Noctua NF-A15 HS-PWM

Lab ID NC15000121

ID FN25121

ID: 25FN121A

: Jul 9, 2024

Scheme: PHI

CYBENETICS Airflow GOLD

CYBENETICS Static Pressure GOLD

Aristeidis Bitziopoulos,

SECTION A: 噪音測試裝置

Test Environment	Hemi-Anechoic Chamber with 6 dB(A) noise floor
Conditions	25(±2) degrees Celsius, 40-50% humidity
Sound Analyzer	Bruel & Kjaer 2270-S G4 & 2250-L G4
Microphone	Bruel & Kjaer Type 4955-A
Mic Calibrator	Bruel & Kjaer Type 4231
Data Logger	Picoscope TC-08
測試方法	Cybenetics Phi Fan Performance Standard

SECTION B: 風扇測試儀器技術規格

Manufacturer	Long Win Science & Technology Corporation
Model Number	LW-9266
Air Flow Rate	2.4 – 250 CFM
Accuracy of Air Flow Rate	< 3.5% INFS
Repeatability error	< 2%
Static pressure	0-20mmAq (100mmAq with the high static pressure throttle device)
Overall Dimensions	0.7 (W) x 2.2 (L) x 1.6 (H) m
Power Source	220VAC, 5A, Single Phase, 50/60Hz
Based on Standards	ISO 5801-2007, AMCA 210-0, ASHRAE 51-2007, IEC 61591-2005, GB/T 1236-200

SECTION C: PHI 效能等級

壓力 at 25 dB(A)	P (mmAq)	1.13
風量 at 25 dB(A)	Q (CFM)	58.98

SECTION D: Information about DUT

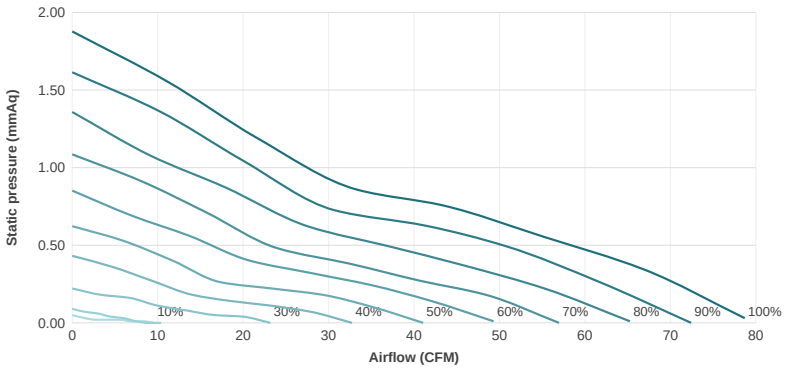
Product Identification Details	
Brand	Noctua

Model	NF-A15 HS-PWM
Serial Number	-
Product Specifications	
Manufacturer-Provided Information	
Bearing	SSO2
Connector	PWM
Cable length (mm)	200
Daisy-chain	None
RGB Connector	None
RGB Daisy-chain	None
Cybenetics Measurements	
Max Speed (RPM)	1515
Max Airflow (CFM)	78.70
Max Static Pressure (mmAq)	1.88
Max Fan Noise Level (dBA)	31.80
Fan Max Current (A)	0.13
Fan Weight (gr)	170
Dimensions (W x H x D)	150mm x 150mm x 25mm
Cybenetics Testing Information	
Lab ID	NC15000121
Date of receipt	Jun 5, 2024
Testing Date	Jul 8, 2024
Report Issued Date	Jul 9, 2024
Engineer Name	Georgios Theodoros Sarimpalas

