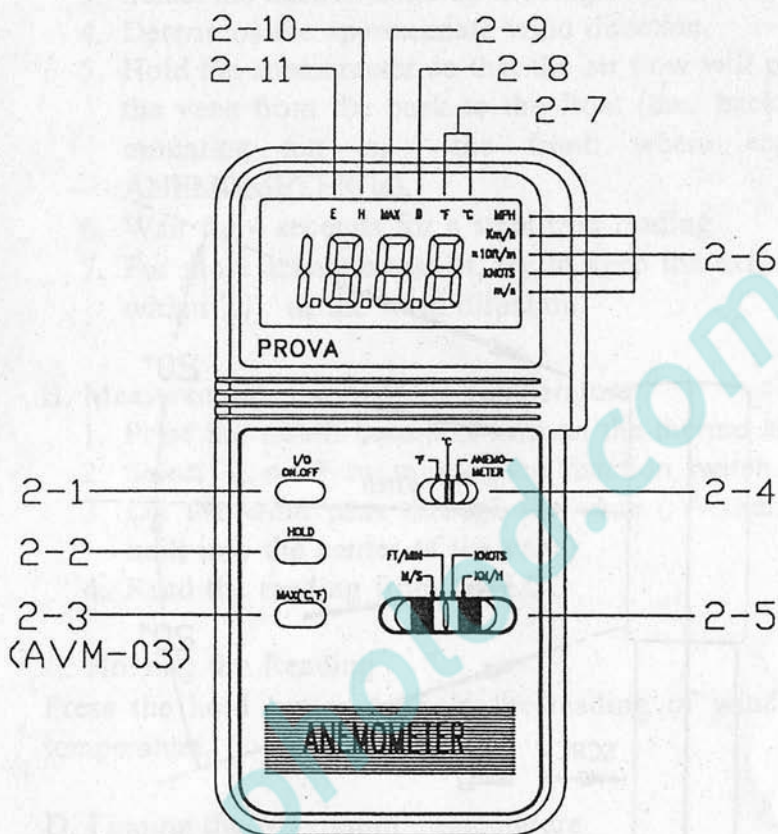
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### **I. Features**

- Sensitive and Accurate (ultra low friction jewel bearing)
- Ergonomic and easy-to-use design
- Read while measuring (detached vane)
- Large 17mm 3 ½ digits LCD (Liquid Crystal Display)
- 2 meters coiled cable and mounting nut for long extension
- Low power consumption
- Data/Max hold function
- Build-in low battery indicator
- CFM Chart

## II. Front Panel Description



**Figure 1**

- |                               |                                |
|-------------------------------|--------------------------------|
| 2-1 On/Off Push Button        | 2-7 Units Symbols              |
| 2-2 Data Hold Button          | 2-8 Battery Low Symbol         |
| 2-3 Max. Hold Button (Temp.)  | 2-9 Max. Hold Symbol for Temp. |
| 2-4 Function Selection Switch | 2-10 Data Hold Symbol          |
| 2-5 Units Selection Switch    | 2-11 Error Symbol              |
| 2-6 Units Symbols of Velocity |                                |