SECTION E: Long Win LW-9266 - Pressure and Airflow

PQ Chart - All Speeds

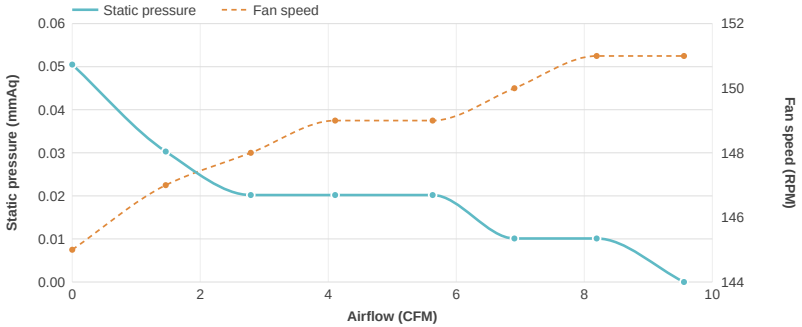
Static pressure against airflow, one curve per speed step



Speed Setting	Max Airflow (CFM)	Max Static Pressure (mmAq)	Fan Speed (RPM)	Max Power (W)
10%	9.56	0.05	145 - 151	0.23
20%	10.41	0.09	302 - 319	0.19
30%	23.19	0.22	432 - 505	0.28
40%	32.75	0.43	592 - 665	0.35
50%	41.06	0.62	708 - 816	0.47
60%	49.32	0.85	817 - 968	0.62
70%	56.97	1.09	923 - 1117	0.82
80%	65.26	1.36	1020 - 1241	1.04
90%	72.43	1.61	1110 - 1384	1.30
100%	78.71	1.88	1192 - 1500	1.56

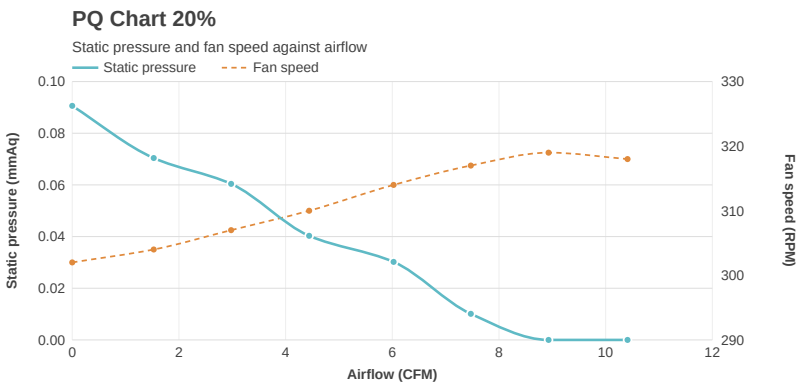
PQ Chart 10%

Static pressure and fan speed against airflow



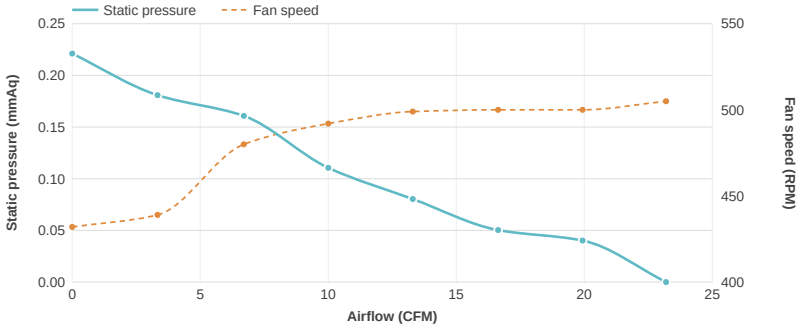
Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	0.05	145	0.019	0.23
1.46	0.03	147	0.019	0.23
2.79	0.02	148	0.019	0.23
4.11	0.02	149	0.019	0.23
5.63	0.02	149	0.018	0.22
6.91	0.01	150	0.018	0.22
8.19	0.01	151	0.019	0.23
9.56	-0.01	151	0.019	0.23

PQ Chart 20%



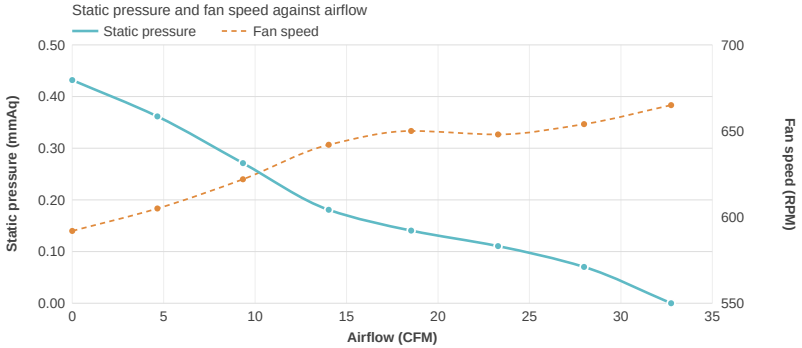
Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	0.09	302	0.016	0.19
1.53	0.07	304	0.016	0.19
2.98	0.06	307	0.016	0.19
4.44	0.04	310	0.016	0.19
6.03	0.03	314	0.015	0.18
7.47	0.01	317	0.015	0.18
8.93	0.00	319	0.015	0.18
10.41	-0.01	318	0.015	0.18

PQ Chart 30%



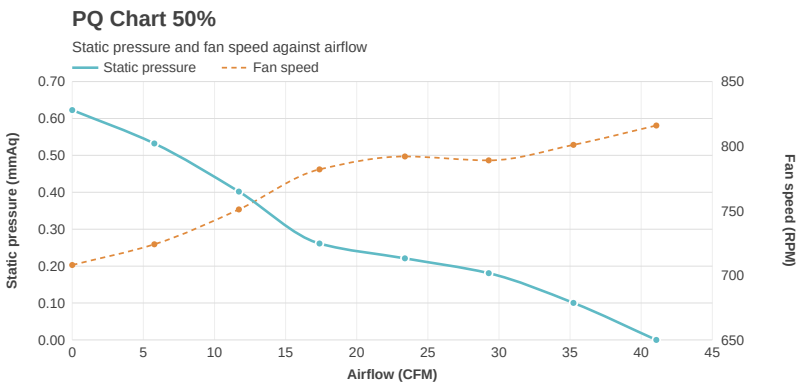
Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	0.22	432	0.023	0.28
3.33	0.18	439	0.022	0.26
6.70	0.16	480	0.020	0.24
10.00	0.11	492	0.020	0.24
13.30	0.08	499	0.020	0.24
16.63	0.05	500	0.019	0.23
19.93	0.04	500	0.019	0.23
23.19	0.00	505	0.019	0.23

PQ Chart 40%



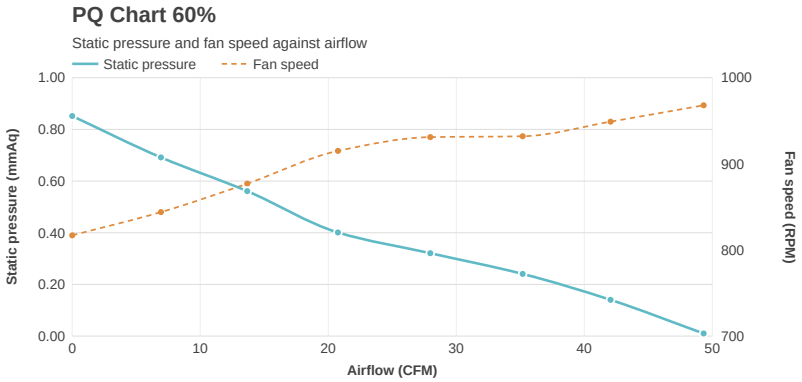
Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	0.43	592	0.029	0.35
4.66	0.36	605	0.028	0.34
9.33	0.27	622	0.027	0.32
14.02	0.18	642	0.026	0.31
18.53	0.14	650	0.025	0.30
23.28	0.11	648	0.026	0.31
27.99	0.07	654	0.026	0.31
32.75	0.00	665	0.025	0.30