### III. Operation Instruction

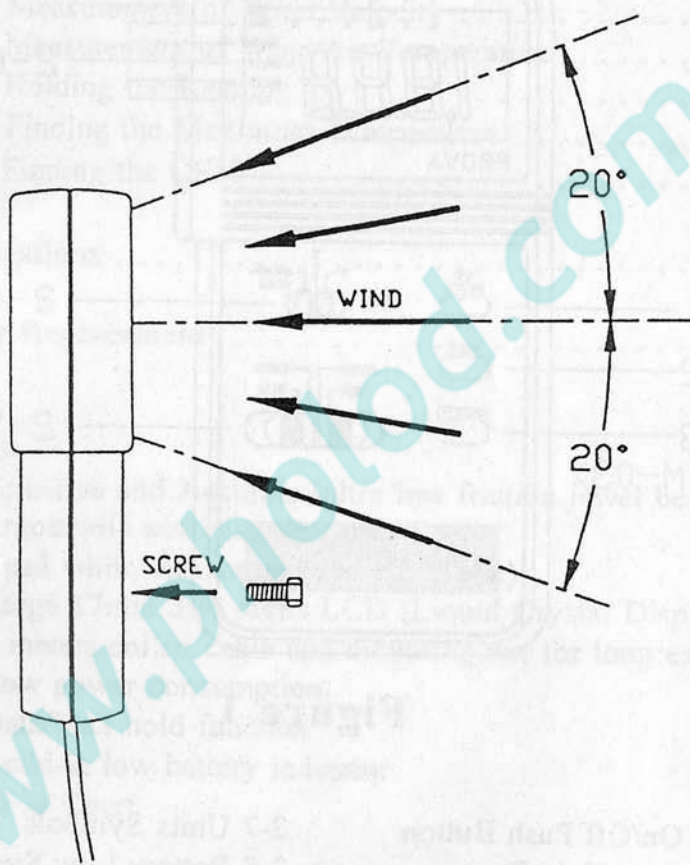


Figure 2



**A. Measurement of Wind Velocity (refer to figure 2)**

1. Press the on/off button to turn on the anemometer.
2. Select anemometer function by moving the function switch
3. Select the desired units by moving the unit selection switch
4. Determine the approximate wind direction.
5. Hold the anemometer so that the air flow will pass through the vane from the back to the front (the back: where the mounting nut is; the front: where engraving of ANEMOMETER is).
6. Wait for 4 seconds for a stabilized reading
7. For more accurate results, try to keep the axis of the vane within 20° of the wind direction.

**B. Measurement of Wind/Air Temperature**

1. Press the on/off button to turn on the thermo anemometer
2. Select °C or °F by moving the function switch.
3. Let the wind pass through the vane ( A thermocouple is built into the center of the vane).
4. Read the reading from the LCD.

**C. Holding the Reading**

Press the hold button to hold the reading of wind velocity or temperature.

**D. Finding the Maximum Temperature**

Press the max button, the maximum temperature measured during the measurement shall be displayed and updated on LCD.

**E. Finding the CFM (cubic feet per minute)**

1. Select FT/MIN with the unit selection switch.
2. Hold the anemometer so that the strongest air flow will pass through the vane from the back to the front.
3. Wait 4 seconds for stable reading.
4. Find the Air Velocity reading for FT/MIN from the AVM-03 on the CFM Chart (included) and cross match with the grill size and/or free air you are measuring from; this will be your CFM.
5. Equation for CFM is  $( (\text{sq. ft}) \times (\text{FT/MIN}) ) \times 2/3 = \text{CFM}$

#### IV. Specifications

##### Range of Wind Velocity:

Units	Range	Resol.	Threshold	Accuracy
m/s	0.0 - 45.0	0.1	0.3	$\pm 3\%^{11}$ or $0.1^{12}$
ft/min	0 - 8800	10	60	$\pm 3\%^{11}$ or $10^{12}$
knots	0.0 - 88.0	0.1	0.6	$\pm 3\%^{11}$ or $0.1^{12}$
Km/hr	0.0 - 140.0	0.1	1.0	$\pm 3\%^{11}$ or $0.1^{12}$
mph	0.0 - 100.0	0.1	0.7	$\pm 3\%^{11}$ or $0.1^{12}$

<sup>11</sup> % of reading <sup>12</sup> whichever is greater

m/s: meter per second

ft/min: feet per minute

knots: nautical miles per hour

Km/hr: kilometers per hour

mph: miles per hour

##### Range of Temperature:

	Range	Resolution	Accuracy
* C	0 - 60.0	0.1	$\pm 0.8$
* F	32.0 - 140.0	0.1	$\pm 1.5$

##### Unit Conversion table:

	m/s	ft/min	knots	Km/hr	mph
1 m/s	1	196.87	1.944	3.60	2.24
1 ft/min	0.00508	1	0.00987	0.01829	0.01138
1 knot	0.5144	101.27	1	1.8519	1.1523
1 Km/hr	0.2778	54.69	0.54	1	0.6222
1 mph	0.4464	87.89	0.8679	1.6071	1

Bearing:	Sapphire jewel bearing
Temperature sensor:	K-type thermocouple
Mounting Nut:	1/4" x 20
Operating Temperature:	Meter: 32 °F ~ 122°F (0 °C ~ 50°C) Vane: 32 °F ~ 140°F (0 °C ~ 60°C)
Operating Humidity for Thermocouple:	Less than 80% RH
Operating Pressure:	500 mB ~ 2 Bar
Storage Temperature:	-40°C ~ 60°C (-40°F ~ 140°F)
Power Consumption:	Approx. 6 mA
Battery Type:	9V
Battery Life:	50 hours ( for 300mA-hrs battery)
Averaging Period for Wind Speed Measurement:	
m/s	0.6 sec.(approx.)
ft/min	1.2 sec.(approx.)
knots	1.2 sec.(approx.)
km/hr	2.2 sec.(approx.)
Dimension:	
Meter	3.46" x 6.61" x 1.03" (88 x 168 x 26.2mm)
Vane	2.60" x 5.22: x 1.15" (66 x 132.5 x 29.2mm)
Weight:	12.34oz. (battery included) (350g)

Accessories:

Carrying case x 1

Users manual x 1

9V Battery x 1

## V. Battery Replacement

When the low battery symbol is displayed on LCD, follow the following procedures to replace the battery.