PQ Chart 50%



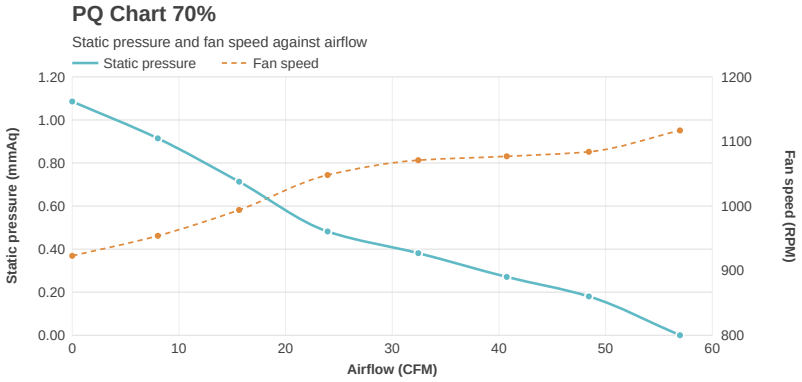
Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	0.62	708	0.039	0.47
5.77	0.53	724	0.038	0.46
11.72	0.40	751	0.036	0.43
17.38	0.26	782	0.034	0.41
23.38	0.22	792	0.034	0.41
29.28	0.18	789	0.034	0.41
35.23	0.10	801	0.033	0.40
41.06	-0.01	816	0.032	0.38

PQ Chart 60%



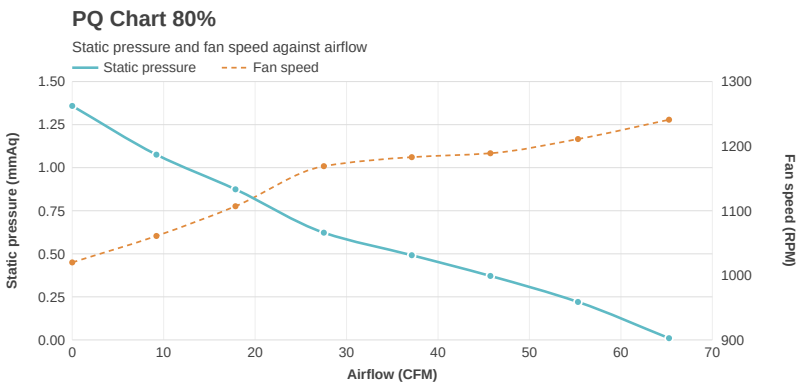
Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	0.85	817	0.052	0.62
6.93	0.69	844	0.050	0.60
13.67	0.56	877	0.047	0.56
20.75	0.40	915	0.044	0.53
27.97	0.32	931	0.044	0.53
35.18	0.24	932	0.044	0.53
42.05	0.14	949	0.043	0.52
49.32	0.01	968	0.041	0.49

PQ Chart 70%



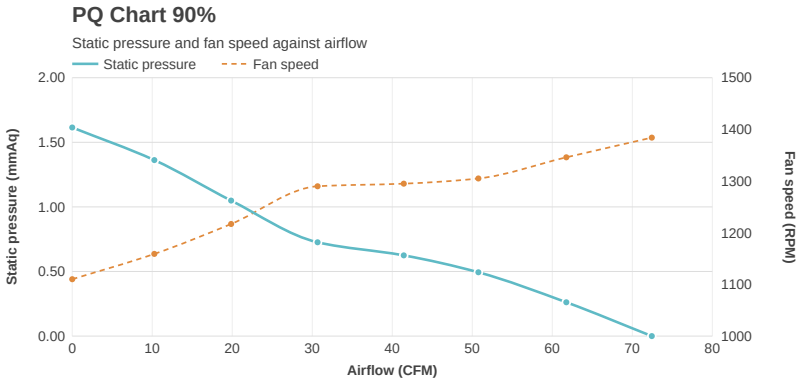
Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	1.09	923	0.068	0.82
8.02	0.91	954	0.065	0.78
15.64	0.71	994	0.062	0.74
23.94	0.48	1048	0.057	0.68
32.44	0.38	1071	0.055	0.66
40.73	0.27	1077	0.055	0.66
48.42	0.18	1084	0.054	0.65
56.97	0.00	1117	0.051	0.61

PQ Chart 80%



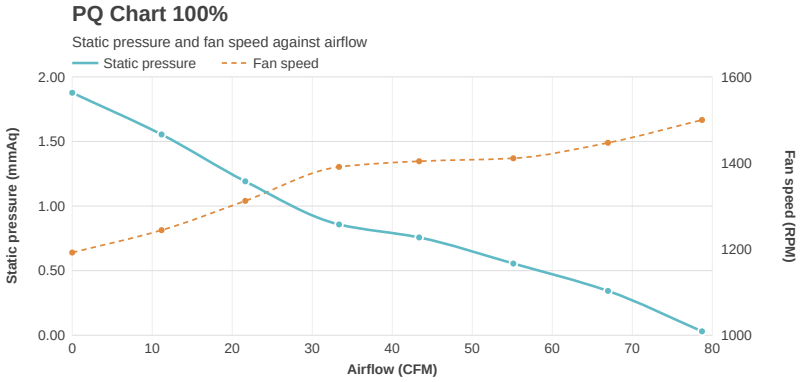
Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	1.36	1020	0.087	1.04
9.21	1.08	1061	0.083	1.00
17.85	0.87	1107	0.079	0.95
27.51	0.62	1169	0.073	0.88
37.13	0.49	1183	0.071	0.85
45.73	0.37	1189	0.071	0.85
55.31	0.22	1211	0.069	0.83
65.26	0.01	1241	0.065	0.78

PQ Chart 90%



Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	1.61	1110	0.108	1.30
10.26	1.36	1159	0.103	1.24
19.86	1.05	1217	0.097	1.16
30.66	0.73	1290	0.089	1.07
41.43	0.63	1295	0.089	1.07
50.76	0.49	1305	0.088	1.06
61.75	0.26	1346	0.083	1.00
72.43	-0.01	1384	0.079	0.95

PQ Chart 100%



Airflow (CFM)	Static Pressure (mmAq)	Fan Speed (RPM)	Current (A)	Power (W)
0.00	1.88	1192	0.130	1.56
11.16	1.55	1244	0.124	1.49
21.63	1.19	1312	0.116	1.39
33.34	0.86	1391	0.106	1.27
43.36	0.76	1404	0.105	1.26
55.13	0.56	1411	0.104	1.25
66.96	0.34	1447	0.100	1.20
78.71	0.03	1500	0.095	1.14