- A. Turn off the anemometer by pushing the On/Off button.
- B. Remove the screw of the battery compartment cover and remove the battery compartment cover.
- C. Replace the old 9V battery with a new 9V battery.
- D. Replace the battery compartment cover and fasten the screw.

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# CFM CHART (Grill Size)

70-603RA

sq. in. (sq. ft.)																								
GRILL SIZE	30X12	2.50	168	335	503	670	838	1005	1173	1340	1508	1675	2010	2345	2680	3015	3350	3685	4020	4355	4690	5025	5360	5695
	30X10	2.08	140	279	419	558	698	838	977	1117	1256	1396	1675	1954	2233	2513	2792	3071	3350	3629	3908	4188	4467	4746
	24X24	4.00	268	536	804	1072	1340	1608	1876	2144	2412	2680	3216	3752	4288	4824	5360	5896	6432	6968	7504	8040	8576	9112
	24X12	2.00	134	268	402	536	670	804	938	1072	1206	1340	1608	1876	2144	2412	2680	2948	3216	3484	3752	4020	4288	4556
	24X10	1.67	112	223	335	447	558	670	782	893	1005	1117	1340	1563	1787	2010	2233	2457	2680	2903	3127	3350	3573	3797
	24X8	1.33	89.1	178	267	356	446	535	624	713	802	891	1069	1248	1426	1604	1782	1960	2139	2317	2495	2673	2852	3030
	24X6	1.00	67	134	201	268	335	402	469	536	603	670	804	938	1072	1206	1340	1474	1608	1742	1876	2010	2144	2278
	14X12	1.17	78.4	157	235	314	392	470	549	627	706	784	941	1097	1254	1411	1568	1725	1881	2038	2195	2352	2508	2665
	14X10	0.97	65	130	195	260	325	390	455	520	585	650	780	910	1040	1170	1300	1430	1560	1690	1820	1950	2080	2210
	14X8	0.78	52.3	105	157	209	261	314	366	418	470	523	627	732	836	941	1045	1150	1254	1359	1463	1568	1672	1777
	14X6	0.58	38.9	77.7	117	155	194	233	272	311	350	389	466	544	622	699	777	855	933	1010	1088	1166	1244	1321
	14X4	0.39	26.1	52.3	78.4	105	131	157	183	209	235	261	314	366	418	470	523	575	627	679	732	784	836	888
	10X12	0.83	55.6	111	167	222	278	334	389	445	500	556	667	779	890	1001	1112	1223	1335	1446	1557	1668	1780	1891
	10X10	0.69	46.2	92.5	139	185	231	277	324	370	416	462	555	647	740	832	925	1017	1110	1202	1294	1387	1479	1572
	10X4	0.28	18.8	37.5	56.3	75	94	113	131	150	169	188	225	263	300	338	375	413	450	488	525	563	600	638
	8X12	0.67	44.9	89.8	135	180	224	269	314	359	404	449	539	628	718	808	898	988	1077	1167	1257	1347	1436	1526
8X10	0.56	37.5	75	113	150	188	225	263	300	338	375	450	525	600	675	750	825	900	976	1051	1126	1201	1276	
8X4	0.22	14.7	29.5	44.2	59	74	88	103	118	133	147	177	206	236	265	295	324	354	383	413	442	472	501	
6X12	0.50	34	67	101	134	168	201	235	268	302	335	402	469	536	603	670	737	804	871	938	1005	1072	1139	
6X10	0.42	28.1	56.3	84.4	113	141	169	197	225	253	281	338	394	450	507	563	619	675	732	788	844	900	957	
6X8	0.33	22.1	44.2	66.3	88.4	111	133	155	177	199	221	265	310	354	398	442	486	531	575	619	663	708	752	
6X6	0.25	16.8	34	50.3	67	83.8	101	117	134	151	168	201	235	268	302	335	369	402	436	469	503	536	570	
6X4	0.17	11.4	22.8	34.2	45.6	57	68.3	79.7	91.1	103	114	137	159	182	205	228	251	273	296	319	342	364	387	
		100	200	300	400	500	600	700	800	900	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400	