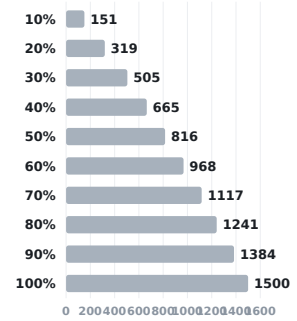
SECTION F: General Performance

Cybenetics

RPM

Fan Speed

Noctua NF-A15 HS-PWM



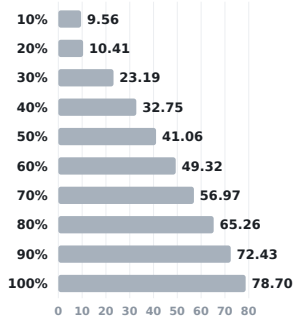
RPM · cybenetics.com

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CFM Higher is better

Airflow

Noctua NF-A15 HS-PWM



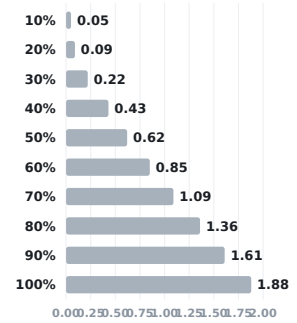
CFM · cybenetics.com

Cybenetics

mmAq Higher is better

Static Pressure

Noctua NF-A15 HS-PWM



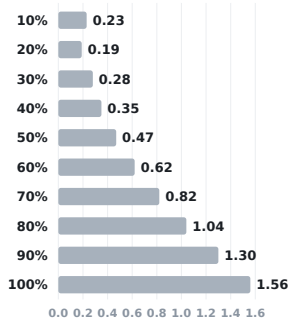
mmAq · cybenetics.com

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W Lower is better

Power Consumption

Noctua NF-A15 HS-PWM



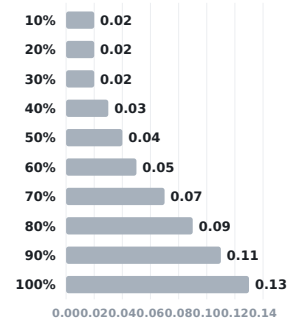
W · cybenetics.com

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A Lower is better

Current

Noctua NF-A15 HS-PWM



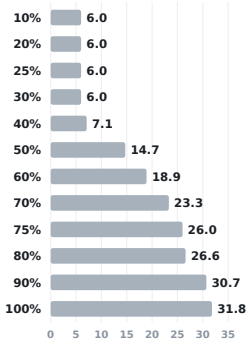
A · cybenetics.com

Cybenetics

dB(A) Lower is better

Noise Output

Noctua NF-A15 HS-PWM



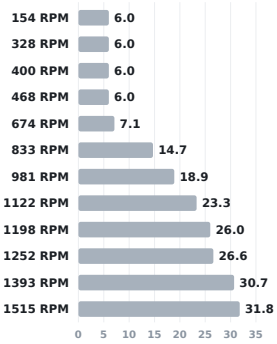
dB(A) · cybenetics.com

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dB(A) Lower is better

Noise at Each Fan Speed

Noctua NF-A15 HS-PWM



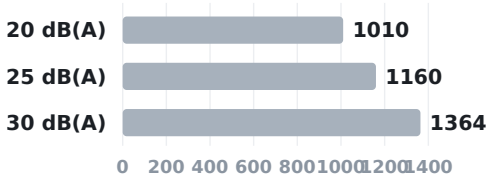
dB(A) · cybenetics.com

Cybenetics

RPM

Fan Speed at Fixed Noise Levels

Noctua NF-A15 HS-PWM



RPM · cybenetics.com

SECTION G: Uncertainty

Fan Performance Uncertainty Estimation

General Statement

Measurement uncertainty associated with the reported results was evaluated and estimated in accordance with JCGM 100:2008 (Guide to the Expression of Uncertainty in Measurement — GUM) and ISO/IEC 17025:2017, Clauses 7.6 and 7.2.

The uncertainty budget accounts for all significant identified contributors arising from the measurement process, instrumentation, test conditions, and operator interaction.

The reported expanded uncertainty U is obtained by multiplying the combined standard uncertainty uc by a coverage factor k = 2, corresponding to a confidence level of approximately 95 %, assuming a normal probability distribution.

Unless otherwise stated, the reported uncertainty applies only to the specific measurements performed and does not include long-term drift, aging effects, or future environmental changes.

Expanded Measurement Uncertainty by Measurement Type

Measurement	Expanded Uncertainty U (k=2, norm)
Fan Air Flow	±1.23176 % of reading (k=2) — e.g. ±3.69 CFM at 25 CFM, ±4.29 at 92 CFM, ±7.15 at 250 CFM
Fan Static Pressure	±0.6727 Pa

Air flow uncertainty is relative to the reading: $U(Q) = 2 \cdot \sqrt{[(1.8200)^2 + (0.0123176 \cdot Q)^2]}$ CFM, valid over the declared measuring range 2.4 – 250 CFM.

The reported static pressure uncertainty applies over the 0 – 20 mmAq (0 – 196.1 Pa) measuring range of the Long Win LW-9266 apparatus. The apparatus can be extended to 100 mmAq (981 Pa) with the high static pressure throttle device; the uncertainty of that extended range has not been separately verified and the value stated above does not apply to it.

Noctua NF-A15 HS-PWM



Front



Rear

□□□