**Air Velocity (feet per minute)**

CFM equation: sq.ft. of Grill Size X Maximum Air Velocity(feet per minute) X 2/3 = CFM



# CFM CHART (Free Air)

70-603RA

(sq. in. / sq. ft.)																									
FREE AIR SPACE	230	1.60	107	214	322	429	536	643	750	858	965	1072	1286	1501	1715	1930	2144	2358	2573	2787	3002	3216	3430	3645	
	220	1.53	103	205	308	410	513	615	718	820	923	1025	1230	1435	1640	1845	2050	2255	2460	2665	2870	3075	3280	3485	
	210	1.46	97.8	196	293	391	489	587	685	783	880	978	1174	1369	1565	1761	1956	2152	2348	2543	2739	2935	3130	3326	
	200	1.39	93.1	186	279	373	466	559	652	745	838	931	1118	1304	1490	1676	1863	2049	2235	2421	2608	2794	2980	3166	
	190	1.32	88.4	177	265	354	442	531	619	708	796	884	1061	1238	1415	1592	1769	1946	2123	2299	2476	2653	2830	3007	
	180	1.25	83.8	168	251	335	419	503	586	670	754	838	1005	1173	1340	1508	1675	1843	2010	2178	2345	2513	2680	2848	
	170	1.18	79.1	158	237	316	395	474	553	632	712	791	949	1107	1265	1423	1581	1739	1897	2056	2214	2372	2530	2688	
	160	1.11	74.4	149	223	297	372	446	521	595	669	744	892	1041	1190	1339	1487	1636	1785	1934	2082	2231	2380	2529	
	150	1.04	69.7	139	209	279	348	418	488	557	627	697	836	976	1115	1254	1394	1533	1672	1812	1951	2090	2230	2369	
	140	0.97	65	130	195	260	325	390	455	520	585	650	780	910	1040	1170	1300	1430	1560	1690	1820	1950	2080	2210	
	130	0.90	60.3	121	181	241	302	362	422	482	543	603	724	844	965	1085	1206	1327	1447	1568	1688	1809	1930	2050	
	120	0.83	55.6	111	167	222	278	334	389	445	500	556	667	779	890	1001	1112	1223	1335	1446	1557	1668	1780	1891	
	110	0.76	50.9	102	153	204	255	306	356	407	458	509	611	713	815	917	1018	1120	1222	1324	1426	1528	1629	1731	
	100	0.69	46.2	92	139	185	231	277	324	370	416	462	555	647	740	832	925	1017	1110	1202	1294	1387	1479	1572	
	90	0.63	42.2	84	127	169	211	253	295	338	380	422	507	591	675	760	844	929	1013	1097	1182	1266	1351	1435	
	80	0.56	37.5	75	113	150	188	225	263	300	338	375	450	525	600	675	750	825	900	976	1051	1126	1201	1276	
70	0.49	32.8	65.7	98.5	131	164	197	230	263	295	328	394	460	525	591	657	722	788	854	919	985	1051	1116		
60	0.42	28.1	56.3	84.4	113	141	169	197	225	253	281	338	394	450	507	563	619	675	732	788	844	900	957		
50	0.35	23.5	46.9	70.4	93.8	117	141	164	188	211	235	281	328	375	422	469	516	563	610	657	704	750	797		
40	0.28	18.8	37.5	56.3	75	93.8	113	131	150	169	188	225	263	300	338	375	413	450	488	525	563	600	638		
30	0.21	14.1	28.1	42.2	56.3	70.4	84.4	98.5	113	127	141	169	197	225	253	281	310	338	366	394	422	450	478		
20	0.14	9.38	18.8	28.1	37.5	46.9	56.3	65.7	75	84.4	93.8	113	131	150	169	188	206	225	244	263	281	300	319		
10	0.07	4.69	9.38	14.1	18.8	23.5	28.1	32.8	37.5	42.2	46.9	56.3	65.7	75	84.4	93.8	103	113	122	131	141	150	159		
		100	200	300	400	500	600	700	800	900	1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000	3200	3400		

**Air Velocity (feet per minute)**

CFM equation: sq.ft. of Free Air X Maximum Air Velocity(feet per minute) X 2/3 = CFM